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Promoting multidisciplinary studies on emerging trends and innovations in education and sustainable development

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PROMOTING MULTIDISCIPLINARY STUDIES
ON EMERGING TRENDS AND INNOVATIONS IN
EDUCATION AND SUSTAINABLE
DEVELOPMENT

(VOLUME 1)

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INDEX

| | |
|--|----------|
| THE CONFERENCE ORGANIZING COMMITTEE | iv |
| REVIEWERS AND EDITORIAL COMMITTEE OF CONFERENCE PROCEEDINGS..... | v |
| CHAPTER I. ECONOMICS AND BUSINESS ADMINISTRATION | 1 |
| THE CURRENT SITUATION AND SOLUTIONS FOR ENHANCING DIGITAL COMPETENCE OF STUDENTS AT HONG DUC UNIVERSITY..... | 2 |
| <i>Do Thi Man, Le Thi Thuy Linh</i> | 2 |
| FACTORS INFLUENCING CREATIVE INNOVATION COMPETENCE OF STUDENTS AT LOCAL UNIVERSITIES: A CASE STUDY AT HONG DUC UNIVERSITY | 17 |
| <i>Do Thi Man, Le Thi Thuy Linh</i> | 17 |
| LOCAL GROWTH PERFORMANCE AND PROVINCIAL ADMINISTRATIVE GOVERNANCE IN VIETNAM: A DYNAMIC PANEL ANALYSIS | 30 |
| <i>Le Thong Tien, Vo Thi Thuy Kieu</i> | 30 |
| IMPROVE THE EFFICIENCY INTERNAL AUDIT FOR MANAGEMENT AND USE OF PUBLIC ASSETS | 40 |
| <i>Dang Quang Van</i> | 40 |
| PROTECTION OF INDUSTRIAL PROPERTY RIGHTS UNDER THE COMPREHENSIVE AND PROGRESSIVE AGREEMENT FOR TRANS-PACIFIC PARTNERSHIP: ASSESSING CURRENT OPPORTUNITIES AND CHALLENGES FOR VIETNAM..... | 48 |
| <i>Le Thi Ngoc Tram</i> | 48 |
| POLICY REFINEMENT TO PROMOTE HIGHLY QUALIFIED INTERNATIONAL MIGRANT WORKERS TO SERVE THE VIETNAM LABOR MARKET IN THE NEW CONTEXT..... | 55 |
| <i>Vo Thi Hoai</i> | 55 |
| MODEL FOR STUDYING THE FACTORS AFFECTING THE DECISION TO CHOOSE ACCOUNTING SOFTWARE OF SMALL AND MEDIUM-SIZED ENTERPRISES | 63 |
| <i>Nguyen Thi Kim Ngan, Le Ngoc Doan Trang</i> | 63 |
| PROMOTIONAL PROGRAMS AND THE FEAR OF MISSING OUT: IMPACTS ON IMPULSIVE BUYING BEHAVIOR OF YOUNG WOMEN ON TIKTOK COSMETIC LIVESTREAMS..... | 75 |
| <i>Quang Thi Phuong</i> | 75 |
| EVALUATING THE EFFECTIVENESS OF HUMAN RESOURCE MANAGEMENT AT BAO SON HOTEL | 84 |
| <i>Nguyen Thi Phuong, Nguyen Xuan Hai</i> | 84 |

| | |
|---|------------|
| FRAMEWORK FOR BUDGET PROPOSAL PRIORITIZATION FOR STRATEGIC RESOURCE ALLOCATION IN UNIVERSITIES | 97 |
| <i>Val Irvin F. Mabayo</i> | 97 |
| NON-COMPETE AGREEMENTS IN LABOR RELATIONS: COMPARATIVE STUDY OF THE LAWS OF MALAYSIA, SINGAPORE, PHILIPPINES, INDONESIA AND VIETNAM | 110 |
| <i>Le Dinh Quang Phuc</i> | 110 |
| FACTORS AFFECTING THE EFFECTIVENESS OF THE INTERNAL CONTROL SYSTEM IN VIETNAMESE AGRICULTURAL ENTERPRISES..... | 120 |
| <i>Nguyen Thi Quynh Trang</i> | 120 |
| THE DEVELOPMENT OF THE CIRCULATORY AGRICULTURAL ECONOMY IN LAM DONG PROVINCE – OPPORTUNITIES AND CHALLENGES | 130 |
| <i>Thai Ngoc Nhu Quynh, Nguyen Thai Hoa</i> | 130 |
| PUBLIC CONCERNS ABOUT THE CHALLENGES OF URBAN VEGETABLE GARDENING IN HANOI, VIETNAM | 139 |
| <i>Le Thi Thanh Loan, Vu Viet Trung</i> | 139 |
| GREEN CREDIT DEVELOPMENT: EXPERIENCES OF SOME BANKS IN THE WORLD AND VIETNAM, LESSONS FOR THE BANK FOR AGRICULTURE AND RURAL DEVELOPMENT OF VIETNAM..... | 148 |
| <i>Pham Thu Van</i> | 148 |
| BUILDING AN INDEPENDENT AND AUTONOMOUS ECONOMY OF VIETNAM IN THE PROCESS OF INTERNATIONAL ECONOMIC INTEGRATION | 158 |
| <i>Nguyen Huu Dung, Vu Dang Dung, Tran Thi Thu Trang</i> | 158 |
| VIETNAM'S POLICY VIEWPOINTS ON SOCIO-ECONOMIC DEVELOPMENT IN THE OCOP FOOD PROGRAM | 171 |
| <i>Tran Thi Dien, Pham Duy Hung</i> | 171 |
| LIVELIHOOD DIVERSIFICATION AND HOUSEHOLD INCOME: CASE STUDY IN DAK LAK PROVINCE, VIETNAM..... | 183 |
| <i>Nguyen Duc Quyen, Le Duc Niem</i> | 183 |
| THE EFFECT OF IMPORTS AND EXPORTS ON VIETNAM'S ECONOMIC GROWTH..... | 196 |
| <i>Bui Do Phuc Quyen</i> | 196 |
| IMPACT OF THE EVFTA FREE TRADE AGREEMENT ON VIETNAM'S AGRICULTURAL EXPORT TURNOVER AND PROPOSAL SOLUTIONS FOR DEVELOPING HIGH-TECH AGRICULTURE UNDER THE IMPACT OF THE EVFTA AGREEMENT..... | 203 |
| <i>Do Hoang Phuong, Do Nguyet Minh, Viet Hoang Pham, Nguyen Thi Hong Van</i> | 203 |

| | |
|--|------------|
| FINANCIAL AUTONOMY MECHANISM AT PUBLIC HOSPITALS: A REVIEW | 213 |
| <i>Duong Thi Van Anh, Dinh Hai Le</i> | <i>213</i> |
| ASSESSING THE IMPACT OF THE COMPREHENSIVE AND PROGRESSIVE AGREEMENT FOR TRANS-PACIFIC PARTNERSHIP ON SEAFOOD EXPORTS OF VIETNAM..... | 227 |
| <i>Le Minh Quang, Do Gia Hung, Vu Dieu Linh, Do Van Bang.....</i> | <i>227</i> |
| KEY FACTORS INFLUENCING CONSUMER BEHAVIOR IN HANOI'S NIGHT-TIME ECONOMY, VIETNAM..... | 238 |
| <i>Hoang Ngoc Quang, Phung Thi Nhu Quynh, Ha Thao-Phan Le, Ha-Dinh Thuy.....</i> | <i>238</i> |
| CHALLENGES FOR HUMAN RESOURCE MANAGEMENT IN THE CONTEXT OF HIGHER EDUCATION AUTONOMY: A CASE STUDY AT TAN TRAO UNIVERSITY | 252 |
| <i>Hoang Anh Dao.....</i> | <i>252</i> |
| CHAPTER II. ENVIRONMENT AND SUSTAINABLE TOURISM | 268 |
| PRESERVING AND PROMOTING THE THAI FESTIVAL OF OFFERING BUFFALO TO WORSHIP THE GOD FOR TOURISM DEVELOPMENT..... | 269 |
| <i>Duong Thi Hien.....</i> | <i>269</i> |
| DIVERSIFIED TOURISM DEVELOPMENT IN TUYEN QUANG AND THAI NGUYEN: ENHANCING VISITOR ATTRACTION AND LOCAL INCOME | 278 |
| <i>Nguyen Huong Sang, Vo Hoang Ngoc Thuy.....</i> | <i>278</i> |
| TOURISM DEVELOPMENT MODEL ASSOCIATED WITH GREEN AGRITOURISM IN SOME COUNTRIES AND LESSONS FOR TUYEN QUANG, VIETNAM..... | 288 |
| <i>Nguyen Thi Diem Kieu, Lai Tri Duc Anh, Le Thi Lan Anh, Tran Thi Nguyet Tu, Truong Minh Hien</i> | <i>288</i> |
| COMMUNITY-BASED TOURISM FOR SUSTAINABLE DEVELOPMENT OF ETHNIC MINORITY COMMUNITIES IN SAPA | 297 |
| <i>Thi Duyen Phuong, Thi Bich Phuong Vu, Thi Kim Thoa Nguyen.....</i> | <i>297</i> |
| PRESERVING AND CONSERVING TRADITIONAL FESTIVALS OF ETHNIC GROUPS IN BINH DUONG PROVINCE SUSTAINABLE TOURISM DEVELOPMENT IN THE CONTEXT OF THE FOURTH INDUSTRIAL REVOLUTION | 306 |
| <i>Pham Thuc Son</i> | <i>306</i> |
| THE ROLE OF BUDDHIST MONASTERIES IN THE DEVELOPMENT OF ZEN TOURISM IN VIETNAM: A CASE OF TRUC LAM ZEN MONASTERY YEN TU | 318 |
| <i>Nguyen Bao Chau, Truong Hoang Giang.....</i> | <i>318</i> |

| | |
|---|------------|
| RANKING TOUR OPERATOR USING ANALYTIC HIERARCHY PROCESS: AN EMPIRICAL STUDY | 328 |
| <i>Nguyen Thuy Nguyen, Vu Anh Thu</i> | 328 |
| RESEARCH AND DESIGN A NUMBER OF UNIQUE SOUVENIR PRODUCTS HUNG KINH PERIOD SERVED THE TOURISM DEVELOPMENT OF PHU THO PROVINCE | 338 |
| <i>Nguyen Quang Hung</i> | 338 |
| SUSTAINABLE RURAL TOURISM DEVELOPMENT: INTERNATIONAL EXPERIENCES AND LESSONS FOR VIETNAM | 347 |
| <i>Do Thi Thuy, Ho Ngoc Ninh, Hoang Van Hung, Nguyen Tat Thang</i> | 347 |
| DEVELOPMENT OF WELLNESS TOURISM ASSOCIATED WITH HOT MINERAL SPRINGS IN HOA BINH, VIET NAM..... | 360 |
| <i>Tran Ngoc Quyet, Nguyen Bao Chau</i> | 360 |
| MARKETING OF TOURIST ATTRACTIONS IN PU LUONG, THANH HOA PROVINCE, VIET NAM..... | 369 |
| <i>Nguyen Phuong Thao, Ngo Van Tien</i> | 369 |
| CONSUMER-BASED CAVE TRAVEL AND TOURISM MARKET CHARACTERISTICS IN LUNG KHUY CAVE, HA GIANG PROVINCE, VIETNAM..... | 383 |
| <i>Ngo Van Tien, Nguyen Quang Anh</i> | 383 |
| THE ROLE OF NATIONAL IDENTITY AND PERCEIVED VALUE IN DOMESTIC DESTINATION CHOICE: THE CASE OF MILLENNIALS IN VIETNAM..... | 395 |
| <i>Phan Thao Nguyen</i> | 395 |
| THE ISSUE OF HUMAN CAPITAL IN THE DEVELOPMENT OF TOURISM ECONOMY LINKED TO CULTURAL HERITAGE IN TUYEN QUANG PROVINCE, VIET NAM..... | 407 |
| <i>Tran Quang Huy</i> | 407 |
| APPLICATION OF AESTHETICS IN TOURISM EXPERIENCE | 418 |
| <i>Nguyen Lan Huong</i> | 418 |
| BEHAVIOR WITH THE NATURAL ENVIRONMENT IN TOURISM DEVELOPMENT AT CON HO, TRA VINH PROVINCE | 431 |
| <i>Le Thuy An</i> | 431 |
| SOUVENIR PRODUCTS' DEVELOPMENT POTENTIAL BASED ON 3D SCANNING AND 3D PRINTING TECHNOLOGY AT THE HERITAGE ASSEMBLY HALL..... | 438 |
| <i>Le Nhat Dinh, An Ha Le</i> | 438 |

| | |
|--|------------|
| TAN HOA TOURISM VILLAGE - A SUSTAINABLE APPROACH TO COMMUNITY-BASED TOURISM DEVELOPMENT IN QUANG BINH PROVINCE | 449 |
| <i>Truong Thi Thu Ha, Nguyen Thi Anh Khuyen</i> | 449 |
| FACTORS INFLUENCING THE ECOTOURISM ENTREPRENEURIAL INTENTIONS OF TOURISM STUDENTS AT UNIVERSITIES IN NHA TRANG CITY | 462 |
| <i>Vu Hoang Bao Tran, Lu Hong Kha, Nguyen Ngoc Yen Nhi, Vong A Quoc Khanh</i> | 462 |
| THE STATE'S ROLE IN DEVELOPMENT ADVENTURE SPORTS TOURISM IN VIETNAM..... | 474 |
| <i>Ton Thanh Hai</i> | 474 |
| MOTIVES FOR DOMESTIC TOURISTS CHOOSING AGRICULTURAL TOURISM: A CASE STUDY OF VALLEY FARM, HUU LUNG DISTRICT, LANG SON PROVINCE, VIETNAM..... | 485 |
| <i>Tran Thi Thanh Tam, Le Thi Kim Thu, Do Ngoc Bich and Tran Thi Hai</i> | 485 |
| DIGITAL TRANSFORMATION IN VIETNAM'S HOTEL INDUSTRY: A CUSTOMER PERSPECTIVE | 493 |
| <i>Bui Thi Nga, Ho Ngoc Ninh, Nguyen Xuan Hai, Nguyen Hung Anh, Hoang Si Thinh, Dang Xuan Phi, Mai Thi Phuong, Nguyen Thi Mai Trang, Luong Minh Hieu, Truong Ngoc Tin, Nguyen Thi Thuy Ngan</i> | 493 |
| APPLYING SOCIAL MEDIA IN DESTINATION DEVELOPMENT AND MANAGEMENT TOWARDS SMART TOURISM DEVELOPMENT IN VIETNAM..... | 503 |
| <i>Nguyen Van Dong</i> | 503 |
| CURRENT SITUATION OF RESPONSIBLE TOURISM IN LO LO CHAI VILLAGE (LUNG CU COMMUNE, DONG VAN DISTRICT, HA GIANG PROVINCE, VIETNAM)..... | 512 |
| <i>Nguyen Thi Hong Lien, Nguyen Xuan Hai</i> | 512 |
| AGRICULTURAL TOURISM PRODUCT DEVELOPMENT IN NA HANG AND LAM BINH DISTRICT (TUYEN QUANG PROVINCE, VIET NAM COUNTRY)..... | 520 |
| <i>Nguyen Thi Yen Nhi, Nguyen Xuan Hai</i> | 520 |
| RESEARCH ON THE EVALUATION FRAMEWORK OF TREKKING TOURISM ROUTES: A CASE STUDY OF PU LUONG NATURE RESERVE IN VIETNAM | 529 |
| <i>Nguyen Thi Thuy Ngan, Nguyen Xuan Hai, Ho Ngoc Ninh</i> | 529 |
| ACCESSIBLE TOURISM AT SOME MUSEUMS IN HANOI: ORIENTATION AND SOLUTIONS..... | 538 |
| <i>Pham Hong Long, Do Phuong Thao</i> | 538 |
| PHU THO (VIETNAM) TOURISM DEVELOPMENT LINKAGE TOWARD SUSTAINABILITY | 552 |
| <i>Phan Thi Hong Giang</i> | 552 |

| | |
|--|------------|
| LOCAL COMMUNITY PARTICIPATION IN COMMUNITY- BASED TOURISM ACTIVITIES IN CAM THANH COMMUNE, HOI AN CITY, QUANG NAM PROVINCE | 564 |
| <i>Pham Thi Lam</i> | 564 |
| INTERDISCIPLINARY RESEARCH: OPPORTUNITIES AND CHALLENGES IN TOURISM STUDIES..... | 575 |
| <i>Ta Xuan Hoai, Phan Thi Ngan</i> | 575 |
| UNDERSTANDING THE COMPLEXITY OF TOURISM IN RURAL AREAS AND SUSTAINABLE DEVELOPMENT: A SCIENTOMETRIC REVIEW OF GLOBAL RESEARCH TRENDS..... | 592 |
| <i>Do Thi Thao, Quan Ba Chinh</i> | 592 |
| PERCEPTION OF LOCAL COMMUNITY ON RESPONSIBLE TOURISM: A CASE STUDY IN DA BAC DISTRICT, HOA BINH PROVINCE, VIETNAM..... | 605 |
| <i>Ho Ngoc Ninh, Lai Phuong Thao, Truong Ngoc Tin, Nguyen Xuan Hai, Nguyen Tat Thang, Pham Huong Lan, Tran Thi Hai, Bui Thi La, Hoang Thi Hoai Ly</i> | 605 |
| GREEN TOURISM ASSOCIATED WITH THE PRESERVATION OF THE GONG CULTURE SPACE IN THE CENTRAL HIGHLANDS OF VIETNAM | 615 |
| <i>Nguyen Phuoc Hien</i> | 615 |
| ASSESSMENT OF TOURISM CARRYING CAPACITY OF BEACHES FOR MANAGING SUSTAINABLE TOURISM DEVELOPMENT IN HA LONG BAY - CAT BA ARCHIPELAGO, VIETNAM | 627 |
| <i>Nguyen Quang Anh, Do Hue Chi</i> | 627 |
| AGRICULTURAL ARCHITECTURE ADAPTING TO CLIMATE CHANGE | 638 |
| <i>Nguyen Thi Phuong Anh</i> | 638 |
| THE IMPORTANCE OF EDUCATION AND DEVELOPMENT OF SUSTAINABLE DESIGN CAPACITY (GREEN DESIGN) IN THE TRAINING OF GRAPHIC DESIGN IN VIETNAM TODAY..... | 646 |
| <i>Vuong Quoc Chinh</i> | 646 |
| REASONABLE AND SUSTAINABLE USE OF FOREST RESOURCES: A CASE STUDY AT DONG CHAU – KHE NUOC TRONG (QUANG BINH PROVINCE) | 654 |
| <i>Van Thong Do, Tuan Cuong Ha</i> | 654 |
| QUANTIFYING THE STRUCTURE AND SPATIAL MODELING OF URBANIZATION PROCESS IN THE NORTHERN AND NORTHWEST SUBURBAN AREAS OF HO CHI MINH CITY..... | 665 |
| <i>Tuan Cuong Ha</i> | 665 |

| | |
|---|------------|
| INDIGENOUS KNOWLEDGE IN EXPLOITING AND USING MEDICINAL PLANTS OF THE H'MONG PEOPLE IN HANG KIA COMMUNE, MAI CHAU DISTRICT, HOA BINH PROVINCE IN THE DIRECTION OF SUSTAINABLE DEVELOPMENT..... | 678 |
| <i>Dao Thanh Thai, Nguyen Phuong Thao.....</i> | 678 |
| THE IMPACT OF INDUSTRIALIZATION AND MODERNIZATION ON RURAL AREAS IN THE SOUTHEAST REGION..... | 691 |
| <i>Tran Minh Duc, Tran Dung</i> | 691 |
| ENERGY MANAGEMENT PROGRAM FOR DIESEL POWER PLANTS: STRATEGIES AND BENEFITS | 702 |
| <i>John Rey Bajuyo.....</i> | 702 |
| IMPACT OF MIGRATION ON SUSTAINABLE DEVELOPMENT IN VIETNAM IN THE PERIOD 1989 TO 2023..... | 712 |
| <i>Mai Thanh Dong, Xuan Truong Nguyen, Nguyen The To</i> | 712 |
| GROUND-LEVEL OZONE POLLUTION IN MALAYSIA: DESCRIPTIVE ANALYSIS AND CLASSIFICATION USING HIERARCHICAL CLUSTERING | 724 |
| <i>Kogilah Krishnasamy, Hazrul Abdul Hamid</i> | 724 |
| EVALUATION OF SOIL CHEMICAL PROPERTIES AND SOYBEAN YIELD IN AN AGROFORESTRY SYSTEM BASED ON TEAK TREES ON ARBORETUM LAND..... | 736 |
| <i>Muhammad Rizwan, Indra Gunawan, Fitra Syawal Harahap</i> | 736 |
| ASSESSING THE STATUS OF ENVIRONMENTAL CORPORATE SOCIAL RESPONSIBILITY AND GREEN PRACTICE WITH COMPETITIVENESS OF HOTEL THE CASE OF 4-5 STAR HOTELS IN KHANH HOA, VIETNAM | 742 |
| <i>Huynh Cat Duyen, Dao Anh Thu</i> | 742 |
| MANAGEMENT SOLUTIONS FOR DOMESTIC SOLID WASTE IN RURAL MOUNTAINOUS AREAS: A CASE STUDY IN TRUNG MON COMMUNE, TUYEN QUANG, VIETNAM | 755 |
| <i>Trinh Phuong Ngoc.....</i> | 755 |
| SOLUTIONS TO REDUCE GREENHOUSE GAS EMISSIONS FROM RICE RESIDUE MANAGEMENT IN THE MEKONG DELTA, VIETNAM | 768 |
| <i>Tran Duc Tri, Nguyen Ngoc Anh, Le Thi Thanh Thuy, Dao Trong Hung.....</i> | 768 |
| STUDY ON THE IMPACT OF CLIMATE CHANGE ON PRODUCTIVITY AND RICE PLANT DISEASES IN SEI MERBAU VILLAGE, UJUNG PADANG DISTRICT, SIMALUNGUN REGENCY, NORTH SUMATRA PROVINCE | 775 |
| <i>Nurhayati, Tri Yulsisa Sirait, Syamsafitri, Satrio Joko Wibowo.....</i> | 775 |

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INTRODUCTION

The 12th International Conference on Multidisciplinary Research 2024 (ICMR 2024) with the theme of “Promoting multidisciplinary studies on emerging trends and innovations in education and sustainable development” will be jointly organized by Tan Trao University (Vietnam), Vietnam National University Of Agriculture (Vietnam), Universiti Sains Malaysia (Malaysia), Universitas Hasanuddin (Indonesia), Universitas Islam Sumatera Utara (Indonesia), Universitas Syiah Kuala (Indonesia), Universitas Sulawesi Barat (Indonesia), Cambodia University Of Technology And Science (Cambodia), Thaksin University (Thailand), and University Of Science And Technology of Southern Philippines (Philippines). The conference aims to create a platform for students, academician and industries from various fields to share their findings and provide insights to explore current ideas and technologies. Sharing of research findings can be channeled into discoveries for improving the quality of life.

ICMR12 proceedings offer a diverse collection of studies, beginning with Economics and Business Administration. The research in this section explores financial strategies, business models, and economic policies that promote sustainable growth and resilience. By examining the role of economic structures and corporate responsibility, these papers highlight the importance of informed, sustainable decision-making within business and economic systems.

Following this, the Environment and Sustainable Tourism section addresses environmental preservation and sustainable resource management, particularly in the context of the tourism industry. Papers in this category investigate strategies to minimize ecological impacts and enhance community involvement, aligning tourism practices with broader environmental goals and sustainable development. Together, these works emphasize the necessity of balancing development with conservation to foster sustainable, eco-friendly tourism development.

The final section, Education and Engineering, reflects on how educational methodologies and technological advancements are instrumental in shaping sustainable societies. The studies presented here range from innovative teaching approaches to engineering solutions designed to meet contemporary needs while considering future implications. These contributions underscore the critical role of education and technology in preparing individuals and industries to engage with sustainability in meaningful, practical ways.

With over 160 peer-reviewed papers selected from an initial 341 submissions, the iCMR12 Proceedings reflect the conference's dedication to high-quality, impactful researches. We extend our sincere gratitude to all authors, reviewers, and partner institutions who have contributed to this volume. It is our hope that these proceedings inspire continued inquiry and foster collaborations that drive sustainable development across disciplines. We invite readers to engage deeply with these works, which collectively offer valuable perspectives on how multidisciplinary research can pave the way toward a sustainable, innovative future.

The ICMR 12 Organizing Committee extends our sincere gratitude to the leaders of the Tuyen Quang Provincial People’s Committee for the support and for facilitating the collaboration between Tan Trao University and Vietnam National University of Agriculture in co-hosting this

international conference. We sincerely appreciate the leaders, faculties, researchers, and scientists from 10 partner institutions for their ongoing partnership, support, and valuable contributions, all of which have been instrumental in the success of this event.

We also highly appreciate the universities, educational institutions, researchers, lecturers, students and scholars from diversified universities, educational institutions for their valuable submissions to the conference.

We extends heartfelt gratitude to the Agricultural Academy Publishing House for providing essential support and enabling this scientific publication to reach its readers.

The Conference Organizing Committee

CHAPTER I. ECONOMICS AND BUSINESS ADMINISTRATION

THE CURRENT SITUATION AND SOLUTIONS FOR ENHANCING DIGITAL COMPETENCE OF STUDENTS AT HONG DUC UNIVERSITY

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ABSTRACT

University students are expected to have the appropriate digital competence to face the demands of the changing educational model and to meet the challenges of the future work. This paper aimed to assess the digital competency status of regular students at Hong Duc University through seven digital competency groups based on the framework of students' digital competencies at University of Social Sciences and Humanities, Vietnam National University. Survey results from 500 regular students at Hong Duc University indicated that among the seven digital competency groups, the group of safety and digital welfare competence was rated the highest, with an average rating of 4.09 out of 5 points. Following this group were the groups of operating software and device, digital content creation, application of digital competencies in the profession, communication and collaboration in the digital environments, information and data exploitation, and studying and developing digital skills. Based on the assessment of students' digital competency status, the authors also proposed solutions for individual students and made some solutions to the University for enhancing the digital competency of regular students in the future.

Keywords: Digital Competence; Hong Duc University; Students

1. INTRODUCTION

The Covid-19 pandemic has highlighted the importance of technology and digital transformation, urging the education sector to adapt its teaching methods and prepare students with essential digital skills. Digital competence is crucial in fostering a successful digital society. Although digital technologies provide access to a wealth of information, using them effectively can be difficult. Digital competence enables individuals to critically assess information, locate what they require, and solve problems efficiently. In Vietnam, challenges related to workforce employability, productivity, and efficiency persist. To capitalize on the nation's digital progress and address these issues, strengthening the digital competence of the population is essential.

In today's educational landscape, the ability to utilize information and communication technology (ICT) to develop students' digital competence plays an extremely important role (Nguyen Tan Dai, & Marquet P, 2019). Students' digital competency is a key factor in new learning models and also prepares them for future academic and career endeavors. Students with higher digital literacy are better able to engage in learning and exhibit greater enthusiasm for education (Bergdahl et al., 2020). Developing digital competency is an integral part of lifelong learning and is a concern for universities and higher education institutions worldwide (Spante et al., 2017). Therefore, enhancing digital competency is a crucial issue for schools, youth organizations, parents, and young people alike.

Today's students are growing up immersed in modern technology, often referred to as digital natives. Those who possess the ability to create and manage content, navigate communication tools, and solve technological problems are better equipped to become more capable and competitive in meeting the demands of the digital age (Eger et al., 2018). Furthermore, the COVID-19 pandemic has accelerated innovation in teaching and learning, significantly reshaping educational models and philosophies. As the primary participants in education, students must develop digital competence to address the new challenges ahead (Toquero, 2020). However, most students currently lack the required level of digital proficiency. Technology has not yet been seamlessly integrated into either traditional classrooms or online learning environments. While some studies suggest that students show progress in certain aspects of digital competence, there is still much work to be done before they can be considered fully competent (Toquero, 2020). The insufficiency of students' digital skills was made evident by the many difficulties and challenges that arose during the lockdowns. Hong Duc University plays a crucial role in providing multidisciplinary human resources to serve the socio-economic development needs of Thanh Hoa province. In the current context of international economic integration and digital transformation, there is an increasing demand from businesses for students' digital competence, which cannot be overlooked. Currently, there has been no research conducted on the digital competence of students at the university. Therefore, this article aims to study and evaluate the current status of students' digital competence at the university, and propose solutions to enhance their digital competence. This effort contributes to supplying the market with high-quality human resources aligned with the digital transformation trend in the economy.

2. LITERATURE REVIEW AND RESEARCH METHODOLOGY

2.1. Literature Review

2.1.1. Digital Competence

Digital competence, initially introduced by Gilster in 1997, refers to the ability to comprehend and effectively use information from diverse sources and formats via computers. Since then, this concept has attracted significant attention from various scholars and has been defined from multiple perspectives. It has become a frequent topic of investigation in academic research and policy documents and is increasingly emphasized in higher education. As the teaching and learning environment has evolved, the integration of ICT into the educational process has become more prevalent, directly influencing the academic performance of both teachers and students (Gómez-Fernández and Mediavilla, 2021).

Digital competence is a broad concept with several interpretations. It is defined as a set of essential knowledge, skills, and attitudes necessary for using digital technologies to optimize daily life effectively (Ferrari, 2012). The European Commission has included digital competence in its recommendations on key competences for lifelong learning, identifying it as one of the eight essential life skills. The Commission defines it as “the confident, critical, and responsible use of, and engagement with, digital technologies for learning, work, and participation in society” (European Commission, 2019). Additionally, digital competence is viewed as a cognitive, attitudinal, and

technological skill that helps address many of the challenges in today's knowledge-based society. It is characterized by its dynamic and transversal nature (Janssen et al., 2013).

Digital competence encompasses not only digital skills but also the social and emotional dimensions of using and understanding digital devices and related technologies. According to the OECD project, "A competency is more than just knowledge and skills. It involves the ability to meet complex demands by drawing on and mobilizing psychosocial resources (including skills and attitudes) in a particular context" (OECD, 2005). Digital competence is seen as a dynamic and multifaceted concept, covering various areas and incorporating multiple fields. Additionally, Calvani proposed that digital competence includes both specific, measurable skills and non-quantifiable ones. In this context, the coexistence of technical, cognitive, and ethical dimensions, along with the integration of relevant skills within these dimensions, is emphasized (Calvani et al., 2009).

In the context of academic research within educational institutions, various groups of authors have offered evolving definitions of digital competence over time. Joosten et al. (2012) and Gourlay et al. (2013) describe digital competence as the skills associated with the use of new technologies and the ability to adapt to them. On the other hand, Bennett (2014) focuses on the cognitive aspect of the individual, defining digital competence as the capability to access and operate basic functions, enabling one to become confident and proficient in using technology for personal, educational, and professional purposes. Cazco et al. (2016) expands the definition by describing digital competence as a combination of values, beliefs, knowledge, abilities, and attitudes, emphasizing effective use of technology, including computers, software, and the internet, to research, access, organize, and apply information for knowledge creation.

The diversity of the digital competence concept has led to the emergence of various digital literacy frameworks being published. In 2018, UNESCO conducted a study and comparison of over 47 digital literacy frameworks from different countries and regions around the world to develop the Digital Competence Global Framework (UNESCO, 2018). Ultimately, UNESCO selected the definition and digital competence framework of the European Commission as the main foundation, as the matching process showed that all competencies described in these 47 digital literacy frameworks could be mapped to the European DigComp framework (Jashari et al., 2021). This means that the European Commission's concept of digital competence, built upon the original definition by Ferrari (2013), encompasses nearly all the elements described in the existing digital competence frameworks.

2.1.2. Digital Competence Framework of Vietnamese Students

In Vietnam, Tran Duc Hoa & Do Van Hung (2021) defined students' digital competence as their ability to efficiently and confidently use and interact with digital technology. Digital competence includes the skills and knowledge necessary to search, evaluate, use, and create information and content using digital technologies such as computers, the Internet, application software, and mobile devices. Students' digital competence is not only about using digital technologies but also involves the ability to analyze, evaluate, and apply information searched

from online sources. It also relates to the ability to work in teams and communicate through digital technologies, as well as problem-solving and creative thinking in a digital environment.

Based on comparisons of international digital competence frameworks, leveraging the content of the information competence module currently being taught by the Faculty of Information and Library Science, Tran Dai Hung and colleagues (2022), from University of Social Sciences and Humanities, Vietnam National University proposed a framework for digital competence for Vietnamese students consisting of 7 competency groups with 26 standards. The specific competencies described within each of these major competency groups are also classified and reorganized to focus less on technical factors in operations, emphasizing instead the application of technology in practice through attitudes, empathy, critical thinking, problem-solving, and innovative thinking.

In this study, the authors chose to develop a digital competence framework for students at Hong Duc University based on the digital competence framework of Social Sciences and Humanities University, Vietnam National University consisting of 7 digital literacy groups: Operation of software and devices, information and data exploitation, Communication and collaboration in the digital environment, safety and digital welfare, digital content creation, Studying and development of digital skills, as well as Application of digital competencies in the profession.

2.2. Research Methodology

2.2.1. Data Collection Method

This research analyzes the current state of digital competence of students at Hong Duc University based on primary data collected from regular students of the University. The sample size is determined using Slovin's formula (1960):

$$n = \frac{N}{1+N*e^2}$$

Where: n is the required sample size, N is the population size, and e is the margin of error (the authors chooses 0.05).

Therefore, with the total number of regular students at the university is 6371 students, the minimum sample size required is 377 samples. To ensure reliability in the study, this research chooses a sample size of 500 samples. Based on the number of regular university students in the 12 faculties in the first semester of the academic year 2023 - 2024, this research chooses the method of random sampling by group to reduce bias in sample selection and ensure that students from all faculties of the university are surveyed. Accordingly, the total number of regular university students is divided into 12 groups corresponding to 12 faculties, and the number of students to be surveyed from each faculty is determined by the formula:

$$h_i = a_i * N \quad (i= \overline{1,12}).$$

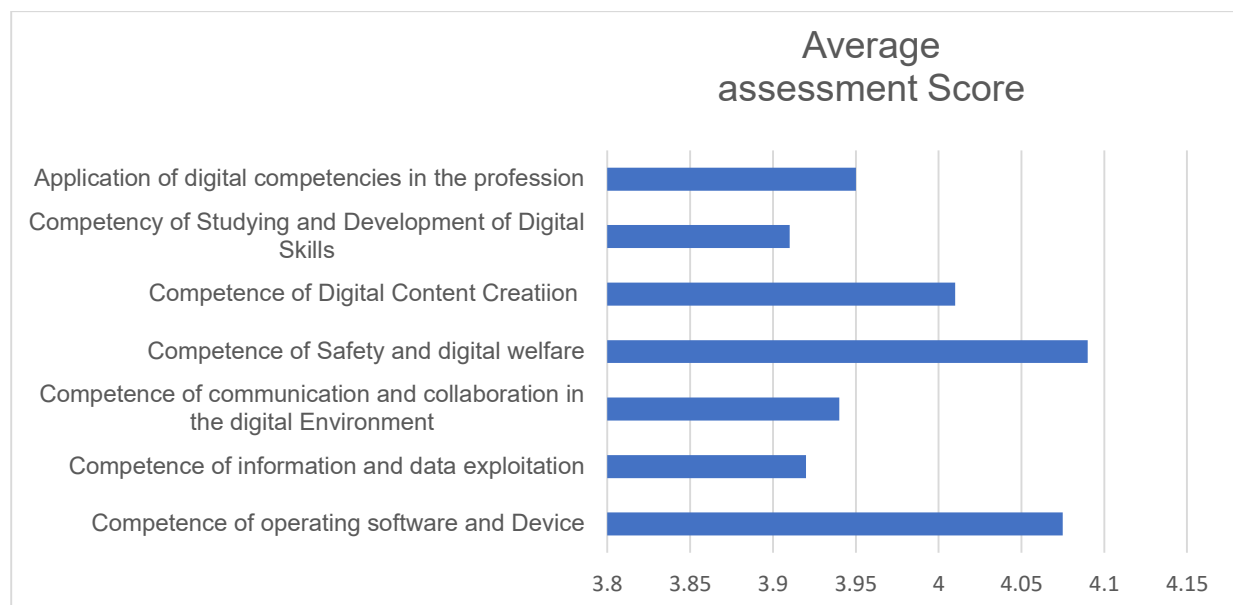
Where: h_i is the number of students to be surveyed from faculty i (sample size by faculty), a_i is the proportion of students from faculty i in the total student population, and N is the sample size required (N = 500).

2.2.2. Data Analysis Method

Descriptive statistical analysis method with indicators of mean values, percentage ratios is used to evaluate the current situation of digital competence of Hong Duc University students.

3. RESEARCH RESULTS

Students' digital competence (comprising 43 indicators) is presented through 7 competency groups as follows: Operation of software and equipment (4 indicators); Information and data exploitation (7 indicators); Communication and collaboration in digital environments (7 indicators); Safety and security competence (6 indicators); Digital content creation (5 indicators); Learning and development of digital skills (8 indicators); Using digital competence for professions (6 indicators). The indicators are assessed by Likert scale of a 5-point scale ranging from very poor to very good, corresponding to evaluation scores ranging from 1 to 5. The evaluation results of students on the various digital competency groups are as follows:



Source: Compiled and processed by the authors

Figure 1. Students' Evaluation of Digital Competency Groups

The survey results from students indicate that among the 7 digital competency groups, the safety and security competency group is rated the highest, with an average evaluation score of 4.09 out of 5 points. Next is the competency group of operating software and equipment, with an average evaluation score of 4.075 out of 5 points. The third-highest rated competency group is digital content creation, with an average evaluation score of 4.01 out of 5 points. The competency groups that are rated less favorably are: Using digital competency for professions (3.95/5 points); Communication and collaboration in digital environments (3.94/5 points); Information and data exploitation (3.92/5 points), and Learning and development of digital skills (3.91/5 points).

3.1. Competency of operating software and equipment

Table 1. Students' assessment of operating software and equipment competence

| Competence of operating software and device | Assessment Level (%) | | | | | Average Assessment Score |
|--|----------------------|------|------|------|-----------|--------------------------|
| | Very Poor | Poor | Fair | Good | Very Good | |
| Recognizing and utilizing functions/features of digital tools/devices | 2.6 | 2.6 | 17.6 | 38.9 | 38.3 | 4.08 |
| Finding solutions to technical issues with digital devices | 1.3 | 9.8 | 11.3 | 42.0 | 35.7 | 4.01 |
| Recognizing and understanding necessary digital data and information for software/tool operation | 0.0 | 5.0 | 29.8 | 28.5 | 36.7 | 3.97 |
| Finding solutions to technical issues with software on digital devices | 1.1 | 4.6 | 7.8 | 40.9 | 45.7 | 4.25 |
| Average Rating Score | | | | | | 4.075 |

Source: Compiled and processed by the authors

The findings presented in Table 1 demonstrate that students exhibit a notable level of confidence in the realm of device and software operation, as evidenced by an overall average rating of 4.075 out of 5 points through four queried aspects. Delving deeper into the indicators of device and software operation competency, it's evident that students excel particularly in their capacity to independently troubleshoot technical issues arising during software utilization on digital devices, garnering the highest average score of 4.25 out of 5 points. Conversely, the aspect pertaining to the recognition and comprehension of requisite data and information essential for software tools and technology operation received the lowest rating, averaging at 3.95 out of 5 points.

Furthermore, competencies associated with identifying and leveraging the functionalities and features of digital tools/devices, along with the ability to autonomously resolve technical challenges encountered while utilizing digital devices, were also appraised positively. This comprehensive assessment underscores the multifaceted nature of students' proficiency in device and software operation, illuminating both strengths and areas for potential enhancement within this domain.

3.2. Competency of Information and Data Exploitation

Table 2. Students' Assessment of Information and Data Utilization Competence

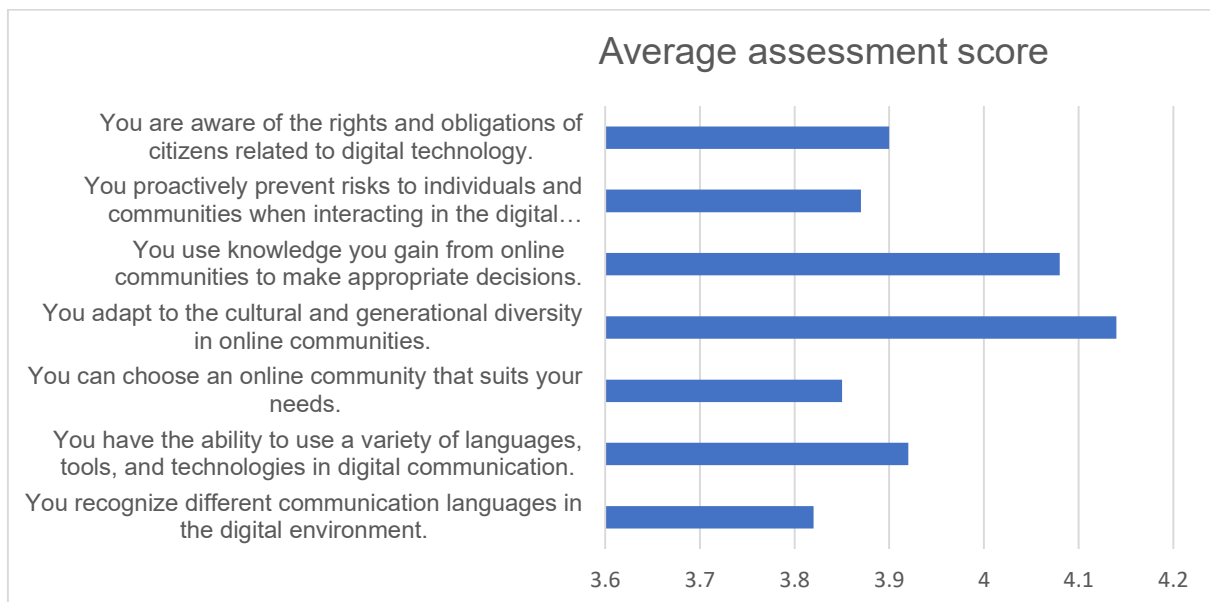
| Competence of Information and Data Exploitation | Assessment Level (%) | | | | | Average assessment Score |
|--|----------------------|------|------|------|-----------|--------------------------|
| | Very Poor | Poor | Fair | Good | Very Good | |
| Recognizing necessary information/data for problem-solving | 0.9 | 3.9 | 31.3 | 30.2 | 33.7 | 3.92 |
| Developing information search strategies and selecting efficient tools | 2.6 | 3.9 | 28.3 | 28.9 | 36.3 | 3.92 |
| Establishing keyword systems for information search | 2.6 | 4.8 | 28.5 | 29.1 | 35.0 | 3.89 |
| Applying methods to evaluate and select appropriate information | 1.7 | 4.1 | 9.3 | 42.0 | 42.8 | 4.20 |

| Competence of Information and Data Exploitation | Assessment Level (%) | | | | | Average assessment Score |
|--|----------------------|------|------|------|-----------|--------------------------|
| | Very Poor | Poor | Fair | Good | Very Good | |
| Recognizing the role of information management and storage | 1.7 | 3.0 | 15.7 | 29.1 | 50.4 | 4.23 |
| Applying technology for organizing, arranging, and storing digital information | 0.4 | 23.3 | 13.9 | 28.3 | 34.1 | 3.72 |
| Using and distributing information and data ethically and legally | 3.7 | 2.2 | 32.4 | 37.2 | 24.6 | 3.77 |
| Average Assessment Score | | | | | | 3.92 |

Source: Compiled and processed by the authors

The survey results regarding students' assessment of information and data exploitation competency show an average rating of 3.92 out of 5 points for the 7 indicators, which is lower than the competency in software and equipment operation. Among the competencies within this group, students perceive themselves as strongest in the ability to recognize the role of information management and storage in using and exploiting information, with an overall average rating of 4.23 out of 5 points, and over 70% of students feel they have a good or higher level of competency in this area. Meanwhile, the competency of applying technology to organize, arrange, and store information is rated lowest, with nearly 60% of students reporting a competency level of average or below, and the lowest average rating within the group at 3.72 out of 5 points. This competency is also perceived relatively low by students, with 13.9% rating themselves as having a normal level of competency and 23.3% rating themselves as having a poor level of competency.

3.3. Communication and Collaboration Competency in the Digital Environment



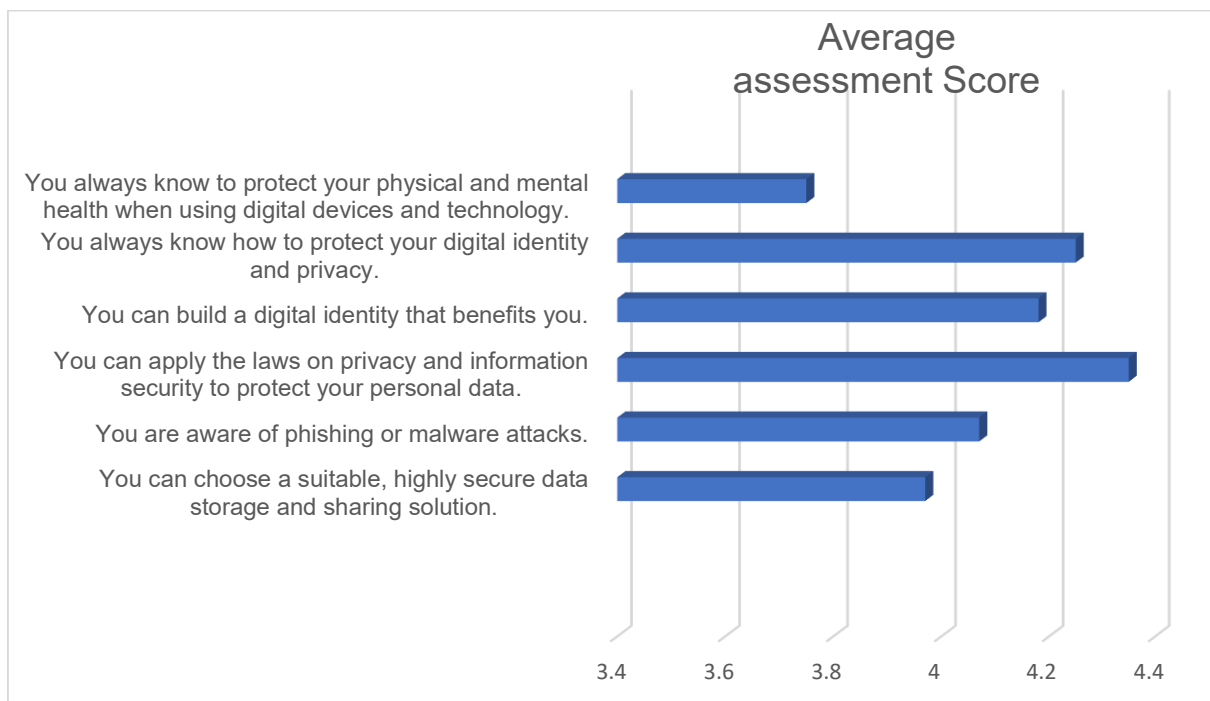
Source: Compiled and processed by the authors

Figure 2. Students' Assessment of Communication and Collaboration Competence in the Digital Environment

The survey results regarding students' competency in communication and collaboration in digital environments show an average rating of 3.94 out of 5 points, indicating a somewhat subpar level. Among these, the ability to recognize different communication languages in digital environments is perceived at the lowest level, with an average rating of 3.82 out of 5 points. Students consider themselves strongest in showing interest in adaptable content with cultural and generational diversity in online communities, with an average rating of 4.14 out of 5 points. The ability to apply knowledge gained from online communities to make appropriate decisions is also highly rated compared to other competencies, averaging 4.08 out of 5 points. Students also perceive themselves quite well in recognizing citizen rights and obligations related to digital technology, and in identifying different communication languages in digital environments, with nearly 60% rated as good or very good.

Conversely, the competency in actively avoiding personal and community risks when interacting in digital environments is rated relatively low, with an average rating of 3.87 out of 5 points, where 12.4% are rated as normal and 6.5% are rated as poor. Additionally, the competency in using various languages, tools, and technologies in digital communication is also rated relatively low, with an average rating of 3.92 out of 5 points.

3.4. Competence of Safety and digital welfare



Source: Compiled and processed by the authors

Figure 3. Students' assessment of Safety and digital welfare competence

The assessment results of students' awareness regarding digital safety and security competencies are presented in Figure 3. The results indicate that students feel competent in terms of digital safety and security, with an overall average rating of 4.095 out of 5 points for the 6

criteria. The majority of students agree that they perform well in selecting appropriate storage and sharing solutions with high security (72.4%). Regarding the recognition of fraudulent attacks or malicious software, most students indicate that they have good or very good competency, with an average score of 4.07 out of 5 points.

Regarding the application of legal regulations on privacy rights and information security to protect personal data, the majority of students believe they have good competency in applying these regulations (82.4%). 75.9% of students rate themselves as proficient in building a digital identity for personal benefits, while 71.4% of surveyed students evaluate their competency in always protecting digital identity and privacy rights as good.

The competency rated lowest in this group is the ability to always protect physical and mental health when using devices and digital technology, with an average rating of 3.75 out of 5 points. The competency rated highest is the ability to apply legal regulations on privacy rights and information security to protect personal data, with an average rating of 4.35 out of 5 points.

3.5. Competence of Digital Content Creation

The survey results indicate that the digital content creativity competence is evaluated with an average rating of 4.012 out of 5 points, demonstrating a high level of competence within the student population across various digital content creativity competency groups within the framework of students' digital competence.

Table 3. Student Evaluation of Digital Content Creativity Competence

| Competence of Digital Content Creation | Assessment Level (%) | | | | | Average Assessment Score |
|--|----------------------|------|------|------|-----------|--------------------------|
| | Very Poor | Poor | Fair | Good | Very Good | |
| You consistently use digital technology in developing ideas, projects, and exploring new opportunities. | 2.6 | 0.7 | 26.1 | 25.7 | 45.0 | 4.10 |
| You possess creative and innovative thinking in constructing digital content. | 2.6 | 6.1 | 21.5 | 33.5 | 36.3 | 3.95 |
| You can select appropriate tools and methods to design and/or create new digital products. | 0.9 | 3.0 | 17.6 | 42.2 | 36.3 | 4.10 |
| You are proficient in basic programming languages to participate in the design and development of digital products and applications. | 0.9 | 4.6 | 18.0 | 45.4 | 31.1 | 4.01 |
| You can identify and solve problems arising during the use of software and digital devices. | 1.7 | 7.6 | 25.4 | 29.8 | 35.4 | 3.90 |
| Average Overall Assessment Score | | | | | | 4.012 |

Source: Compiled and processed by the authors

The survey results also indicate that among the scales for digital content creation competency, the ability to use digital technology in developing ideas, projects, and seeking new opportunities, as well as the ability to select appropriate tools and methods to design and/or create new digital products, are rated the highest with an average evaluation score of 4.1 out of 5 points. Next is the ability to use basic programming languages to participate in the design and development of

products and applications on digital platforms, with an average evaluation score of 4.01 out of 5 points. Competencies in innovative thinking in building digital content and the ability to identify and solve problems arising from the use of software and digital devices are not rated highly (average evaluation scores below 4 points).

3.6. Competency of Studying and Development of Digital Skills

Survey results regarding students' perceptions of learning and digital skills development competency show that the majority of students believe they have fairly good competence in learning and developing digital skills, with an average rating of 3.91 out of 5 points. Although this score is lower than self-assessment scores in other digital competency groups, it still reflects students' ability to apply digital transformation in learning and develop adaptable digital skills in line with societal trends.

Table 4. Students' Assessment of Learning and Development of Digital Skills Competency

| Competency of Studying and Development of Digital Skills | Assessment Level (%) | | | | | Average Assessment Score |
|--|----------------------|------|------|------|-----------|--------------------------|
| | Very Poor | Poor | Fair | Good | Very Good | |
| You identify opportunities and challenges in the online learning environment. | 3.5 | 1.5 | 26.7 | 26.5 | 41.7 | 4.02 |
| You understand personal needs and preferences as a learner in the digital environment. | 3.0 | 5.7 | 27.8 | 28.7 | 34.8 | 3.87 |
| You study and research effectively in a digital technology environment. | 0.9 | 5.0 | 16.7 | 35.0 | 42.4 | 4.13 |
| You are proactive in seeking learning opportunities to develop personal skills and lifelong learning habits. | 1.7 | 6.3 | 21.5 | 43.5 | 27.0 | 3.88 |
| You proficiently use learning applications, devices, and software. | 1.1 | 8.0 | 24.3 | 28.0 | 38.5 | 3.95 |
| You consistently plan to monitor the progress of personal digital competence development. | 3.3 | 2.4 | 27.6 | 49.1 | 17.6 | 3.75 |
| You can guide others in using devices and software for learning purposes. | 2.4 | 9.8 | 25.4 | 25.4 | 37.0 | 3.85 |
| You are proactive in creating, sharing, and utilizing open educational resources and open data. | 2.4 | 3.5 | 33.3 | 27.2 | 33.7 | 3.86 |
| Average Overall Assessment Score | | | | | | 3.91 |

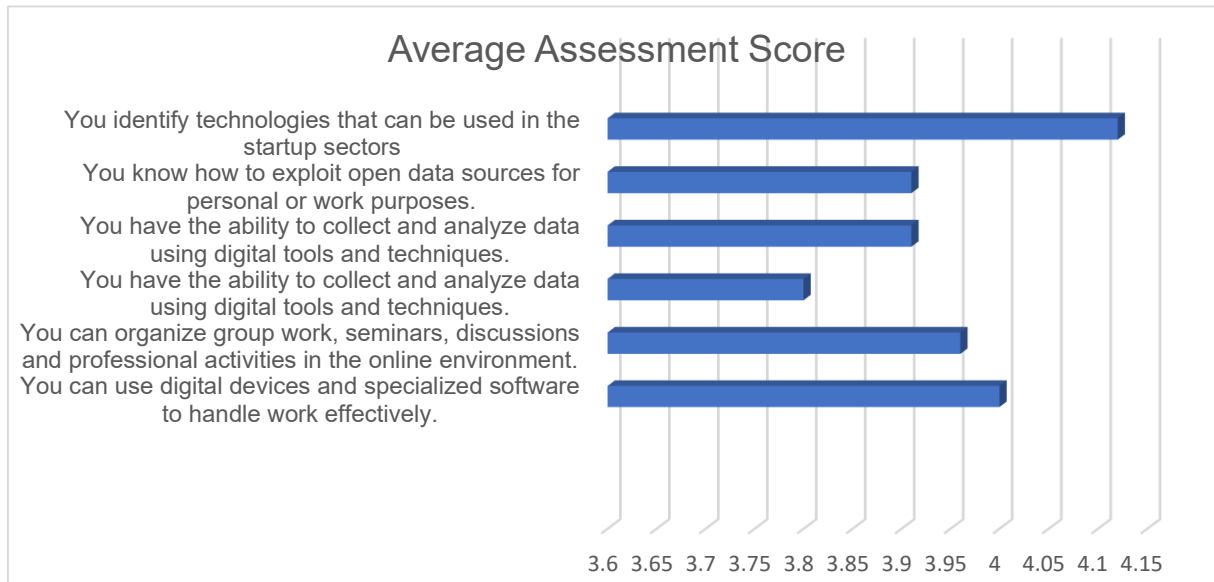
Source: Compiled and processed by the authors

The survey results also reveal that among the scales for competencies of learning and developing digital skills, the ability to learn and conduct research effectively in a digital environment is rated the highest, with an average evaluation score of 4.13 out of 5 points (77.4% of surveyed students rated this competency as good or excellent). Next is the ability to identify opportunities and challenges in online learning environments, with an average evaluation score of 4.02 out of 5 points, indicating a good rating for this competency.

The proficiency in using learning applications, devices, and software is rated relatively well (3.95 out of 5 points). Other competencies such as understanding personal needs and preferences as a learner in a digital environment, guiding others in using devices and software for learning

purposes, and actively creating, sharing, and utilizing open educational resources and open data are mostly rated from fair to very good (average evaluation scores ranging from 3.85 to 3.88 points). The competency rated lowest in this group is the ability to plan and monitor the progress of individual digital skills development.

3.7. Application of digital competencies in the profession



Source: Compiled and processed by the authors

Figure 4. Students' Evaluation of Application of digital competencies in the profession

The perception of students regarding the use of digital competence for professions, as depicted in Figure 4, indicates an overall average rating of 3.95 out of 5 points for the 6 criterion evaluated. Among these, the ability to identify technologies applicable to entrepreneurship is rated the highest, with an average score of 4.12 out of 5 points. Next is the proficiency in using specialized devices and software to efficiently handle tasks, rated at a good level (4/5 points). Competencies related to organizing teamwork, seminars, webinars, and professional activities in online environments; the ability to gather and analyze data using digital tools and techniques; and the capability to leverage open data sources for personal or professional purposes are rated relatively well. However, the proficiency in using applications for time and task management automation is rated the lowest within the group of competencies for using digital literacy for professions.

4. SOLUTIONS FOR ENHANCING STUDENTS' DIGITAL COMPETENCY AT HONG DUC UNIVERSITY

4.1. Solutions for Students to Improve Digital Competency

Learn and master the basics of information technology: To master basic information technology, students need to grasp the knowledge taught in lectures, understand the concepts,

principles, and related knowledge. Use information technology in learning. Mobile applications, time management software, note-taking software, or project management tools can be used to organize tasks and track learning progress. Take advantage of online resources such as instructional videos, online lectures, online learning materials, discussion forums, and online communities to learn more about concepts and digital technologies. Participating in online courses and certifications will help you learn new knowledge and have certificates to prove students' competence.

Applying learned knowledge in practice: To enhance digital competence, it is essential to practice and apply what you have learned in real-life situations. Practice will help students become familiar with technologies and develop problem-solving skills by applying knowledge. Participating in projects and volunteer activities related to information technology is a way to apply students digital knowledge and skills in practice and contribute to the community. Students can engage in social projects that use technology to address social issues.

Self-study and independent research: Students should cultivate the habit of self-study and independent research. Set personal learning goals, interests, and want to explore in the field of information technology. Self-study and research will help students achieve independence and develop deeper knowledge in areas you are interested in.

Keep up with new technologies: Stay updated with new technologies and digital trends to avoid becoming outdated. Read books, articles, follow blogs, or YouTube channels about technology to stay informed about the latest information.

Develop a habit of continuous learning: Digital competence is not just a one-time learning process but a continuous one. Create a habit of learning and practicing digital skills daily. Try to dedicate at least a small amount of time each day to reading, researching, and practicing your digital skills. Discipline and patience are essential factors for progressing in digital competence.

4.2. Solutions for Hong Duc University to Enhance Students' Digital Competency

Building a digital learning environment: Hong Duc University needs to create a conducive and expanded digital learning environment for students. This may include further developing online learning management systems, providing online learning materials and lectures, and introducing or encouraging students to use digital tools and applications to enhance their learning effectiveness.

Improving technological infrastructure: Hong Duc University needs ensure that all areas on campus have fast and stable internet connections, providing modern technology equipment such as computers, projectors, and specialized software to enable students to access new technologies more widely.

Organizing courses and seminars on digital competence: Hong Duc University can organize open courses for students to participate in for free or at a reasonable fee. Organizing seminars on digital literacy helps students access the latest knowledge and skills in the field of information technology and digital literacy. Additionally, inviting experts and relevant businesses to participate in seminars also provides opportunities for students to interact and learn.

Creating innovative and collaborative spaces: Hong Duc University should provide creative and collaborative spaces for students to work on projects related to digital literacy. Schools should build partnerships with businesses and technology organizations in the community. This may provide opportunities for students to develop their creative projects and put them into practice, receiving recognition and assistance from a wider range of stakeholders.

Guidance, Support, and Increasing Awareness of Online safety for students: Enhancing education about online safety awareness for each student, updating documents, articles, and online threats to help students understand and avoid them.

Receiving feedback and evaluation from students: Hong Duc University should regularly collect opinions and evaluations from students about the quality of teaching staff and the use of technology in the teaching process. This helps schools understand the needs of students and adjust policies and activities to meet these requirements.

Diversifying training programs: Hong Duc University can consider diversifying training programs by adding courses related to information technology. This helps students access a variety of fields in information technology such as data analysis, artificial intelligence, cybersecurity, and mobile application development. By providing diverse courses, students will be encouraged to develop digital literacy in areas they are interested in and passionate about.

Hong Duc University can also consider building a separate code of conduct on social networks for their students, to propagate and encourage students to have civilized behavior in the digital environment. This can be both an educational tool for orientation and a product to communicate the beautiful image of the school. In addition, organizing quality courses and training classes to provide knowledge and skills in exploiting and sharing information on the internet or organizing information technology application skills competitions is certainly important which will help each student's study and career path become more complete.

In the process of organizing activities to improve digital capabilities for students, Hong Duc University should also effectively exploit their available valuable resources, which are talented young lecturers and reputable scientists. Let's bring them into exchange activities to share experiences, support the development of ideas, information technology products, connect with startup opportunities, establish a business on digital platforms, etc. to ensure value is created. For students from those activities will not be small. The university should also carry out digital transformation of their activities to improve their ability to interact with students, creating convenience, safety, and security.

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FACTORS INFLUENCING CREATIVE INNOVATION COMPETENCE OF STUDENTS AT LOCAL UNIVERSITIES: A CASE STUDY AT HONG DUC UNIVERSITY

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ABSTRACT

This article aims to present a comprehensive overview of researches related to creative innovation competence, then formulate and validate a model for evaluating creative innovation competence of students, and examine the influence of factors on students' creative innovation competence at Hong Duc University through the analysis results of a multivariate regression model with data from a survey sample of 500 students. The findings reveal that three out of four factors included in the model have a positive influence on students' creative innovation competence at Hong Duc University. Among these, the creative supportive environment emerges as the most significant factor influencing students' creative innovation competence in the University, followed by the influence of intrinsic motivation on students' creative innovation capacity, and finally, the impact of creative style. From the research results, the authors propose several recommendations to the University to enhance students' creative innovation competence such as creating innovative environment, organizing training programs to foster innovative capabilities, and building teamwork and a democratic culture within the institution.

Keywords: Creative innovation competence, Influencing factors, Students, Hong Duc University

1. INTRODUCTION

Innovation is a crucial measure for assessing one's competitiveness and adaptability to the current trends and societal changes within the economy. In the context of the booming digital economy, studying the factors influencing students' innovative capacity in universities will help enhance their innovative capabilities, thereby improving their sustainable learning through technological advancements, financial progress, and social factors within the university. Innovation involves utilizing new knowledge to create a desired service or product that customers seek; it encompasses the processes of invention and commercialization. Innovation plays a vital role in enhancing business production efficiency, fostering sustainable business development, and serves as a crucial prerequisite for building competitive capabilities. Fagerberg (2004) also asserts that innovation is the initial commercialization of ideas. Therefore, innovation has become a core competency with universal significance and will be integrated into daily practices (Bozic, 2017).

According to the report by the World Intellectual Property Organization (WIPO), Vietnam was ranked 46th out of 132 countries in terms of the Global Innovation Index (GII) in 2023. From 2017 to the present, Vietnam's GII has consistently improved, rising from 59th place in 2016 to 42nd in 2019 and 2020, 44th in 2021, 48th in 2022, and 46th in 2023. These results reflect Vietnam's positive changes in enhancing and elevating its ranking in the assessment of national innovation. However, alongside advancements in credit, high-tech imports, and national income, Vietnam still

faces certain challenges such as institutional issues, investment, particularly in terms of human resources with specialized knowledge. Moreover, the analysis of Vietnam's digital economy by Lucy Cameron and colleagues (2019) clearly identified one of the existing weaknesses as "lack of innovation and supervision in digital technology usage," involving entities such as universities, innovation centers, startups, and individuals. Therefore, researching the innovative capacity of university students plays a significant role in addressing these weaknesses. Enhancing students' innovative capacity will enable them to demonstrate their abilities effectively in the labor market and is a prerequisite for Vietnam's long-term economic development.

Hong Duc University, situated in Thanh Hoa province, is a local educational institution renowned for its offerings in pedagogy, economics, engineering, agriculture, and forestry. The university plays a crucial role in supplying skilled human resources to meet the socio-economic development requirements of the province. Apart from domain-specific knowledge, students are increasingly expected to possess digital literacy, proficiency in foreign languages, and various soft skills, notably innovative capacity, to effectively navigate the demands of the contemporary job market. Hence, this article aims to present a comprehensive overview of research related to innovative capacity, formulate and validate a model for evaluating the innovative capacity of students enrolled at Hong Duc University. The ultimate goal is to assess and suggest strategies to enhance the innovative capacity of students at Hong Duc University specifically, and by extension, other local universities.

2. LITERATURE REVIEW

"Innovation," originating from the Latin term "innovatio," stems from the root "nova," meaning new. Innovation is understood as the creation and application of something new. Both globally and in Vietnam specifically, numerous scholars have researched issues related to innovative capacity from various perspectives, including the individual angle. Studies from this perspective primarily focus on examining influencing factors and constructing models to assess individual innovative capacity.

Evers (2005) conducted research on the inventory of essential skills for individuals in two processes: from university students to entering the workforce, and the process of transitioning between different jobs for working individuals. The study mentioned innovation and creativity as one of the four fundamental competency groups in the inventory. Surveys were completed by students, graduates, and administrators. The inventory was constructed as a set of 18 types of necessary skills, divided into four competency groups: self-management, communication, human resource management and tasks, innovative and creative change management. Innovative and creative change management is understood as generating ideas and taking action by initiating a change related to the existing and managing that change. Based on this, the author identifies the innovative creativity of each individual consisting of four components: idea generation, creativity/innovation/change, level of risk acceptance, and vision.

Waychal et al., (2011) view innovation and creativity as an individual's competency, and they conducted research within a technology company in India. This study considers innovation and creativity as an important human capability. The purpose of innovation and creativity is to

create business value, which can take various forms such as improving existing products, creating entirely new products and services, and reducing costs. The authors acknowledged that the competency of innovation and creativity is associated with a set of the following abilities: foresight, idea generation, connecting relationships internally and externally, ownership within the organization, open-mindedness, task focus, and decisiveness. Additionally, the research results indicate that gender, age, reading preferences, and individual educational backgrounds are factors influencing the competency of innovation and creativity.

Kairisto-Mertanen et al., (2012) conducted an insightful exploration into one aspect of individual creative innovation: pedagogical innovation. This particular form of innovation revolves around introducing novel teaching methods aimed at nurturing the innovative capabilities of students. What sets pedagogical innovation apart is its emphasis on fostering interaction not only within educational institutions but also between students and the broader social milieu they inhabit. Their research sheds light on the pivotal role pedagogical innovation plays in cultivating students' creative innovation capacity. By delving into the essential knowledge, skills, and attitudes necessary for the successful execution of innovative activities, the authors underscore the transformative potential of pedagogical approaches. Furthermore, they highlight how diverse pedagogical methods contribute not only to enhancing interpersonal interactions but also to fostering meaningful networking opportunities among students.

Bozic (2017) contributes to understanding individual innovation competency by providing a comprehensive view of the concept, integrating various theories from innovation management into a model and linking it with theories from competence studies, with the competence model of Illeris (2013) serving as the foundation. The author investigated three dimensions of innovation and creativity: internal communication, information capability, and social capability. This model can be used in various ways, both in education and organizations. Teachers can utilize it as a reflective tool to enhance students' understanding of innovation competency and as a basis for developing practice-based teaching programs to enhance competence among students. Organizations can use this model as support in recruiting creative talent, assessing and developing innovation as a core competency among employees, and when forming innovation teams.

3. THEORETICAL FOUNDATIONS AND PROPOSED RESEARCH MODEL

Competence reflects not only qualities and skills but also develops through the process of learning and training. To further clarify students' innovative and creative competence, it is necessary to consider the field of education. Stukalenko and colleagues (2016) have argued that innovation and creativity in education are an inseparable model from three fundamental pedagogical processes: creating new features, mastering them, and applying them. Moreover, the process of innovation and creativity in education is not only natural but also the result of conscious adjustment based on specific conditions and resources.

Furthermore, Serdyukov (2017) observed that in the field of education, innovation and creativity can manifest in various forms such as a new pedagogical theory, a new teaching method, new teaching tools, or a new lesson structure. When applied, these innovations can contribute to improving effectiveness or enhancing the quality of student learning. This process involves not

only learners (students) but also parents, teachers, educational managers, policy-planners, and other related factors.

When considering students, the competence of innovation and creativity is studied from the cognitive processes occurring in the brain (often related to knowledge acquisition during learning) along with identifying and developing abilities, skills, and competencies including: nurturing attitudes, orientations, behaviors, motivating, self-assessing, autonomy, as well as communication, collaboration, and study productivity. While students' competence is formed through the educational process, students' innovative and creative competence is nurtured through innovation and creativity in education. Pedagogical innovation and creativity in the university context are characterized by purposeful actions aimed at improving university students' learning sustainably through advancements in technology, finance, and the social factors of the university (Walder, 2014). Serdyukov, P. (2017) defines students' innovative and creative competence as the knowledge, skills, and attitudes necessary for students to learn and be ready to enter the workforce. Thus, students' innovative and creative competence can be understood as the ability of students to generate new value through inherent qualities along with the process of learning and applying that value in practice to meet specific needs and goals.

The foundation for developing a model of factors influencing individual innovative and creative competence is built upon the theoretical framework of Woodman and colleagues (1993), which was subsequently inherited and developed by studies conducted by Amabile (1996), Tierney and colleagues (1999), and Eder & Sawyer (2008). The common thread among these studies indicates a relationship between the factors of (i) Intrinsic Motivation; (ii) Autonomy in Creativity; (iii) Creative Style; and (iv) Creative Supportive Environment to an individual's Innovative and Creative Competence. In this study, the authors utilize these factors to assess the influence on the innovative and creative competence of students at Hong Duc University. Based on this, the authors propose a model of factors influencing the and Creative Innovative Competence (CIC) of regular students at Hong Duc University as follows:

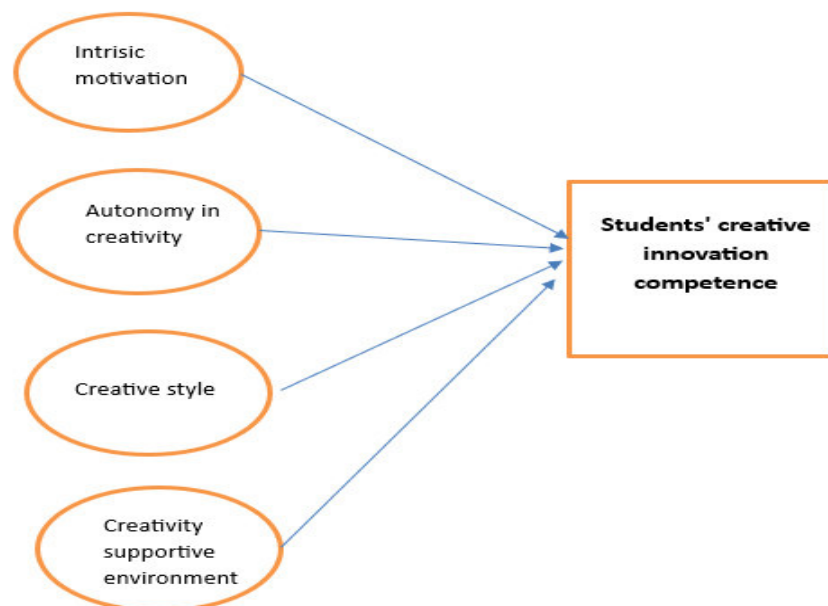


Figure 1. Model of factors influencing students' creative innovation competence at Hong Duc University

Within this framework, intrinsic motivation is understood as the drive propelled by passion, enthusiasm, and the desire to engage in creative thinking, analysis, and problem-solving (Amabile, 1996; Diliello & Houghton, 2006). Students with intrinsic motivation are driven by an internal desire, which enhances their interest in creativity and consequently boosts their innovative and creative competence. Intrinsic motivation is regarded as a fundamental driver for creativity at the individual level. Therefore, the hypothesis H1 of the research model is proposed as follows:

H1: Intrinsic Motivation (IM) positively influences students' creative innovation competence.

According to Eder & Sawyer (2008), autonomy in creativity leads individuals to feel confident in facing risks when being creative and strive to explore new ways to accomplish tasks. Thus, autonomy in creativity is a crucial factor influencing students' innovative and creative competence within organizations because it fosters and sustains confidence and expectations in the student's inherent creative abilities, thereby motivating them to take action. Through theoretical analysis and relevant research, this article also predicts the positive influence of autonomy in creativity on students' innovative and creative competence. Hypothesis H2 is proposed as follows:

H2: Autonomy in Creativity (AC) positively influences students' creative innovation competence.

According to the Innovation Adaptation Theory, individuals with a creative thinking style are inclined towards solving problems in innovative or adaptive ways (Kirton, 1978). There exists a contrast in thinking and behavior between those inclined towards adaptation and those inclined towards creativity. Those with an adaptive thinking style tend to accept and resolve tasks using existing solutions, while individuals with a creative thinking style are willing to confront risks, deviating from established methods, and develop new and more valuable solutions (Voo et al., 2019). From these, the authors have proposed hypothesis H3 as follows:

H3: Creative Style (CS) positively influences students' creative innovation competence.

The creativity of students flourishes within the dynamic school environment, where creativity is nurtured by the support provided by educational institutions. Drawing from the insights of Woodman et al., (1993), who explored the creativity model, a supportive environment for innovative and creative competence is characterized by fair and collaborative leadership, a flexible organizational structure, diverse group composition, and training programs focused on idea development and problem-solving skills. Moreover, research conducted by Stukalenko et al., (2016) delves into the importance of support for creativity from colleagues and supervisors. Colleagues and supervisors play a crucial role in fostering creativity by demonstrating concern for the emotions and issues of employees and by offering contributions and constructive feedback.

H4: Creative Supportive Environment (CSE) of the organization positively influences students' creative innovation competence.

4. RESEARCH METHODOLOGY

Through a comprehensive review of research on innovative competence and theoretical foundations of innovative competence., the study proposed a model to investigate the factors influencing students' creative innovation competence. Subsequently, an investigation and survey

were conducted to assess the degree of influence of these factors on students' creative innovation competence. The research combined both qualitative and quantitative research methods to enhance rigor and ensure the reliability of the research results. Qualitative research was conducted through in-depth interviews with six experts in the field of education (including 2 administrators, 2 lecturers, and 2 academic advisors) to explore and construct scales for the factors influencing students' creative innovation competence. Quantitative research was carried out by sending survey questionnaires to regular students from 12 faculties of the University. The collected data will be processed and analyzed following the procedures of quantitative research.

4.1. Sampling Design for Primary Data Collection

In multivariate regression analysis, the minimum sample size required is calculated using the formula $50 + 8m$ (where m represents the number of independent variables) (Tabachnick & Fidell, 1996). Thus, with 25 observed variables constructed in the model in this study, the minimum sample size should be $50 + 8 \times 25 = 250$ observations. To ensure objectivity and reliability, the author selects a formal quantitative research sample of 500 questionnaires. The result obtained is 486 questionnaires, of which 21 are invalid responses. Ultimately, 465 valid questionnaires are used by the author for formal data analysis. The sample for quantitative research is chosen using the method of random sampling by cluster (according to the 12 current faculties of Hong Duc University). This method is chosen to reduce sampling bias and ensure that students from all faculties are surveyed.

4.2. Data Processing and Analysis Method

Data collected from the quantitative survey questionnaire are processed using SPSS 22.0 software to evaluate Cronbach's alpha coefficient and conduct exploratory factor analysis (EFA). Subsequently, the author uses a multiple regression model to analyze the influence of factors on the creative innovation competence of regular students at Hong Duc University.

5. RESULTS AND DISCUSSION

5.1. Activities to improve students' creative innovation competence carried out by Hong Duc University

Hong Duc University is a multidisciplinary public university, under the administration of the People's Committee of Thanh Hoa province and the management of the Ministry of Education and Training. Over its 24 years of establishment and development, the university has continuously improved the quality of human resource training, research, technology transfer, and innovation to serve the socio-economic development goals of the local area and the nation. Recognizing the need to train high-quality human resources according to national standards, capable of adapting to the diversity and continuous development of the labor market, during the period of 2021-2025, Hong Duc University continues to take proactive and innovative approaches in teaching, learning, and research activities. Moreover, there is a strong emphasis on entrepreneurship development to provide the best opportunities and conditions for students to unleash their creative potential and foster entrepreneurial aspirations.

Since its early days, Hong Duc University has placed great emphasis on intellectual property and intellectual property rights within the university. Intellectual property ownership serves not only as a basis for protecting inventions and technologies but also as a crucial driver for fostering innovation and creativity in the academic environment. On October 10, 2008, the university issued Decision No. 1008/QĐ-HĐHD regarding intellectual property rights at Hong Duc University. In 2016, based on a review and adjustment to comply with the new regulations of relevant ministries and laws on intellectual property, on November 10, 2016, the university issued Decision No. 2797/QĐ-HĐHD on intellectual property rights at Hong Duc University.

Table 1. Results of some key activities enhancing creative innovation competence

| Main Activities | Content | Unit | Quantity |
|--|--|-------------|----------|
| Project Supporting Activities, Collaboration of Start-up Support Organizations for Creative Innovation | Attracting faculty participation | Person | 30 |
| | Attracting student participation | Person | 600 |
| | Organizing practical, hands-on programs | Program | 4 |
| | Ideas participating in Provincial Union finals | Idea | 100 |
| Research topics of the Ministry of Education and Training and research topics of Thanh Hoa province | Excellent type approval. | Research | 01 |
| Consulting, supporting start-ups for creative innovation for students and youth in the area | Successfully support project | Project | 80 |
| | Participation in National Techfest Vietnam | Project | 01 |
| | Attracting student participation | Student | 4120 |
| Training course for Creative Entrepreneurship Nursery for students | Certification granted by the US Embassy in Vietnam | Certificate | 200 |
| Establishment of Future Entrepreneur Club and DMST Entrepreneurship Club | Successfully organize successful start-up projects | Project | 18 |
| Entrepreneurship Startup and Entrepreneur Training Courses in Thanh Hoa Province | Training courses attracting students | Course | 11 |

Source: Compiled by the authors

To enhance the effectiveness of the student training program on innovation and creativity, the university has implemented a series of specific measures. Firstly, during the academic year 2017-2018, the university collaborated with the US Center and the US Embassy to organize training courses on entrepreneurship and creativity for over 200 students. Furthermore, from the period of 2017 to 2020, each year the university has conducted 3-4 training classes for approximately 300-400 third and fourth-year students. This underscores the importance of equipping students with the necessary skills to promote their entrepreneurial and creative abilities, while helping them apply the knowledge they have learned to real-world situations.

In particular, the university has been tasked by the Ministry of Science and Technology to implement the objectives of the "Supporting the National Startup Ecosystem Innovation Project until 2025." Under this project, 35 entrepreneurship experts, including staff, lecturers, have been

trained, equipping them with knowledge on entrepreneurial innovation, benefiting over 600 students of the university. Additionally, there has been a focus on innovating the training programs to enhance the learners' capabilities and meet the demands of the job market.

The student entrepreneurship movement, creative ideas, and activities of academic clubs within the university are vibrant, with specialized competitions and skill-building events. Examples include the Entrepreneurship Student Competition, Economic Festival, Pedagogical Professional Competitions, Tour Guide Competitions, Geographic Journey for Sustainable Development, and cultural exchanges between English, Vietnamese, and American cultures. Through these competitions, students' knowledge, skills, and professional awareness have significantly improved, fostering a passion for their chosen fields.

Moreover, to ignite the passion and creativity of the youth and lay the groundwork for future entrepreneurship, the university consistently promotes scientific research activities among students across all faculties and disciplines. Many student research projects participate in school and ministry-level scientific research competitions. Some research topics have high practical applicability, contributing meaningfully to real-life scenarios.

Encouraging students to participate in entrepreneurial idea competitions is also seen as an activity to enhance students' capacity for innovation and creativity. The nationwide "Students with Entrepreneurial Ideas" competition organized by the Ministry of Education and Training has attracted over 200 universities, colleges, vocational schools, and high schools, along with the participation of student unions and students. Projects from 2018 to 2020 include traditional fish sauce preservation, herbal medicine production, biofungicide mushroom cultivation, and bioproducts. Students from Hong Duc University participated in the provincial-level competition with over 100 ideas, 8 of which made it to the finals and won various awards.

In the academic year 2022-2023, the university established the Entrepreneurship and Innovation Support Center according to Decision No. 85/QĐ-HĐĐH dated January 11, 2023, issued by the Rector of Hong Duc University. The achieved results are as follows: Establishment of an Entrepreneurship and Innovation Club; Development of a plan to organize the "Student Entrepreneurship 2023" competition; Conducting training sessions for knowledge enhancement for the Student Entrepreneurship competition in the academic year 2022-2023; Organizing 04 Entrepreneurship Fairs named "Mai An Tiêm"; Signing a Memorandum of Understanding for cooperation between Hong Duc University and Accelebator Pte. Ltd., Singapore, regarding the implementation of entrepreneurship and innovation training courses; and so on.

5.2. Analysing factors influencing students' creative innovation competence

5.2.1. Reliability Assessment of Scales and Exploratory Factor Analysis

The reliability of measurement scales was assessed using Cronbach's Alpha, a widely-used tool for this purpose. Observational variables with item-total correlation coefficients below 0.3 were excluded, and the criterion for selecting measurement scales was set at a Cronbach's Alpha of 0.6 or higher (Nunnally & Bernstein, 1994). According to the research findings, all

measurement scales in the study demonstrated relatively high Cronbach's Alpha coefficients (>0.8). Additionally, all observational variables within the measurement scales exhibited item-total correlation coefficients greater than 0.3. Therefore, all measurement scales met the required criteria, thus providing sufficient conditions for factor analysis.

The results of the exploratory factor analysis (EFA) revealed that the Kaiser-Meyer-Olkin (KMO) measure was 0.893 (>0.5), indicating sampling adequacy. The total variance explained was 63.411% ($>50\%$), signifying that these 8 factors collectively accounted for 63.411% of the data variance. Moreover, the eigenvalues in the EFA were all greater than 1, with a value of 1.342, indicating adequate factor extraction. Additionally, Bartlett's test of sphericity yielded statistically significant results (Sig. <0.05). Therefore, it can be concluded that the indices in the study met the standards for conducting EFA.

5.2.2. Regression Analysis Results

The regression model is constructed with the dependent variable being the innovation and creative capabilities of students and four groups of independent variables representing factors influencing the innovation and creative capabilities of students. The goodness-of-fit test results of the model are presented in Table 1 and Table 2 as follows:

Table 2. Summary of regression model

| Model | R Value | R Square | Adjusted R Square | Standard Error | Durbin-Watson Statistic |
|-------|--------------------|----------|-------------------|----------------|-------------------------|
| 1 | 0.729 ^a | 0.531 | 0.524 | 0.52717 | 1.894 |

Predictors: (Constant), IM AC CS CSE
Dependent Variable: CIC

Source: Data processing results by the authors

The results from Table 2 show that the Sig. value = 0.000 < 0.05 , indicating that the regression model is appropriate with a 95% confidence level. The R-Square value = 0.531, indicates that 53.1% of the variation in students' creative innovation competence at Hong Duc University is explained by the independent variables in the model, while the remaining 46.9% is attributed to other factors outside the model. Additionally, the Durbin Watson statistic (Table 2) is 1.894 (falling within the range of 1 to 3), indicating that the multiple regression model meets the condition of no autocorrelation. The results in Table 3 also show that the values of the Variance Inflation Factors (VIF) are all less than 10. Therefore, the independent variables are not correlated with each other, indicating no multicollinearity issue in the model.

Table 3. Results of testing the fit of the regression model

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|------------|----------------|----|-------------|--------|--------------------|
| Regression | 20.807 | 4 | 5.202 | 19.134 | 0.000 ^b |
| 1 Residual | 21.477 | 79 | 0.272 | | |
| Total | 42.284 | 83 | | | |

Source: Data processing results by the authors

Regression analysis results for factors influencing students' creative innovation competence at Hong Duc University as shown in Table 4.

Table 4. Estimation results of the regression model

| Independent Variables | The unstandardized regression coefficients | | The standardized regression coefficient (Beta) | Critical value (t) | Statistical significance (Sig.) | Variance Inflation Factor (VIF) |
|-----------------------|--|----------------|--|--------------------|---------------------------------|---------------------------------|
| | B | Standard error | | | | |
| Constant | 0.067 | 0.452 | | 0.148 | 0.883 | |
| AC | 0.078 | 0.103 | 0.063 | 0.755 | 0.452 | 0.922 |
| IM | 0.307 | 0.089 | 0.312 | 3.456 | 0.001 | 0.787 |
| CS | 0.156 | 0.086 | 0.167 | 1.818 | 0.053 | 0.763 |
| CSE | 0.443 | 0.079 | 0.470 | 5.626 | 0.000 | 0.920 |

Dependent Variable: CIC

Source: Data processing results by the authors

From the estimated model results (Table 4), the model of factors influencing the creative innovation competence of students at Hong Duc University is described as follows:

$$\text{CIC} = 0.063 \text{ AC} + 0.312 \text{ IM} + 0.167 \text{ CS} + 0.470 \text{ CSE}$$

The estimated results reveal that three factors influence the innovative and creative capacity of students at Hong Duc University: Intrinsic Motivation (IM), Creative Supportive Environment (CSE), and Creative Style (CS). Specifically, the study findings demonstrate a positive relationship between intrinsic motivation and students' creative innovation competence with a coefficient of $\beta = 0.312$. In reality, students' intrinsic motivation is considered a crucial factor in driving creativity because it stimulates their engagement in creative activities and the search for new solutions to problems. This indicates that passion and intrinsic motivation help students overcome challenges and find creative approaches to problem-solving. The estimation results also show that the organization's creative supportive environment is the most significant factor influencing students' innovative and creative capacity in the model ($\beta = 0.470$).

The support from the learning environment not only provides conducive conditions for students' development but also encourages and motivates them to experiment and explore new ideas. This highlights the importance of educational institutions in providing space and resources for students to freely develop their creativity. Indeed, support from the learning environment is a driving factor for students to be more creative in their studies than formal knowledge or skills training alone. Creative style is the third factor influencing students' creative innovation competence ($\beta = 0.167$). Students' creative style reflects how they approach and solve problems, and in a supportive environment, creative styles can be encouraged and developed to foster a creative culture.

6. CONCLUSION AND RECOMMENDATIONS

The research results indicate that there are three selected factors positively influencing the creative innovation competence of regular students at Hong Duc University. Among them, the

creative supportive environment factor has the greatest impact on students' creative innovation competence within the model, followed by the influence of intrinsic motivation on students' creative innovation competence, and finally, the impact of creative style. Based on the research findings, the authors propose several recommendations to the Hong Duc University to enhance students' creative innovation competence as follows:

- Innovative Environment Creation

Firstly, in terms of physical infrastructure, schools need to create shared working spaces where students can freely interact, exchange ideas, and collaborate. Design rooms should also be equipped with modern machinery and tools to facilitate students in realizing their creative ideas. Having good space and equipment will make students feel more comfortable and confident when implementing their creative projects.

Additionally, a creative environment must be built through mechanisms and policies that encourage it. One effective way is to award points for students' creative activities. Instead of focusing solely on traditional academic performance, grading students' participation in creative projects will encourage them to approach problems in innovative ways and motivate them to engage in extracurricular activities with high creativity.

Furthermore, supplementing training evaluation criteria is also an effective method to promote creativity. Instead of assessing solely based on the ability to do assignments and memorize knowledge, training evaluation criteria should also evaluate students' creativity and innovative spirit. This will help students recognize the value of creativity and encourage them to develop this capability in their learning and work processes.

- Organizing Training Programs to Foster Innovative Capabilities

In the context of an educational environment increasingly demanding creativity and innovation, organizing and expanding training programs to promote students' innovative capabilities is an effective and necessary solution. Through this approach, educational institutions not only provide specialized knowledge but also create opportunities for students to develop creative thinking and problem-solving abilities. These programs can focus on skills and methods to promote creativity, such as creative thinking skills, teamwork skills, problem-solving skills, and the use of new tools and techniques.

Training programs also need to cover diverse topics and methodologies. They can include workshops on creative design, working with new technologies, or even engaging and interesting programs like creative arts, music, or sports. An essential part of these training programs is to provide opportunities for students to practice and apply the knowledge and skills they have learned. This can involve practical sessions, real-world projects, or even creative competitions to encourage students to apply what they have learned in practice.

- Building teamwork and a democratic culture within the institution

To foster creativity and innovation, instructors play a crucial role in creating conditions for students to develop independently. In complex assignments, bringing students together for discussions and opinions is a crucial step. This way, students not only have the opportunity to learn

from each other but also to confidently express their opinions and contribute to problem-solving processes. Teamwork in a democratic environment is not just about communication and collaboration but also about respecting and listening to each member's opinions. Instructors can use methods such as workshops, group discussions, or simulation games to encourage interaction and exchange of ideas among students. Most importantly, a democratic environment will create comfort for students to freely express their opinions and contribute ideas naturally and without imposition. Applying teamwork and a democratic culture in education not only helps students develop communication and teamwork skills but also promotes creativity and innovation.

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LOCAL GROWTH PERFORMANCE AND PROVINCIAL ADMINISTRATIVE GOVERNANCE IN VIETNAM: A DYNAMIC PANEL ANALYSIS

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ABSTRACT

The paper investigates the effect of provincial administrative governance on local growth in Vietnam by Dynamic Panel Data and employed D-GMM. The research dataset of 63 provinces and cities directly under the Central Government was employed to consider the factors affecting the local economy in Vietnam over the 2012-2021 period. Besides, public administrative governance was measured by PCI or PAPI, well-explained changes in local economic growth. The quality of public administration governance can significantly explain the change in the local economy, both at the 1% level. In addition, the research results also considered the influences of 06 PAPI's dimensions. While there were positive effects in Participation at Local Levels and Vertical Accountability, a negative correlation was witnessed in Transparency. From there, the paper proposes solutions to stimulate growth through the improvements of PCI and PAPI indicators.

Keywords: Cobb – Douglas, D-GMM, provincial administrative governance, Vietnam.

JEL Code: C33, E02, O43

1. INTRODUCTION

While the current 4.0 industrial revolution continues to be prevalent, public administration also needs to be reformed to overcome increasingly complex challenges. Studies of local public administration have also been conducted to address essential practical requirements for the efficient and synchronized reforms of the public administration system in Vietnam. Manning et al. (2006) insisted that economists have different approaches to interpreting the basic views of public governance. Public administration is measured in a complex way that has left various inconclusive debates (Rotberg, 2004). On the other hand, the introduction of two sets of indicators related to local institutional quality, namely the Viet Nam Provincial Governance and Public Administration Performance Index (PAPI) and Provincial Competitiveness Index (Provincial Competitiveness Index, PCI), has also promoted greater public interest as well as public policy analysts.

Since 2005, the project for PCI has been conducted annually by the Vietnam Chamber of Commerce and Industry (VCCI) with the assistance of The United States Agency for International Development (USAID) to measure, evaluate and rank the economic governance quality of the provinces and cities directly under the Central Government in creating a favorable work environment for spread of private enterprises. The Government has assigned the responsibility to local authorities to review and propose solutions to enhance the PCI, and ordered VCCI to conduct independent surveys, assessments, and annual publishment of PCI (VCCI- USAID, 2018).

Until 2009, the Centre for Community Support Development Studies (CECODES), Centre for Research and Training of the Viet Nam Fatherland Front (VFF-CRT), Real-Time Analytics (RTA), the United Nations Development Programme (UNDP) and the Viet Nam Union of Science and Technology Associations (VUSTA) has coordinated development and annual updates for The Viet Nam Provincial Governance and Public Administration Performance Index (PAPI). PAPI aims to improve the efficiency of local governments' services to better meet the increasing demands of the people through (i) Creating opportunities for people to participate in assessing their performance, mobilizing the local governments to improve the quality of citizen services; and, (ii) Promoting create healthy competition practices, self-evaluation to innovate, and a culture of active exchanges among local governments (CECODES et al., 2019).

At the same time, Tran et al. (2009) studied the institutional reforms in Vietnam and their impacts on firm performance. The dataset employed the Provincial Competitiveness Index (PCI) and enterprise data collected from financial reports in 2005. The research results showed that the competition amongst provinces and cities directly under the Central Government has statistical significance in making a big difference in economic management responsibilities. The performance of companies has been improved thanks to the positive impact of provided market information, safety on land use rights, and support for labor training. However, judicial barriers and administrative reforms have not really been effective in promoting the growth of non-state enterprises in Vietnam.

Recently, Vinh & Nhung (2019) used the estimation methods of OLS, REM, FEM, FGLS to seek positive research results for the public budget allocation situation. The public budgets in this paper were employed as capital inputs. The empirical model was added to the assessment and ranking of the provinces and cities directly under the Central Government of Vietnam (PCI) to calculate the quality of economic governance and the building of business models. However, the research results illustrated that there was an inconsistent correlation of PCI with local economic growth among the estimation methods, statistical evidence of the existence of a positive correlation was only provided by OLS method.

Thanh & Hoai (2017) quantified the impacts of government size and public administration on private investment in Vietnam's provinces from 2005 to 2013. Research results exposed that the public governance index and its components had a positive impact on private investment growth improving public spending efficiency, which boosted economic growth.

Barbosa et al. (2016) demonstrated that if the government increases transparency and accountability in public spending, which means the enhancement in the quality of public administration, public sector costs for meeting the objectives of economic development will decrease. Emphasizing the importance of administrative institutions, related to higher civil liberties, lower legal quality, and lower corruption, Percoco (2014) argued that the quality of public administration would promote greater participation of the private sector in public-private partnership projects. Legal quality such as property rights, contract performance, price law, labor, and business regulations also have a decisive impact on social and economic performance (Gwartney & Stroup, 2014).

In addition, Tran et al. (2009) and Nguyen et al. (2013) evidently documented that institutional reform and public governance had extreme significance for increasing firm performance and encouraging domestic enterprises to innovate business strategies more effectively to compete with foreign companies. Investments by multinational enterprises in emerging countries depend on the governance structure of the host government (Jiang et al., 2015). In fact, the quality of public governance that is primarily aimed at supporting state-owned enterprises is considered to be one of the signs of corruption and distorted competition in the business environment (Nguyen & van Dijk, 2012).

Therefore, instead of spreading public investment and insufficient direction, national governments should better establish administrative institutions that can mobilize more investment channels of the private sector (Aparicio et al., 2016; Braga Tadeu & Moreira Silva, 2013). The higher quality of public governance is inclined to increase the marginal productivity of public investment and simultaneously exhibited an upward trend in the marginal productivity of private investment (Dzhumashev, 2014). Recent studies have suggested that besides public spending, public governance and institutional reform are also important endogenous factors that determine economic growth (Brousseau et al., 2011; Nawaz, 2015; Neyapti & Arasil, 2016; Thanh & Hoai, 2017).

This article's effort analyzed the impact of public governance on the output of the local economy. While a wide range of previous studies used the GRDP series of provinces and cities directly under the Central Government in the analysis model, this dataset proved ineffectiveness and it is recommended to re-evaluate the whole GRDP series consistent with the calculation of national GDP. As evidence, the estimated GRDP series was different from the national GDP. On April 10, 2018, the General Director of General Statistics Office issued Decision No. 286 about adjusting the scale of GDP and GRDP in the 2010-2017 period and proposed the Provincial Statistics Offices and The Provincial Departments of Planning and Investment stop GRDP calculations and conducted the reevaluation by the guidance of the General Statistics Office. Therefore, the paper proposes to use the Industrial Production Index (IPI) to represent the output of the local economy. One of the main reasons why the Industrial Production Index (IPI) was often considered a good representative of GDP is because the added value of industrial production accounts for a significant proportion of GDP (OECD, 2012).

On the other hand, the Dynamic Panel Data model (DPD) and estimation method of Difference Generalized Method of Moments (D-GMM) are also proposed to build experimental models and provide additional statistical evidence, reinforcing the economic significance of previous studies.

The rest of this article is organized as follows. Section 2 reviews research methodology, describing model specification, estimation technique, and collected dataset, for the design of empirical models. Section 3 discusses further findings and implications. Concluding remarks are presented in Section 4.

2. RESEARCH METHODOLOGY

The paper utilized quantitative research methods applying Cobb-Douglas theoretical models to study the impact of public administration in 63 provinces and cities directly under the Central

Government, and employed PAPI and PCI for the local economy. The impact of public administration was quantified by Dynamic Panel Data models (DPD), whose coefficients were estimated by the Difference Generalized Method of Moments (D-GMM).

2.1. Theoretical Model

Cobb and Douglas (1928) introduced an economic model that represents the relationship between two or more of the inputs and the output, Cobb – Douglas, as follows:

$$Y = A[K(\varphi)]^\alpha [L(\theta)]^{1-\alpha} \quad (1)$$

whereas:

+ Y is economic productivity or economic output

+ $K(\varphi)$ is the product of the i^{th} capital factor k

$$K(\varphi) = \prod_{i=1}^p k_i^{\varphi_i} \text{ with } \varphi_i \text{ is the weight of } i^{\text{th}} \text{ capital factor k} \quad (2)$$

+ $L(\theta)$ is the product of the j^{th} labor factor l

$$L(\theta) = \prod_{j=1}^q l_j^{\theta_j} \text{ with } \theta_j \text{ is the weight of } j^{\text{th}} \text{ labor factor l} \quad (3)$$

+ A is the growth multiplier, presenting the combination of capital and labor factors. In the specific case of this article, factor A can be understood as the quality of public administration.

Equation (1) is also written as follows:

$$Y = A(\prod_{i=1}^p k_i^{\varphi_i})^\alpha (\prod_{j=1}^q l_j^{\theta_j})^{1-\alpha} \quad (4)$$

Do transform both sides of equation (4) to natural logarithms:

$$\ln Y = \ln A + \alpha \ln(\prod_{i=1}^p k_i^{\varphi_i}) + (1 - \alpha) \ln(\prod_{j=1}^q l_j^{\theta_j}) \quad (5)$$

Then, Equation (5) is equivalent to:

$$\ln Y = \ln A + \sum_{i=1}^p \alpha \varphi_i \ln(k_i) + \sum_{j=1}^q (1 - \alpha) \times \theta_j \ln(l_j) \quad (6)$$

2.2. Estimation technique

The Dynamic Panel Data model (Dynamic Panel Data - DPD) used in the article to further analyze the impact of historical information, considering the impact of lagged local growth on itself, the DPD model has the following formation:

$$y_{i,t} = X_{it}\beta + y_{i,t-1} + \alpha_i + \mu_{i,t} \quad (7)$$

Whereas, $y_{i,t}$ is the dependent variable observed for individual i and time t, X_{it} is a vector of independent variables at time t, α_i is the time-invariant and unobserved individual effect, $\mu_{i,t}$ and is a random error term.

The OLS estimation technique used in the dynamic panel data model obtained estimated coefficients that were biased because of the endogenous problem in the model. Arellano and Bond (1991) proposed a Difference-GMM estimation developed by Hansen (1982). At the same time, the second lag of the dependent and explanatory variables acts as instrumental variables to control potential endogenous problems in the empirical research models. Taking the model's difference eliminates the correlation between residuals and explanatory variables.

The D-GMM has considered to be more efficient than the OLS, FEM, and REM estimation methods because it is easy to satisfy the estimation assumptions through the moment condition equations. The moment condition equations determine the exogenous constraints between the error and the instrument variables used in the model. If the observed sample is large enough, the coefficient estimated by the D-GMM will be asymptotic to the estimators obtained from the Ordinary Least-Squares estimation (OLS) and Maximum Likelihood Estimation (MLE).

The Sargan test and Arellano - Bond test are also run. To be more detailed, the Sargan test is performed to check the simultaneous exogenous conditions of the instrument variables. Because the model was built on the difference transformation, the first-order autocorrelation problem was obviously accepted. The second autocorrelation problem was examined through the Arellano - Bond test proposed by Arellano and Bond (1991).

2.3. Empirical models

The article examined capital and labor factors as inputs: local capital (Localsize) and private capital (Private) are the capital factors (k); labor capital (l) is the labor force (Labor). Equation (6) is analyzed as follows:

$$\ln Y = \ln A + \alpha \varphi_1 \ln(\text{Localsize}) + \alpha \varphi_2 \ln(\text{Private}) + (1 - \alpha) \theta_1 \ln(\text{Labor}) \quad (8)$$

Based on the theoretical model built in equations (7) and (8), three empirical dynamic panel data (DPD) models, which examined the impact of the quality of public governance on local economic growth, were built in the following way:

$$\ln \text{IPI}_{i,t} = \beta_0 + \beta_1 \ln \text{IPI}_{i,t-1} + \beta_2 \ln \text{Localsize}_{i,t} + \beta_3 \ln \text{Private}_{i,t} + \beta_4 \ln \text{Labor}_{i,t} + \beta_5 \ln \text{PCI}_{i,t} + \mu_i + \varepsilon_{it} \quad (9)$$

$$\ln \text{IPI}_{i,t} = \beta_0 + \beta_1 \ln \text{IPI}_{i,t-1} + \beta_2 \ln \text{Localsize}_{i,t} + \beta_3 \ln \text{Private}_{i,t} + \beta_4 \ln \text{Labor}_{i,t} + \beta_5 \ln \text{PAPI}_{i,t} + \mu_i + \varepsilon_{it} \quad (10)$$

$$\ln \text{IPI}_{i,t} = \beta_0 + \beta_1 \ln \text{IPI}_{i,t-1} + \beta_2 \ln \text{Localsize}_{i,t} + \beta_3 \ln \text{Private}_{i,t} + \beta_4 \ln \text{Labor}_{i,t} + \sum_{j=1}^6 \beta_{j+4} \ln \text{PAPISub}_{j,t} + \mu_i + \varepsilon_{it} \quad (11)$$

Whereas,

$$+ \mu_i \sim \text{i.i.d.}(0, \sigma_{\mu_i}), \varepsilon_{it} \sim \text{i.i.d.}(0, \sigma_{\varepsilon}), E[\mu_i \varepsilon_{it}] = 0;$$

i: province or city directly under the Central Government; t: year (2012-2021);

+ $\ln \text{IPI}_{i,t}$: the Industrial Production Index, a proxy of the local economic growth

+ $\ln \text{Localsize}_{i,t}$: local budget spending.

+ $\ln \text{Private}_{i,t}$: local total retail sales of consumer goods and services at real prices

+ $\ln \text{Labor}_{i,t}$: the local labor force aged 15 and above.

+ $\ln \text{PCI}_{i,t}$: The Provincial Competitiveness Index

+ $\ln \text{PAPI}_{i,t}$: The Viet Nam Provincial Governance and Public Administration Performance Index.

+ $\ln PAPI_{subj,i,t}$: A set of six content indexes or dimensions constituting PAPI.

2.4. The research dataset

Table 1. Description of the variables used in the empirical models

| Variable name | Notation | The meaning of variables | Data resources |
|--|---------------|---|---|
| Industrial production index | IPI | A proxy of local economic growth. | General Statistics Office of Vietnam |
| Local capital | Localsize | Local budget spending is the measurement of public sector capital in the locality. | The Ministry of Finance of Vietnam |
| Private capital | Private | Total retail sales of goods and services at real local prices | General Statistics Office of Vietnam |
| Local labor force | Labor | Local labor force aged 15 and above | General Statistics Office of Vietnam |
| Provincial Competitiveness Index | PCI | annual surveys, assessment, and publishment by VCCI and USAID | http://pcivietnam.org/ |
| The Viet Nam Provincial Governance and Public Administration Performance Index | PAPI | The non-weighted sum of 06 content indicators, PAPI data does not include two additional indicators, Environmental Governance and E-governance. $PAPI_{i,t} = \sum_{j=1}^6 \ln PAPI_{subj,i,t}$ | |
| | $PAPI_{subj}$ | Including 06 content indicators or dimensions: (j=1) Participation at Local Levels (PLL); (j=2) Transparency (Trans); (j=3) Vertical Accountability (VA); (j=4) Control of Corruption (COC); (j=5) Public Administrative Procedures (PAP); (j=6) Public Service Delivery (PSD) (CECODES, 2019). | http://papi.org.vn/ |

Source: Reviewed by the authors

Table 1 describes the meanings and sources of data collection of variables in the empirical models. The dataset was collected in 63 provinces and cities under central authority from 2012 to 2021. Most research data was collected mainly from data and reports of the General Statistics Office and the Ministry of Finance of Vietnam. PCI and PAPI were downloaded from open-source websites and free access.

3. RESULTS AND DISCUSSION

Table 2. Estimated results of experimental models

| Dependent Variable: $\ln IPI$ | Model (9) | Model (10) | Model (11) |
|-------------------------------|-----------|------------|------------|
| $\ln IPI_{t-1}$ | 0.0499*** | 0.0520*** | 0.0691*** |
| $\ln Localsize$ | -0.0201 | 0.0282*** | 0.0313*** |
| $\ln Private$ | -0.0368** | -0.0389* | -0.0102 |
| $\ln Labor$ | 0.2298 | 0.2454** | 0.2401* |
| $\ln PCI$ | 0.5334*** | | |
| $\ln PAPI$ | | 0.3737*** | |
| $\ln PLL$ | | | 0.3315*** |

| Dependent Variable: lnIPI | Model (9) | Model (10) | Model (11) |
|------------------------------------|-----------|------------|------------|
| lnTrans | | | -0.1779*** |
| lnVA | | | 0.1151*** |
| lnCOC | | | -0.0374 |
| lnPAP | | | -0.1212 |
| lnPSD | | | -0.0088 |
| The number of instrument variables | 49 | 49 | 54 |
| Sargan test | 0.188 | 0.179 | 0.216 |
| AR(2) | 0.651 | 0.568 | 0.521 |
| N | 504 | 504 | 504 |
| N_g | 63 | 63 | 63 |

***, **, * imply the statistical significance respectively at 1%, 5%, 10%; N is the sample size; N_g is the number of provinces and cities directly under the Central Government in the sample; The Sargan test presents the p_value value of the Sargan test statistic; AR(2) presents the p_value of second-order autocorrelation by Arellano-Bond test.

Source: Authors' calculations

The pvalue of Sargan test was not sufficient to reject the null hypothesis (H_0 : all instrumental variables are exogenous) at the significance level of 1%, 5%, 10%, corresponding to 0.188, 0.179, and 0.216 in Models (9), (10) and (11).

The set of instrumental variables, considered exogenous, were tested. At the same time, AR(2) showed that the second-order autocorrelation was not serious in all three models (9), (10) and (11).

In general, local economic growth was strongly maintained and deeply influenced by its inherent advantages. The lag of the Industrial Production Index ($lnIPI_{t-1}$) was statistically significant at 1% in all three experimental models (Table 2).

One of the highlights of the research results was that the quality in public administration governance can strongly explain the change of the local economy. The estimated coefficient of the Provincial Competitiveness Index (lnPCI) was 0.5434 and that of the Provincial Governance and Public Administration Performance Index (lnPAPI) was 0.3737, both statistically significant at the 1% level. Upon further analysis of the content indicators that constitute PAPI, the results of the study found that the statistical evidence was significant at the 1% level of the impact of Participation at Local Levels (lnPLL), Transparency (lnTrans), and Vertical Accountability (lnVA).

While the government's moves are aimed at reducing the pressure to force citizens to contribute the amount of money, materials, or labor days to the infrastructure project, the citizens are thus more proactive in deciding to voluntarily contribute to local infrastructure development projects. In general, citizens' positive attitude towards the government promotes the development of the local economy. This explains the estimated coefficient of 0.3315 of lnPLL at the 1% significance level, recorded from Model (11).

In addition, because the estimated coefficient of -0.1779 was statistically significant at 1% with the negative impact recorded, the results of the study in Table 2 did not have optimistic evidence for the role of humor in People's hearts to the level of Transparency (Trans) of local authorities in the establishment of the poor household lists and sharing of budget revenue and expenditure information. While Transparency brought about social benefits, it had a negative impact on the local economy because of the strong effect of unsustainable growth from benefiting through asymmetric information, hoarding speculation, and arbitrage trading.

The study results showed that a remarkable effect was the estimated coefficient of Vertical Accountability (lnVA) corresponding to 0.1151 with a statistical significance of 1%. It is clear that the interaction between the people and the government, in this case, brought about some harmonious results between the two sides, which also contributed to the local economic growth.

Regarding the influence of capital factors, the estimated coefficient of local capital (lnLocalsize) was statistically significant at the 1% level for Model (10) and Model (11), reflecting the positive correlation on the local economy. However, the statistical results also illustrated that local capital has not been well supported for the effect of private capital (lnPrivate) on provincial economic growth. As evidence, the negative effect found in Model (9) and Model (10) was statistically significant at 5% and 10%, respectively. This effect made local and private capital tend to cancel each other out. This result also supports the research results of Vinh & Nhung (2019) on the positive effects of local budget expenditure recorded but proved ineffective in the allocation of social resources.

Regarding the influence of the local labor factor, the estimated coefficients of the local labor force (lnLabor) were 0.2454 and 0.2401, with statistical significance at 5% and 10% respectively for the Model (10) and (11). The obtained results were consistent with the recent researches (Nawaz, 2015; Neyapti & Arasil, 2016; Vinh & Nhung, 2019). Finally, statistical evidence of Control of Corruption (lnCOC); Public Administrative Procedures (lnPAP), and Public Service Delivery (lnPSD) had not been found.

4. CONCLUSIONS

With the research model in the form of dynamic table data, the study considered the factors affecting the local economy in Vietnam over the 2012-2021 period. The main objective of the study was to assess the impact of public administration on the local economy in 63 provinces and cities directly under the Central Government. The estimation results showed that PCI and PAPI are both measures of institutional efficiency that have a positive impact on the economy of the provinces in particular and Vietnam's economic growth in general.

As regards the research results, the improvements of PCI and PAPI indicators to contribute to the growth of the local economy through the dimensions of PCI and PAPI are considered as driving forces for economic growth. While Transparency was negatively correlated, there were positive impacts on Participation at Local Levels and Vertical Accountability. No statistical evidence could be found for Control of Corruption, Public Administrative Procedures, and Public Service Delivery.

The study will be expanded in the future, with the trend of evaluating and providing more useful statistical evidence on the relationships generated by the two indicators of Environmental Governance and E-governance.

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IMPROVE THE EFFICIENCY INTERNAL AUDIT FOR MANAGEMENT AND USE OF PUBLIC ASSETS

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ABSTRACT

Financial management and asset management at public service units plays an important significance and role in helping to economically and effectively use State resources and well perform assigned functions and tasks. Many solutions have been implemented in recent years. Among them, strengthening internal audit of management and use of public assets is one of the important tasks that contribute to the protection of assets, limitation of negative effects causing loss and waste of State resources, and building of a clean, strong, effective and efficient State apparatus. The article discusses the meanings and role of internal audit in the management and use of public assets and proposes some solutions to improve the effectiveness of internal audit in the management and use of public assets. To achieve this research objective, the author uses qualitative research methods through the collection of data related to the functions and roles of internal audit, the implementation of internal audit organization at public sector units and the research on the reality of public asset management and use to make assessments and propose specific solutions.

Keywords: Internal audit, public assets; management and use of public assets.

1. INTRODUCTION

Public assets or State-owned assets are regulated in the 2013 Constitution of the Socialist Republic of Vietnam and the 2017 Law on Management and Use of Public Assets. Article 53 of the 2013 Constitution stipulates that “Land, water resources, mineral resources, resources in the sea and airspace, other natural resources, and assets managed or invested in by the State are public assets, owned by all the people, and represented and uniformly managed by the State”; Clause 1, Article 3 of the 2017 Law on Management and Use of Public Assets stipulates that “Public assets are assets that are owned by all the people, and represented and uniformly managed by the State, including public assets serving the management and provision of public services and ensuring national defense and security at agencies, organizations and units; infrastructure assets serving national and public interests; assets owned by all the people; public assets at enterprises; money belonging to the State budget, non-budget State financial funds, and State foreign exchange reserves; and land and other resources.”

According to the national database on public assets, by 2023, information on 06 types of assets were updated, including land belonging to head offices and non-business units; buildings belonging to head offices or non-business unit; automobiles of all kinds; other fixed assets; concentrated rural clean water infrastructure assets; and road transport infrastructure assets. The total historical cost of public assets updated in the database is about VND 6,122,452 billion. This is an important resource contributing to socio-economic development. However, the process of

managing and using public assets also has potential risks that can cause loss of State assets, thereby requiring strict management and effective use of these resources, contributing to capital autonomy, reducing the burden of foreign debt, making the economy healthy, contributing to promoting the process of restructuring and transforming the economy towards the market, encouraging investment, and increasing confidence of the people and the international community in the State's management ability.

Public asset data table updated as at December 31, 2023

Unit: billion VND

| Asset type | Historical cost | Residual value |
|--|------------------------|-----------------------|
| 1. Public assets at public non-business units | | |
| Land use rights | 1.239.468 | 1.239.468 |
| Buildings | 549.150 | 341.088 |
| Automobiles | 23.143 | 9.121 |
| Other fixed assets | 254.341 | 90.145 |
| 2. Infrastructure assets | | |
| Transport and irrigation infrastructure assets | 4.019.340 | 2.888.639 |
| Concentrated rural clean water infrastructure assets | 37.010 | 19.423 |
| Total | 6.122.452 | 4.587.883 |

Source: Thematic report on public asset management of the Ministry of Finance in 2023

In reality, the current management and use of public assets has achieved many positive results. The legal corridor on the management and use of public assets has basically been completed, creating a relatively complete basis for the management and use of public assets in the direction of strict management, effective use and exploitation of financial resources from public assets; the situation of loss and waste of assets is gradually overcome; awareness and responsibility of all levels, agencies, organizations and units are enhanced; the efficiency of use and exploitation of assets is emphasized; etc. However, public assets have a very wide scope because many different entities manage and use and many organizations and individuals use public assets wastefully and for improper purposes, especially intentionally violating the law to obtain benefits. This not only weakens the economy but also causes frustration among the people. A number of violations in the management and use of public assets that occurred at State agencies and public service units in recent times are evidence of shortcomings and weaknesses in internal management and control. Faced with the requirements in the management and use of public assets, the Party and State have had many policies and solutions that are both immediate and long-term, such as perfecting the legal system on management and use of public assets, enhancing the use of accounting and auditing tools to control the management and use of public assets. In addition to strengthening the responsibility of the State Audit Agency in detecting and preventing negative violations in the management and use of public assets, the State focuses on the role of internal control and internal audit at units using public assets.

2. LITERATURE REVIEW

Up to now, there have been many studies on internal audit, most of which mainly focus on internal audit in businesses; there are not many research works on internal audit at public service units, especially for management and use of public assets. Some works by authors such as Dang Van Thanh (2018), researched the current state of internal audit in Vietnam on what needs to be done; Nguyen Duc Tho (2017), researched on internal inspection and auditing models on management and use of state budget and assets; Mai Thi Hoang Minh (2018) researched on internal audit experiences of public service units in the world, lessons learned for Vietnam; Pham Quang Huy (2018), researched on improving compliance with customs clearance and establishing internal audit departments in the public sector in Vietnam; Dang Văn Quang (2023), Exchange about internal audit at public service units; Le Thi Tuyet Nhung (2024), researched internal audit at public service units. The authors' studies have confirmed the necessity of internal audit for public service units and deal with organizational models to ensure the independence and effectiveness of internal audit departments. However, these studies have not delved into specific internal audit subjects in the public sector in general and the management and use of public assets in particular. Therefore, research on internal audit for the management and use of public assets can bring a clearer view of the role of internal audit in each stage of management and use of assets at units, thereby contributing to improving quality, efficiency in using internal audit is an essential control tool at public service units in Vietnam.

3. THEORETICAL BASIS AND RESEARCH METHODS

3.1. Theoretical basis

In the world, Internal Audit appeared around the 1940, appearing in Vietnam in 1997. Up to now, there have been many concepts of internal audit. In 1978, for the first time, the American Accounting Association gave a viewpoint of internal audit: "internal audit is an independent appraisal function established within an organization to review and evaluate the activities of that organization, as an aid to that organization. The objective of internal audit is to help members of the organization effectively perform their tasks internal audit provides members of the organization with analysis, appraisal, recommendations, advice and information related to activities that are considered. Audit objectives include proposing an effective control framework at a reasonable cost.

Along with the above viewpoint, there are other viewpoints that are more specific or broader such as the viewpoint of French Institute of Audit and Internal Control (IFACI): "internal audit is the review of tools and solutions that leaders use to manage and control the unit's operations. Meanwhile, the Association of Chartered Certified Accountants (ACCA) defines: "internal audit is an inspection and evaluation activity within an entity for internal management purposes. internal audit has the function of checking and evaluating the reliability, suitability and effectiveness of the accounting and internal control systems. The International Federation of Accountants has a more direct viewpoint: "internal audit is an evaluation activity established within an enterprise as a service for that enterprise, with the function of checking, evaluating and monitoring the suitability and effectiveness of the accounting and internal control systems."

The 2015 Vietnam Accounting Law stipulates that “internal audit is the inspection, evaluation, and supervision of the completeness, appropriateness, and effectiveness of internal control.” The Accounting Law specifies that internal audit is an activity with the functions of inspection, evaluation, and supervision, and also specifies that the object of internal audit is the completeness, appropriateness, and effectiveness of the Internal Control system.

3.2. Research methods

To achieve the research objectives and results, the author used qualitative research methods. Regarding data collection methods, the data for research was collected by the author from published works in specialized journals, proceedings of national and international scientific conferences; publications on websites of professional organizations, etc. In addition, to supplement data for assessment, the author interviewed experts in the fields of finance, accounting and auditing who currently work at the Ministry of Finance and Vietnam Association of Accounting and Auditing (VAA) and a number of managers at units using public assets. Regarding data processing methods, to process the collected data, the author used methods of synthesis, systematization, information analysis, and comparison between theory and practice to draw research results.

4. RESEARCH RESULTS AND DISCUSSION

4.1. The role of Internal Audit in the management and use of public assets

Legal regulations on internal audit have been basically completed. internal audit is regulated in Article 39 of the 2015 Accounting Law. The Government issued a Decree on internal audit regulations, and the Ministry of Finance also issued a Circular guiding the organization of internal audit in State agencies and enterprises. According to current regulations, state agencies and public service units are required to organize internal audit. These regulations create an important basis for units to organize and build internal audit as an effective management tool for State management agencies and unit leaders in managing activities in general and public assets in particular. With assigned functions and tasks, internal audit inspects and evaluates the suitability, effectiveness and efficiency of control regulations at units and issues related to compliance with regulations to detect gaps in control activities. These gaps can cause loss of assets as well as risks in the units’ operations. In the management and use of public assets, the role of internal audit is demonstrated through the inspection and evaluation of internal control processes and regulations on the implementation of tasks related to the management and use of public assets from determining the need for asset procurement to submitting to competent authorities for approval; asset use process; and the process of declaring and providing information about public assets as follows:

First, internal audit evaluates the purpose, necessity and appropriateness of public asset procurement plans at units. Based on the asset use needs of the departments, standards and norms for asset use, unit leaders kindly ask competent authorities to approve asset purchases. Before being submitted to competent authorities for approval, proposals must be strictly controlled and evaluated by the units to ensure the correct, economical and effective use of State resources. With its functions and tasks, internal audit independently and objectively evaluates the purpose,

necessity, and effectiveness of asset use on the basis of legal regulations on management and use of public assets and other relevant legal regulations. When detecting signs of non-conformity, internal audit will report to competent authorities to make appropriate and timely adjustment and handling decisions. This control activity contributes to preventing and minimizing fraud and errors in the management and use of public assets right during the stage of identifying needs and proposing asset purchases.

Second, internal audit contributes to minimizing risks and mistakes during the process of procurement of public assets. Procurement of public assets is a regular activity that takes place at State agencies and public service units. The amount of money used for asset procurement is very large and often comes with risks that can cause loss of State money and assets. In fact, in recent years, many units have not managed asset purchases well, resulting in purchased assets that cannot be used or assets that are not used for the right purpose, and the actual amount of money used for purchases is much larger than the estimate, raising the purchase prices of the assets to obtain benefits, etc., causing a loss and waste of the State resources. To minimize the above risks, the unit has applied and developed procedures and regulations to control the asset procurement process. However, in reality, the process of implementing regulations and control regulations has many loopholes and weaknesses, causing the loss of a large amount of State assets.

Performing control and consulting functions, internal audit uses auditing methods and techniques to conduct inspections and assessments of internal control regulations related to the asset procurement process such as assessment of implementation of regulations on asset procurement norms and asset procurement bidding regulations; consideration and evaluation of the separation between the person requesting the purchase of assets and the person approving the request for purchase of assets, separating the person purchasing the assets from the person recording the accounting books, etc. to find control loopholes and weaknesses in the asset procurement stage, thereby providing advice to managers to propose solutions to promptly overcome and limit the risks of loss of State money and assets.

Third, internal audit contributes to protecting assets during the management and use process. Public assets are assets that are owned by all the people, and represented and uniformly managed by the State. At units, these assets are not owned by the heads of the units, but the heads of the units are only the representatives of the State as the owners. With this characteristic, there may be risks that public assets being used at the units are not managed and monitored closely, are used wastefully, causing loss, etc., especially types of assets of great value. Therefore, to prevent and minimize risks in the management and use of public assets, internal audit conducts an assessment of control regulations during the use of assets at the units to ensure compliance with legal regulations, compliance with internal regulations of the units, assessment of asset use norms, assessment of valuation, accounting records of existing assets at the units, auditing inventory, repair, upgrade, liquidation of assets, etc. The assessment and control by internal audit contributes to promptly detecting violations in the management and use of assets to report to competent authorities for prevention and handling solutions.

Fourth, internal audit contributes to ensuring the reliability of information related to public assets at units. Units that manage and use public assets must record accounting books, provide

information on public assets to serve management requirements and provide information for preparing State financial reports through the evaluation of control regulations and control procedures in preparing accounting documents, recording accounting books, presenting information on financial reports, and management accounting reports related to secured public assets, complying with accounting principles, standards and laws, controlling the implementation of regulations on declaration of public assets being assigned to manage and use on the national database on public assets, etc. thereby contributing to ensuring the reliability of economic and financial information in general and information on public assets in particular to serve management decisions of unit leaders and State management agencies.

4.2. Some shortcomings in public asset management and use at public sector units

According to the thematic report of the Ministry of Finance on public asset management in 2023 and through the synthesis of reports of the State Audit Office of Vietnam on public asset management and use at some public sector units, public asset management and use still has the following shortcomings:

- Regarding public asset procurement: Currently, the Government and the Ministry of Finance have very strict regulations on public asset procurement and management; however, some public sector units have not fully complied with these regulations, and the situation of bidding formalism is still common, such as dividing the bidding package to avoid bidding, inflating prices or changing types to gain illegal profits and not really paying attention to public asset quality. Units that purchase assets must follow the cost estimates approved by the competent authorities; nevertheless, at some units, the preparation of cost estimates is not consistent with the actual needs of use, leading to the purchased assets not being used or not being used for the right purpose, causing loss and waste of public assets.

- Regarding public asset management: Due to the large scope of public asset management, including many different assets, the Ministry of Finance has built a national database on public assets, and units must declare assets in this database; nonetheless, many units have not seriously declared assets in the system, leading to difficulties in monitoring and managing assets. Some units have not really paid attention to the efficiency of asset use, the accounting and monitoring of assets are not timely and complete, the accounting departments have not calculated depreciation and amortization of fixed assets in accordance with regulations; some units have not even reflected assets in accounting books and reports. In some cases, the decision to sell or transfer assets is not within the authority, and the handling method and the determination of selling prices are not in accordance with regulations, causing loss and waste to the state budget.

Regarding the efficiency of public asset use. The efficiency of public asset use at units has not yet received much attention, because public assets are mainly purchased with resources from the state budget, so many units still depend on the budget funding for their operations. Therefore, they have not been able to effectively promote their inherent potential or use these resources wastefully. Many units withhold real estate beyond the limit, use public assets for the wrong purposes, lease assets to create illegal income, buy and use public vehicles indiscriminately, wastefully and ineffectively, buy assets without use for many years, etc...

4.3. Solutions to improve the efficiency of internal audit of management and use of public assets

Firstly, on the basis of law the unit organizes internal audit to ensure independence, effectiveness and efficiency. Currently, although the legal corridors for internal audit have basically been completed. However, in reality implementation faces many difficulties, due to the nature of internal audit being a department under the unit, this can affect the independence, effectiveness and efficiency of internal audit activities. Establishing this department is not in accordance with the nature and functions of internal audit, so the effectiveness does not meet the effectiveness and efficiency during operations. Therefore, units assigned to manage and use public assets based on Decree No. 05/2019/ND-CP of the Government regulating internal audit; Circular No. 67/2020/TT-BTC of the Ministry of Finance promulgating model regulations on internal audit applicable to State agencies and public service units; and professional ethical standards specified in Circular No. 08/2021/TT-BTC and based on specific business activities and management requirements of the units' operations to organize an internal audit department in accordance with regulations, including the need to define the objectives, scope, position, tasks and powers of internal audit within the units to ensure independence, effectiveness and efficiency during operations.

Second, develop an internal audit plan focusing on identifying risks related to the management and use of public assets. After the units have organized internal audit, during the audit process, the units need to pay attention to the audit objects when the units carry out annual internal audit planning. It is necessary to identify potential risks and control risks affects operations financial management activities and use of public assets from the stage of determining use needs, the purchasing process and the use process to ensure that risks that may arise from this activity are not overlooked during the annual internal audit planning stage.

Third, strengthen training and fostering to improve the qualifications of internal auditors. The capacity and qualifications of internal auditors are important factors that determine the quality of internal audit, because the management and use of public assets has many specific and specialized projects and processes, requiring internal auditors to have certain understanding of this activity in order to make assessments and give audit opinions, so units need to pay attention to training and fostering to improve qualifications of internal auditors at the units, by organizing training courses on auditing expertise and public asset management skills for internal auditors, including basic and in-depth knowledge in the field of internal audit, to help auditors improve their qualifications in the fields of auditing in general and auditing the management and use of public assets in particular, contributing to improving the quality of audit.

Fourth, use internal auditor opinions to correct the management and use of public assets. At the end of the internal audit, the audit team must provide concluding opinions and consulting opinions on the management and use of public assets. Based on internal auditor opinions, unit leaders must take measures to overcome the weaknesses in controlling this activity. For example, internal audit may give opinions that determining the need to purchase assets that is not consistent with actual use needs can lead to waste, improper use, or the auditor gives opinions on the asset procurement process which does not ensure control principles such as accounting, which does not

separate accounting responsibilities from asset procurement tasks, etc. Based on these concluding opinions, the competent person at the unit needs to take measures to overcome weaknesses in internal control regulations, and organizations and individuals who violate regulations of law or violate unit's regulations.

5. CONCLUSIONS

Efficiency in management and use of public assets is a matter of great concern. With many solutions that have been proposed, in the recent period, the management and use of public assets has brought many clear results, demonstrating the leadership role of the Party and the management role of the State in new economic mechanism. In the coming time, when the legal framework on internal audit in Vietnam is completed and implemented at units, there needs to be attention and direction from State management agencies and unit managers and staff's awareness of the role of internal audit in inspection and control activities in general and in improving the efficiency of management and use of public assets in particular, contributing to achieving the objectives to build a healthy and developed economy.

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PROTECTION OF INDUSTRIAL PROPERTY RIGHTS UNDER THE COMPREHENSIVE AND PROGRESSIVE AGREEMENT FOR TRANS-PACIFIC PARTNERSHIP: ASSESSING CURRENT OPPORTUNITIES AND CHALLENGES FOR VIETNAM

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ABSTRACT

This article analyzes the protection of industrial property rights under the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the opportunities and challenges currently facing Vietnam. The CPTPP sets high standards for the protection of industrial property rights, requiring member countries to adjust and improve their legal systems accordingly. As one of the 11 member countries, Vietnam has the opportunity to strengthen the protection of industrial property rights, promote innovation, and ensure sustainable development. However, compliance with these new regulations also poses several challenges, including raising awareness, improving the legal system, and enforcing intellectual property rights. The article proposes solutions for Vietnam to leverage these opportunities and overcome the challenges in the current context.

Keywords: CPTPP Agreement, Industrial Property, Opportunities, Challenges.

1. INTRODUCTION

The CPTPP Agreement not only presents significant opportunities in trade and investment but also poses numerous challenges, particularly in the field of industrial property rights protection. The CPTPP is a trade agreement impacting approximately 500 million people across the Asia-Pacific region, contributing around 14% to global GDP and accounting for 15% of international trade. The primary goal of this Agreement is to enhance economic cooperation and harmonize trade policies among member countries. By eliminating tariffs and trade barriers on imported and exported goods and services, the CPTPP aims to boost trade, investment, encourage innovation, and promote economic growth along with social benefits (Hai, 2019). The CPTPP is one of the largest free trade agreements globally, encompassing 11 member countries, including Vietnam.

The CPTPP establishes comprehensive standards for industrial property protection, including trademarks, patents, and geographical indications. These provisions aim to strengthen the protection and enforcement of industrial property rights, fostering a secure environment for innovation and investment.

The content of this article revolves around two main areas: the protection of industrial property rights under the CPTPP Agreement; and the analysis and assessment of Vietnam's opportunities and challenges in protecting industrial property rights under the CPTPP Agreement, along with proposals for legal improvements. The analytical-synthetic method is the primary research approach used in this paper. Through this method, the author will analyze and clarify key concepts, provide evaluations, and offer in-depth commentary on the research content.

Several studies have been conducted on this subject, including Hai (2019) with “The Comprehensive and Progressive Agreement for Trans-Pacific Partnership and Its Impact on Human Rights in Vietnam”; Nguyen (2022) with “Standards for Patent Protection in the CPTPP, EVFTA, and Their Implications for Vietnam” and Nguyen (2020) with “New Generation Free Trade Agreements: Impacts on Vietnam's Intellectual Property System”. These works emphasize the impact of the CPTPP on the protection of industrial property rights in Vietnam, thereby evaluating the adaptability of Vietnamese law to the provisions of this agreement.

2. PROTECTION OF INDUSTRIAL PROPERTY RIGHTS UNDER THE CPTPP AGREEMENT

The protection of industrial property rights is a crucial component of the intellectual property system, encompassing rights related to patents, industrial designs, trademarks, geographical indications, and the protection of plant varieties. The CPTPP Agreement sets forth specific provisions and higher standards for the protection of industrial property rights compared to other free trade agreements, presenting both opportunities and challenges for Vietnam.

- Firstly, the protection of patents under the CPTPP Agreement

Regarding patents, the CPTPP Agreement requires member countries to protect not only new products but also new production processes. This means that any innovation that meets the standards of novelty, inventive step, and industrial applicability must be protected under the Agreement's provisions. The CPTPP allows member countries to exclude certain subjects from patent protection, such as methods for medical treatment of humans or animals, or biological processes for the production of plants and animals (excluding microbiological processes).

The CPTPP Agreement stipulates that in cases where the granting of a patent is delayed due to administrative procedures, member countries must provide a mechanism to extend the patent protection period¹. This is particularly important for patents in the pharmaceutical field, where the time required to obtain approval can be lengthy and impact the patent's duration. If the market authorization for a pharmaceutical product is delayed due to regulatory procedures, member countries must also extend the patent protection period for that product to compensate for the lost time during the authorization process. This provision underscores that delays by the patent office or unreasonable reductions in patent protection for pharmaceuticals require member countries to provide compensation. This presents a significant challenge, especially as the burden of backlog issues needs to be addressed (Nguyen, 2022).

The CPTPP Agreement requires member countries to establish effective mechanisms for resolving disputes related to industrial property rights, including patents. This involves ensuring that disputes are resolved promptly and fairly, while also providing measures to protect the interests of the parties involved. Member countries must also ensure that there are mechanisms in place for inventors to defend their rights against infringements, including the ability to seek damages or apply injunctions to prevent further violations.

¹ Article 18.48: Adjustment of Patent Term for Unreasonable Reductions: For a pharmaceutical product requiring patent protection, each Party shall notify an adjustment of the patent term to compensate the patent holder for any unreasonable reduction in the effective patent term caused by the market authorization process.

- Secondly, Protection of Trademarks under the CPTPP Agreement

The CPTPP Agreement requires member countries to protect not only traditional trademarks (such as words, numbers, and images) but also non-traditional trademarks, including sounds, colors, shapes, or even scents, provided these signs are capable of distinguishing the goods or services of one business from those of others. According to Article 105, Paragraph 2 of the 2022 Intellectual Property Law, it is specified that "...if the trademark is a sound, the trademark sample must be an audio file and a graphical representation of that sound." Although the amended provisions indicate that Vietnam has made efforts to improve its intellectual property laws to meet CPTPP commitments, the current regulations merely list sound marks without clearly defining which types of sounds will be protected. It remains ambiguous whether protection includes all audible sounds, such as music or other noise types (Chi, 2022).

According to Article 18.22 of the CPTPP Agreement, "No Party shall impose a condition that a trademark be registered in that country or another country, be listed as a famous trademark, or be previously recognized as a famous trademark for it to be determined as well-known." This provision is further detailed in Article 75 of the Intellectual Property Law: The 2022 amended law clarifies the criteria for determining a well-known trademark. These criteria include the geographical scope of the trademark's use, duration of use, scale and scope of advertising, revenue generated from the trademark, the level of distinction of the well-known trademark compared to other trademarks, and the number of consumers aware of the trademark. Currently, Vietnamese law only recognizes well-known trademarks based on their prominence within Vietnam's territory and lacks specific provisions for protecting trademarks that are recognized as well-known abroad but are new to the Vietnamese market. Therefore, it is necessary to establish clear regulations for the recognition and protection of foreign well-known trademarks entering the Vietnamese market. This will safeguard the rights and legitimate interests of trademark owners, facilitating their market expansion and investment in Vietnam (Duyen, 2023).

The CPTPP Agreement and the amended 2022 Intellectual Property Law have expanded the scope of trademark protection to include non-traditional trademarks such as sounds, colors, and scents, to meet the diverse protection needs in the context of a globalized economy. Despite these improvements, Vietnamese regulations still lack clarity regarding which types of sounds will be protected. Additionally, the amended law specifies the criteria for determining well-known trademarks and provides clearer regulations on unfair competition related to trademarks, contributing to the enhancement of the domestic legal system to comply with international commitments.

- Thirdly, Protection of Other Industrial Property Objects under the CPTPP Agreement

The CPTPP Agreement addresses geographical indications in Articles 18.30 to 18.34. According to Article 18.30, geographical indications are defined as signs used to indicate that a product originates from a specific geographical area, where the quality, reputation, or characteristics of the product are closely linked to that geographical origin. Article 18.31 outlines the registration and protection process for geographical indications, stipulating that member countries must have clear and transparent registration procedures, including mechanisms for opposition and cancellation of protection if justified. Member countries are required to protect

geographical indications to prevent the misuse or misleading use of indications for products that do not meet the geographical indication standards.

Regarding the protection of confidential information under the CPTPP Agreement, Article 18.50 stipulates that member countries must protect confidential information against unauthorized collection, use, or disclosure. Confidential information must have economic value, be non-public, and the holder must take reasonable measures to maintain its secrecy.

Regarding the protection of test data (Article 18.51 of the CPTPP Agreement), this provision outlines the obligations for safeguarding test data or other relevant information submitted for marketing approval of pharmaceuticals and agricultural chemicals. It mandates that member states must ensure the protection of such data for a designated period, preventing unauthorized use or disclosure that could unfairly benefit competitors. This requirement aims to foster innovation while maintaining a fair competitive landscape in the pharmaceutical and agricultural sectors.

Regarding domain name dispute resolution mechanisms (Article 18.28 of the CPTPP Agreement): It mandates that member countries must establish or maintain a domain name dispute resolution system to address complaints related to domain name registrations that are identical or confusingly similar to protected trademarks.

The detailed provisions in the CPTPP Agreement on the protection of industrial property aim to elevate the standards of industrial property protection within the region and ensure the rights of owners. These regulations facilitate innovation, promote sustainable economic development, and encourage member countries to adhere to international commitments.

3. ASSESSMENT OF OPPORTUNITIES AND CHALLENGES FOR VIETNAM IN PROTECTING INDUSTRIAL PROPERTY RIGHTS UNDER THE CPTPP AGREEMENT

The provisions on industrial property in the CPTPP Agreement not only offer opportunities but also pose certain challenges in promoting innovation and technology transfer in member countries, including Vietnam (Nguyen, 2020).

- Regarding Vietnam's Opportunities in Protecting Industrial Property Rights under the CPTPP Agreement:

Concerning the enhancement of standards for the protection of industrial property rights, the current Vietnamese Intellectual Property Law and several related legal documents are being amended and supplemented to internalize Vietnam's commitments in various FTAs, particularly under the CPTPP Agreement. With these amendments and supplements, Vietnamese enterprises will undoubtedly benefit from a clearer and more transparent legal system for establishing industrial property rights and stronger enforcement mechanisms. However, for such a legal framework to be truly effective, individuals, organizations, and businesses in Vietnam must also enhance their legal awareness in general, and specifically their understanding of industrial property law, to meet the higher protection standards required by these FTAs (Ha, 2022).

Adopting International Standards: The CPTPP Agreement requires its members to adhere to higher standards of industrial property protection, particularly in the area of industrial property

rights. This facilitates Vietnam's access to and application of international standards for industrial property rights protection, thereby enhancing the ability to safeguard the industrial property assets of domestic enterprises. By continuing to strive towards advanced regional and global protection standards, Vietnam can create a favorable environment that attracts foreign investment and technology transfer, ultimately improving the quality of domestic products and gradually enhancing the country's indigenous technological capabilities (Ha, 2020).

Improving the Legal Framework: The CPTPP Agreement encourages Vietnam to enhance its legal framework related to the protection of industrial property, particularly in the areas of trademarks, patents, and geographical indications. These reforms create a more transparent and stable legal environment that better safeguards the rights of both domestic and foreign enterprises.

Encouraging Technology Transfer: With stronger protection of industrial property rights, foreign enterprises will be more motivated to transfer advanced technology and technical know-how to Vietnam, thereby enhancing the technological level and production capabilities of domestic companies.

Promoting Research and Development: Effective protection of industrial property rights encourages enterprises to invest in research and development activities, technological innovation, and increasing the added value of products. This, in turn, helps to strengthen the competitiveness of Vietnamese businesses in the international market.

- Challenges for Vietnam in Protecting Industrial Property Rights under the CPTPP Agreement

Pressure for Legal Reform and Enforcement: To comply with its commitments under the CPTPP Agreement, Vietnam must continuously amend and supplement its legal system regarding industrial property, including regulations related to trademark protection, patents, and geographical indications. This requires significant efforts from both the legislative and executive bodies.

One of the biggest challenges for Vietnam is to enhance the capacity for enforcing laws on the protection of industrial property rights. This necessitates strengthening the capabilities of regulatory agencies, training specialized personnel, and improving the court system's ability to handle disputes related to industrial property.

The CPTPP Agreement requires stricter protection of geographical indications, which necessitates that Vietnam effectively safeguard its geographically indicated products, such as Phu Quoc fish sauce and Buon Ma Thuot coffee. To achieve this, specific legal and enforcement measures are required to protect these distinctive Vietnamese products from infringement by similar foreign products.

Patent protection requires Vietnam to establish an effective patent registration and examination system. This poses a significant challenge given the current limitations in the country's industrial property infrastructure and the availability of specialized human resources.

4. SOME RECOMMENDATIONS

To capitalize on the opportunities and overcome the challenges presented by the CPTPP Agreement, the author proposes several solutions as follows:

Firstly, to fully exploit the opportunities and benefits that the CPTPP Agreement offers, it is necessary to develop specific and detailed regulations on industrial property, technology transfer, and innovation. These regulations help translate the provisions of the CPTPP Agreement into practical, effective, and enforceable policies. However, this process is not straightforward, as it requires lawmakers to undertake thorough and comprehensive research and analysis of the relevant legal provisions.

At the same time, there needs to be a team of highly specialized personnel in industrial property to ensure that the regulations developed are not only in line with international commitments but also feasible and effective in the specific context of Vietnam.

Secondly, to internalize the specific commitments and obligations under the CPTPP Agreement, we can gradually issue regulatory documents, such as decrees, to incorporate the provisions of the CPTPP into the national legal system. This approach not only helps harmonize the new regulations with the existing legal framework, avoiding conflicts and legal discrepancies, but also ensures the rigor and effectiveness of industrial property protection and enforcement in accordance with international commitments.

Thirdly, it is essential to implement stronger punitive measures to better protect the interests of industrial property rights holders and ensure that any losses they incur due to infringements are compensated fairly. This would also create a healthier business environment and encourage innovation and investment.

5. CONCLUSION

The CPTPP Agreement offers Vietnam numerous opportunities to enhance its industrial property protection system, attract investment, and promote innovation. However, to fully capitalize on these opportunities, Vietnam must confront and overcome several challenges related to legal reform, improving enforcement capacity, and increasing business awareness. Successfully implementing the commitments under the CPTPP will help Vietnam enhance its international standing, protect the interests of its enterprises, and foster the sustainable development of its economy.

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POLICY REFINEMENT TO PROMOTE HIGHLY QUALIFIED INTERNATIONAL MIGRANT WORKERS TO SERVE THE VIETNAM LABOR MARKET IN THE NEW CONTEXT

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ABSTRACT

Globalization and the context of international economic integration have promoted resident workers to work in every country. The trend of migrating from countries with a surplus of labor and therefore imported to countries with a labor shortage and higher income is getting increasingly popularized and thus exposing developing countries to fierce competition for labor. In order to develop human resources that meet the requirements, many synchronous solutions will be needed that need to be urgently implemented. In particular, attracting labor energy from other countries to move to work in Vietnam is one of the immediate solutions to solve the current shortage of high-quality human resources. This article analyzes the current situation of high-quality labor migration in Vietnam; Vietnam's current policies on attracting migrant workers, an assessment of Vietnam's policies on the basis of comparison with Taiwan's policies, from which we propose a number of recommendations and recommendations. Proposal to improve policies to attract migrant workers to work in the Vietnamese labor market.

Keywords: migrant workers; migration policy.

1. INTRODUCTION

Similar to many other countries in the world, Vietnam annually provides a source of international migrant labor for many countries' labor markets and is also a place to attract many workers from other countries. According to statistical results, before the Covid-19 epidemic, on average each year, Vietnam had about 110,000 people going abroad to work, and at the same time, up to 100,000 foreigners were licensed to work in Vietnam (ILO, 2022). With the issuance of Decision No. 899/2023/QĐ-TTg on July 31, 2023, Decision Approving the national strategy on attracting and utilizing talents to 2030, with a vision to 2050, the Party and State has affirmed its policy: “promoting the implementation of solutions to attract and utilize domestic and foreign talents to work in Vietnam with the goal of turning Vietnam into a developed country, with high income and an equal, democratic, and civilized society by 2050”. For the purpose of achieving this goal, it is necessary to have reasonable and specific policies to attract domestic and foreign migrants to choose Vietnam as a long-term start-up and business location.

2. RESEARCH CONTENT AND PROBLEM

2.1. Research Content

The content of the article will focus on researching the following issues:

- (i) Requirements raised on the issue of attracting migrant workers in the new context;

(ii) Policies on attracting foreign workers to work in Vietnam, compared with the provisions of Taiwanese law;

(iii) Propose some solutions to effectively promote policies to attract talent to achieve the goals set by the Government in building Vietnam into a developed country; achieve digital transformation and innovation goals.

2.2. Research Method

The research method throughout the entire article is the materialist dialectical methodology, , theoretically and practically, verifying theory in reality in order to analyze and discuss theoretical issues, current situations, limitations and inadequacies to propose some solutions to solve practical problems. Other specific research methods such as: secondary document research methods (collecting documents, data, policy research), analysis, comparison, discussion, synthesis, and evaluation is used in the author's article.

3. RESULTS AND DISCUSSION

3.1. Requirements for Vietnam in attracting international migrant labor in the new context

In the last five years, Vietnam has made many new changes with a high determination for economic, scientific and technological development directions. Decision No. 569/QĐ - TTg dated May 11, 2022 affirms Vietnam's development goal: "Science, technology and innovation play an important role in developing key industries, with a focus on processing and manufacturing industries, making an important contribution to restructuring the economy towards modernity, turning our country into a country with modern industry by 2030". The Government's orientation identifies the goal of focusing resources to promote the construction of national innovation centers, industry and regional innovation, and creative start-up support centers into systems, integrated cluster with high-tech parks, financial centers, schools, and research institutes. In order to develop and operate these centers, a team of highly qualified scientific and technological human resources would be necessary. This is a significant challenge for Vietnam in the context of competing for human resources with developed countries and countries in the region. As the economy develops, high-knowledge workers have more conditions to move their workplace and job position. The rapid development of science and technology causes a scarcity of labor in many job positions. High-quality labor is influenced by demand-pull policies from countries in need of labor. To have a labor source to meet demand, countries that need labor will design preferential policies to meet the desires of workers. People with knowledge or expertise from one country, economic region or other fields, because of better living conditions or salaries, will not be afraid of change to find new jobs. In the era of science and technology, when traveling becomes easier and faster, the working environment becomes similar and there are no longer too many differences, migrating to find a better job will increasingly popular. Young people's perspective on a dynamic, effective international working environment and good remuneration policies is a condition for them to be ready to change the working environment, leaving the place where have been living since birth to find a new opportunity. Labor migration will put countries in a situation where they have to change

policies to compete for labor, which may mean having to amend immigration laws, work visa procedures, develop new policies and preferential policies on salary, job position, housing, build scholarship funds.... High-quality labor force or labor talent has become an issue that developing countries must pay attention to, and Vietnam is not an exception among them. The phenomenon of brain drains due to Vietnamese human resources going abroad to work, foreign workers not finding what they expect in the Vietnamese labor market will cause Vietnam to lack high quality human resources. The current Vietnamese labor market still accounts for a large proportion of untrained and low-skilled workers. According to statistics from the General Statistics Office in 2022, preliminary labor without technical qualifications in Vietnam accounts for 78.5%; primary level labor is 53.8%; intermediate level workers is 41%; Workers with college degrees are 30.5% and workers with college degrees or higher are only 12.5%. The number of trained workers has increased over the years but in general it is quite slow and the rate is not high. Specifically, in 2020, the total number of trained workers accounts for 26.1%; in 2021 is 28.5% and preliminary in 2022 is 28.6% (General Statistics Office, 2022). With the number of untrained workers accounting for too large a proportion, Vietnam is forced to promote policies to attract international migrant workers to work in Vietnam, this source of labor includes educated Vietnamese people. studying and working abroad and foreigners with high professional qualifications. However, attracting international workers to work in Vietnam is not easy. Some survey results show that 70% of international students do not return to Vietnam to work; As for people of Vietnamese origin who were born and studied abroad, cultural differences can be a huge barrier to the decision to migrate and move to a new job. For foreign workers, Vietnam also faces difficulties in attracting policies when neighboring countries are stepping up their talent attraction activities and their policies and working environment could be better than Vietnam in many aspects. Therefore, in recent times, although many new policies have been issued, Vietnam still has to continue to promote policies to attract quality labor from neighboring countries to work in the Vietnamese market.

3.2. Vietnam's policies to attract high-quality foreign workers and comparison with Taiwan's policies

3.2.1. Vietnam's policies aim to attract foreign human resources

In recent times, Vietnam has issued many policies showing its determination to build a human resources team to serve the process of innovation and creativity. According to Decision No. 569/QĐ-TTg on the Strategy for developing science, technology and innovation until 2030 affirmed the State's policy of "focusing on forming domestic human resources and attracting human resources". Decision No. 899/2023/QĐ-TTg dated July 31, 2023 Approving the national strategy on attracting and utilizing talented people to 2030 with a vision to 2050, also affirming the common goal of "Develop and effectively implement strong and groundbreaking policies and solutions to attract and utilize talented people (both domestic and foreign) by 2030, with a vision to 2050, especially in the following industries and fields: Key areas such as: Science and technology; education and training; culture; social science; medical; information and communication, digital transformation... ". To achieve the goal of attracting foreign workers to work in Vietnam, the solution is to promote "Organize programs to invite and attract Vietnamese talents abroad to work

in the country and support talents to integrate into life in Vietnam". In order for these policies to be implemented, Vietnam needs to promote the implementation of solutions such as: readjusting the mechanism; amending a number of policies to support reasonable funding for learners and high-quality human resources; create more openness and convenience in state management through entry and exit procedures for foreigners; extend visa validity; Simplify work permit procedures for a number of necessary subjects but still ensure the principle of prioritizing domestic workers and only use foreign workers in fields, occupations, qualifications, and skills that Vietnamese workers cannot meet in the current context.

The first moves have been initiated for this policy such as the issuance of Decree No. 70/ND-CP dated September 18, 2023 amending and supplementing Decree 152/2020/ND-CP regulating people foreign workers working in Vietnam and recruiting and managing Vietnamese workers working for foreign organizations and individuals in Vietnam, accordingly, there are now changes in a more favorable direction in recruitment procedures and work permit applications have a number of procedures. Resolution 105/NQ-CP takes effect from September 9, 2021, relaxing requirements on conditions for foreign experts and foreign technical workers when working in Vietnam. Accordingly, instead of the requirement to have experience in the specialized field of training, it is now stipulated that foreign workers expected to work in Vietnam only need to have work experience appropriate to the job position they undertake. These changes show that Vietnam's perspective has changed in the direction of being more open to high-quality foreign labor. However, compared to some countries in the surrounding region, Vietnam's policies on foreign workers still have certain limitations. Take Taiwan's Recruitment and Employment of Foreign Experts Act as an example.

3.2.2. Policies to attract foreign talent are stipulated in Taiwan's Recruitment and Employment of Foreign Experts Act.

To attract talented people to work for itself, Taiwan issued the Recruitment and Employment of Foreign Experts Act drafted by the Taiwan National Development Council in 2017, amended and supplemented on September 7, July 2021. Some outstanding basic contents of this law are stipulated as follows:

(i) The Law divides the talent source into 3 groups to have attraction policies, including: Foreign experts are foreigners doing professional work at the State; (ii) Foreign special expertise is a foreign expert with special expertise required by the State in fields that need to attract talent; (iii) Senior foreign experts are high-level experts that the State needs according to the provisions of the Immigration Law. The concept of expert is also clarified by the Law; Specifically, these are foreigners with master's degrees or higher from higher education institutions both domestically and internationally. The concept of expert is also expanded to include those with a bachelor's degree or higher from one of the leading universities in the world according to the list published by the Ministry of Education. Work experience shall not be a prerequisite for employment (Article 6).

(ii) the visa period of foreign special experts to engage in professional work is up to 5 years. Visa is renewed for a maximum of 5 years each time it expires. This regulation also applies to the

wife, minor children or adult children who are unable to work of foreign experts. In addition, the Law also has preferential regulations for special experts in consideration for being granted an Employment Golden Card. The Employment Golden Card will integrate four in one including Work Permit; residence visa; Residence certificate and re-entry permit. Simplifying paperwork will create favorable conditions for foreigners when they work in Taiwan, and also shows the State's appreciation for the policy of attracting special talents.

(iii) When foreign experts plan to engage in professional work in the State and need to find work for a long time, they can apply for a 6-month tourist visa to the foreign representative agency of the Ministry of Foreign Affairs. Extending the tourist visa period before experts decide to work in Taiwan gives them time to thoroughly learn about the culture, living environment, working environment, and working conditions in Taiwan, and once they have researched carefully and decided to choose Taiwan as a place to start a business, it will help them stick with the workplace for a long time, avoiding the situation where not having enough time to research carefully leads to working for a short time before realizing that that place doesn't suit your wishes.

(iv) Foreign experts can apply to NIA for permanent residence when they have worked professionally and resided legally and continuously in the State for 5 years; each year resides an average of more than 183 days in the State.

(v) For adult children of foreign professionals engaged in professional work in the State, foreign special professionals or foreign senior professionals who have been approved for permanent residence, conditions will be created for them to be able to work in Taiwan. In cases where they meet the requirements such as: Having legally resided in the State for ten years and have been present in the State for more than 270 days in each year; Having entered the State before the age of 14 and being present in the State for more than 270 days in each year; Being born in the State and having legally resided in the State for ten years and having been present in the State for more than 183 days in each year, the children of these professionals may apply directly to the Ministry of Labor for a work permit to engage in work in the State and do not need to apply through an employer, as long as the child receives confirmation from the NIA that he or she meets one of the above conditions.

(vi) Income Tax Reduction: If a qualified foreign special professional can have half of the amount reduced when calculating the total income for personal income tax in that year for the portion of salary income over NT\$3 million in each tax year and they reside in the State for 183 days.

(vii) Regarding social insurance payment regime: Not only foreign experts, foreign special experts or foreign senior experts, their spouses, children under the age of majority and children over the age of majority who cannot live independently due to physical or mental disabilities, with documents proving their place of residence, will be able to participate in the National Health Insurance as insured persons without having to have a full six-month residence in the State as prescribed in Article 9, Paragraph 1 of the National Health Insurance Act if they meet the statutory conditions.

3.3. Some recommendations to improve regulations on foreign workers working in Vietnam based on learning some experiences from Taiwan

Reviewing and evaluating Vietnam's legal regulations to attract foreign experts and technical workers shows that Vietnam still does not have specific regulations and has not created competition with countries in the region in attracting foreign human resources to work in Vietnam. The new regulations are at the level of policies, guidelines, and orientations, and there is still concern and caution due to the need to protect domestic workers from job opportunities. However, to meet human resources for the goals of economic development, digital transformation, innovation, creativity and technology, Vietnam will have to pay special attention to perfecting policies to create creating a working environment that shows that Vietnam has reasonable policies in attracting talented foreign experts who want to choose Vietnam as a place to start a business. Some solutions that Vietnam needs to implement include:

(i) Issue a unified document on incentives for foreign experts: Policy regulations for foreigners working in Vietnam are currently scattered in many different documents. Therefore, it is still necessary to issue a unified document, gathering all relevant regulations on policies to encourage foreign workers to work in Vietnam. This document does not necessarily have to be promulgated into a law document, but at least it is a decree to clearly stipulate the subjects of foreigners and the "recruitment of scholars" regimes for foreigners; regulations for relatives of foreigners, welfare and security regimes; procedures, visa duration, work permit duration for special cases... This document will be the concretization of the Government's commitments to the policy of "organizing programs to invite and collect Attracting Vietnamese talent from abroad to work in the country and supporting talent to integrate into life in Vietnam."

(ii) Expanding the number of foreigners allowed to work in Vietnam according to the policy of attracting talent: In order to encourage the migration of high-quality workers into the Vietnamese labor market, there needs to be a clear and transparent mechanism on incentives and attraction policies. The first thing is to come up with a unified and transparent concept of "talent". Talent is simply someone who has a high degree or can or just needs to be someone who works effectively, has experience and many initiatives that can be applied effectively in life. Once you have clearly identified the target audience, it will be easy to build a job position structure with standards and criteria set for each position. The standards for each position should be built practically to ensure that these requirements are truly necessary for that position, avoiding unnecessary requirements for the purpose of beautifying the job position profile only. Once there are clear criteria, high-quality workers will feel they are suitable for that position and decide to apply and stick with their chosen job for a long time.

With the principle of protecting domestic workers, the State's policy is to only allow the recruitment of foreign workers for management, executive, expert and technical positions that workers Vietnam has not been able to meet production and business needs. According to current regulations, foreign workers who want to work in Vietnam must have professional qualifications, techniques, skills, and work experience; Have enough health according to regulations of the Minister of Health (Article 151, Code of Conduct 2019). According to Decree 152/2020/ND-CP dated December 30, 2020, foreign experts or foreign technical workers must have degrees, practice

certificates and experience appropriate to the job position. This regulation is very strict but will probably miss some subjects. For example, some talented foreigners cannot have the opportunity to work in Vietnam because they have not accumulated experience. Thus, they will look for jobs in countries that do not need more binding conditions such as Taiwan. And when they are attached to the environment there, it is difficult to migrate to a new workplace that does not have a better preferential environment than where they are currently working. Therefore, should Vietnam need to amend the regulations on the conditions for foreigners to still be able to work in Vietnam if they graduate from prestigious schools, especially top science and technology schools with talented human resources that we lack? For excellent international students who graduate as valedictorian or salutatorian at key training institutions in Vietnam's technology fields, they also receive the opportunity to get a job in Vietnam without necessarily having to have work experience.

(iii) Extending the term of work permits and residence visas to help talents stay long-term in Vietnam: Although Decree 70/2023/ND-CP dated September 18, 2023 amends and supplements Decree 152/2020/ND-CP has stipulated a simpler way to issue work permits to foreigners, but the license term is still limited to a maximum of 2 years and if renewed, it is only a maximum of 2 years (Article 155 of the Code 2019). With the goal of "Striving for 100% of (recognized) talents to continue to work after 5 years, being attracted and utilized to work at agencies, organizations and units of the State" according to the Decision No. 899/QĐ -TTg, we should also consider the option of extending work permits for some special subjects for a period of 5 years to encourage experts to stick with Vietnam for a long time. Taiwan's regulation on a 6-month travel period for experts planning to come to Vietnam to work is a regulation that Vietnam should also learn. This regulation helps experts have enough time to understand the environment, culture, job position... before deciding to migrate to Vietnam to work. When they are carefully prepared, they will stick with their decision longer.

(iv) Have policies to care for relatives of talented foreigners to help them stabilize their lives and integrate into life in Vietnam: To implement the policy of " Organize programs to invite and attract Vietnamese talents abroad to work in the country and support talents to integrate into life in Vietnam ", supporting talented people to quickly integrate into life means that their families also get a number of privileges in terms of time and visa issuance procedures. Allowing special family members to reside in Vietnam in accordance with foreigners' working hours is a policy that shows that the State cares about their families and relatives. Therefore, in the coming time, it is necessary to expand the visa period and safety net policies for relatives of foreigners so that they can work and contribute with peace of mind.

(v) Create a working environment that attracts migrant workers to work in the Vietnamese market: To attract talent, we must create a competitive working environment with neighboring Asian countries. In addition to building a reasonable salary policy, it is necessary to ensure a working environment in which talented people have the conditions to develop their abilities. To do this, it is necessary to strictly handle cases where leadership positions are passed unfairly, for instance, passed down to family and friends. When the leader is not talented, it is also unlikely that the employees will be talented.

(vi) When developing and perfecting policies on attracting foreign talent, we should selectively refer to current and effective policies of neighboring countries to be able to have appropriate policies.

4. CONCLUSION

The solution to attracting high-quality labor from abroad is not the key solution. The most important thing is still training and fostering the domestic labor force to be able to undertake job positions according to the requirements of labor demand. However, training domestic labor resources is a long-term policy and requires a certain amount of time. Therefore, to meet the immediate shortage of human resources, attracting the migration of high-quality foreign workers into the domestic labor market is one of the solutions that need to be focused on. To attract this human resource, perfecting preferential policies is necessary in the current period.

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MODEL FOR STUDYING THE FACTORS AFFECTING THE DECISION TO CHOOSE ACCOUNTING SOFTWARE OF SMALL AND MEDIUM-SIZED ENTERPRISES

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ABSTRACT

In the context of globalization, digital technology in accounting is crucial for enhancing business competitiveness. The Fourth Industrial Revolution has transformed accounting practices, with electronic documents and software improving efficiency and overcoming geographical limits. Despite these benefits, many small and medium-sized businesses have yet to adopt accounting software. Research on the factors influencing accounting software choice remains limited. This article reviews domestic and international studies, identifying four key factors: business requirements, software features, software cost, and provider support. The findings lay the groundwork for future quantitative research on this topic.

Keywords: small and medium enterprises, choosing accounting software

1. INTRODUCTION

In the digital age, businesses of all types and sizes tend to seek and integrate scientific and technological applications into their organizations to achieve economic efficiency. One of the top priorities for companies, regardless of their size or industry, is the use of accounting software. This makes the work of accountants simpler and more effective, helping businesses save time, reduce costs, and improve work efficiency. According to Pham Thi Ngoc Ly (2016), the application of information technology in accounting has become widespread, with variations across companies depending on their size, management requirements, and the style of the managers. The computerization of accounting not only helps process and provide information quickly but also reduces the workload for accountants, creating favorable conditions to enhance the productivity of the accounting department. Accounting software plays a crucial role in supporting the collection, recording, and processing of accounting data quickly and accurately. It has become an invaluable tool for both accountants and managers, helping to optimize accounting tasks as well as assess and effectively manage the company's performance. However, choosing accounting software that fits the needs and operational methods of the business remains a significant challenge. Accounting software plays a crucial role in supporting the collection, recording, and processing of accounting data quickly and accurately. It has become an invaluable tool for both accountants and managers, helping to optimize accounting tasks as well as assess and effectively manage the company's performance. However, choosing accounting software that fits the needs and operational methods of the business remains a significant challenge. If the wrong software is chosen, the business will not only waste time but also incur financial costs due to the need to replace or develop new software (Nguyen Van Hai & et al, 2022) and choosing

the wrong accounting software can have negative impacts on the business operations, leading to financial losses for the company (Abu-Musa, A.A., 2005). According to Jadhav, A. & et al (2009), choosing the wrong software package can lead to incorrect strategic decisions and cause economic losses for businesses. The process of selecting a software package is a complex and time-consuming decision. Making the wrong choice can result in significant damage to the business processes and operations of the organization (Jadhav, A.S. & et al, 2011). Sampaio & et al (2016) stated that accounting software is an effective "solution" for managing financial information, especially in the context of increasingly large volumes of data and the growing complexity of financial transactions over time. Thottoli (2021) suggests that most accounting software features user-friendly interfaces, enabling accountants to perform their daily accounting tasks and duties quickly and accurately. Choosing appropriate software that meets the expectations of a business is practical and of significant concern. Globally, there have been numerous studies in the field of software applications in general and accounting software in particular to explore the criteria that may influence a business's selection. Rushinek & et al (1995) pointed out that the criteria for evaluating software are aimed at satisfying user requirements. Jadhav, A.S. & et al (2009) proposed criteria to support the selection of general software packages, while Jadhav, A.S. & et al (2011) also introduced an integrated knowledge-based software evaluation system to assist decision-makers in choosing accounting software. Fumagalli & et al (2019) highlighted that, in addition to quality, there are other factors that can affect the implementation of software and emphasized that using criteria to select software is crucial for successfully achieving the ultimate goals of a business. Thottoli (2021) discussed the impact of knowledge about accounting software on the process of selecting this technology.

In Vietnam, the recognition of the importance of accounting software for businesses and the necessity of making the right choices has prompted numerous studies on the selection of accounting software. These studies have provided findings on the factors influencing software selection decisions (Nguyen Ngoc Hoang Khiem, 2018; Nguyễn Ngọc Hoàng Khiêm, 2018; Nguyen Thi Qua, 2018; Nguyen Bich Chau, 2022). However, these studies still have certain limitations, as acknowledged by the authors themselves, including focusing only on a few specific research factors. There may be other influential factors that have not yet been explored, or some factors rely on scales based on studies conducted long ago, which may no longer be suitable for the current context. Moreover, the sample size in previous studies was limited.

2. RESEARCH OVERVIEW

- Foreign Research

Adhikari & et al (2003) examined the relationship between the business environment and the international attributes of software that companies consider important when selecting accounting software in the UK. The study was based on a survey of 94 companies from the Bradstreet and Dun database. The results indicated a statistically significant relationship between the business environment and the international characteristics of accounting software, but the type of business did not influence this relationship. From these findings, the study

suggests that the business environment plays a crucial role in the selection of international accounting software for companies. The research also highlights that establishing a common accounting software policy for all businesses is not feasible; hence, no single accounting software can be universally applied across all companies. However, this study has limitations due to the sample size being restricted to companies in the UK, and beyond the factors that have been tested, there may be other factors that influence the appropriate selection of accounting software. Building on this research, Adhikari & et al (2004) expanded the scope of the study by surveying 132 companies in the United States about their selection of international accounting software to examine the relationship between company characteristics and the internationalization features of accounting software, as well as general selection criteria. The analysis results indicated a relationship between company size, level of internationalization, and the international features of accounting software. These findings were consistent with the group's earlier research in 2003. However, the relationship between size, level of internationalization, and general software selection criteria was not significant. This implies that the choice of an accounting software package based on general criteria is not significantly influenced by the size and level of internationalization of the business. Nonetheless, the study also had limitations due to a low response rate and the large number of manufacturing companies in the sample, which could result in industry bias in the research findings. Additionally, there may still be other influencing factors that the research did not address. In the study by Abu-Musa, A. (2005), the author evaluated factors influencing the selection of accounting software by businesses, including user needs, software features, IT environment and infrastructure, as well as the reliability of the software provider. However, this study had certain limitations, as the proposed model was only applicable to companies adopting accounting software for the first time, previously performing accounting tasks manually, or to those using accounting software that no longer meets their needs and requires replacement. Moreover, the model did not address the repair or upgrade of existing accounting software for reuse within the business.

The study by Jadhav, A. & et al (2009) focuses on the evaluation and selection of software packages, a complex process in software engineering aimed at meeting organizational requirements. This research provides a foundation for improving the software evaluation and selection process through the synthesis of previous studies. The main findings of the research include: (1) The Analytic Hierarchy Process is widely used for evaluating software packages; (2) There is a lack of a common set of software evaluation criteria, which creates difficulties in comparison and selection; (3) It is necessary to develop a framework that includes software selection methods, evaluation techniques, evaluation criteria, and decision support systems to improve the software selection process. The study also indicates that software evaluation should be considered a multi criteria decision making problem, requiring the consideration of multiple conflicting factors. The goal is to assist decision-makers in choosing the best option, ranking choices by performance, and filtering out potential options. The study identifies criteria for evaluating and selecting software packages, including: Software package quality, software vendor,

cost and utility of the software package, hardware and software platform, output data, and feedback from previous users.

Following their previous research published in 2009, Jadhav, A.S. & et al (2011) conducted a literature review to propose a general methodology for selecting software packages, which includes six steps: identifying needs, preliminary investigation of the availability of software packages, compiling a shortlist of software vendors, establishing evaluation criteria, evaluating software packages, and selecting software packages. The authors identified seven criteria for evaluating software packages: Functionality, technological features, software package quality, vendor, output data, cost and utility, and feedback from previous users. They consulted with experts to validate these criteria. This study not only provides insights into the factors involved in software selection but also proposes a general methodology that can serve as a basis for decision-makers when choosing software. However, the research is limited by sample size and the number of experts interviewed, which may affect the generalizability of the study's findings.

Thottoli (2021) examined the awareness and use of accounting software among SMEs in Oman, focusing on the impact of knowledge on software adoption. Findings revealed that knowledge positively influences the use of both general and customized accounting software, while IT skills are crucial for enhancing efficiency and productivity in accounting. The study recommends that businesses invest in employee training to improve accounting processes and financial transparency, potentially reducing reliance on external services and enhancing compliance with international standards. Foreign research indicates a statistical correlation between the business environment and the international features of accounting software, while the type of business does not significantly influence this relationship. The business environment is vital in selecting international accounting software, and a universal software policy for all businesses is impractical. The choice of accounting software for first-time adopters or those replacing outdated systems depends on user needs, software features, IT infrastructure, and provider reliability. Additionally, software evaluation is a multi-criteria decision-making process, considering factors such as software quality, vendor reliability, cost, hardware and software compatibility, output data, and user feedback. Seven key criteria for evaluating software packages include functionality, technological features, quality, vendor reliability, output data, cost, and user feedback. Overall, the research highlights that knowledge of accounting software positively impacts its usage.

Table 1. Summary of international research on factors influencing the decision to select accounting software for SMSs

| Author | Title | Method | Research results | Limitations |
|---------------------------|---|---|---|--|
| Adhikari & et al (2004) | Firm characteristics and selection of international accounting software | Building on the 2003 study, this research expands by surveying U.S. companies on international accounting software selection. It examines the relationships between company characteristics and software features like multi-currency, multi-reporting, multi-language, security, support, cost, flexibility, hardware, and platforms | The results are similar to the 2003 study, but the relationship between company size, internationalization, and general software selection criteria is not significant. This suggests that software selection is not strongly influenced by company size or internationalization. The study aligns with other research, highlighting challenges in selecting appropriate industry samples | The study includes 132 observations with an 18% response rate. The low response rate and overrepresentation of manufacturing companies may cause industry bias, potentially overlooking other influencing factors. |
| Jadhav, A. & et al (2009) | Evaluating and selecting software packages: A review | Evaluation of 20 studies focused on selection methods, assessment techniques, criteria, and support systems for choosing suitable accounting software | The general method for selecting accounting software follows a 7-stage process: identifying needs, initial screening, detailed evaluation, prototyping, negotiation, purchase, and implementation. • A framework with selection methods, evaluation techniques, criteria, and support systems is needed for assessing and selecting accounting software | Data extraction may be inaccurate, and relevant documents might be overlooked due to the study being limited to English, potentially missing studies in other languages. The study mainly relies on theoretical research and literature review, lacking empirical evidence to validate the results. |
| Thottoli (2021) | Knowledge and use of accounting software: evidence from Oman | The research explores the impact of knowledge on accounting software selection and use in Omani SMEs, using semi-structured interviews with experienced accountants from these firms. | The results show that knowledge significantly influences accounting software selection, with a positive relationship between software knowledge and SMEs' choice of accounting applications in Oman. | The study is limited to examining the impact of knowledge on accounting software use, neglecting other potential factors. It does not quantify the extent of knowledge's impact on software adoption. |

- Domestic Research

Dang Thi Kim Xuan (2011) conducted a study to explore the system for evaluating the quality of Vietnamese accounting software, as a basis for proposing solutions to select appropriate software for businesses. The author used a combination of qualitative and quantitative methods and proposed evaluation criteria for software quality, including: compliance with current accounting regulations and standards, ensuring scientific management of accounting objects, accuracy, openness, level of automation, ease of use, data security and safety, and compatibility with other software. Among these, compliance with regulations and standards is considered the most important criterion when evaluating accounting software. Vo Thi Bich Ngoc (2014) combined qualitative and quantitative research to identify criteria used to evaluate the quality of accounting software, which includes four criteria: security, system design, customer support, and software functionality.

Vo Thi Ngoc Anh (2016) conducted research with 157 small and SMEs in Binh Dinh province and identified six factors influencing the selection of accounting software: software features, user requirements, software cost, the support capability of the provider, and the reliability of the provider. Nguyen Do Ngoc Phu (2017) conducted a study involving 165 businesses operating in Cù Chi District and identified the factors influencing the choice of accounting software: user requirements, software features, the reliability of the software provider, the provider's ability to support businesses, software cost, and after-sales service of the software provider. Similarly, Nguyen Bich Chau (2022) also studied the factors affecting the choice of accounting software in businesses in Cù Chi District and found that the factors influencing the choice of accounting software include five main factors: user requirements, accounting software provider, software features, accounting software cost, and social influence on accounting software selection. Additionally, the results of the quantitative analysis showed that the factor with the strongest influence is the features of the accounting software, followed by user requirements, social influence, software cost, and the weakest influence coming from the software provider. However, these findings are limited by the use of a non-probability convenience sampling method with a smaller sample size compared to the total number of businesses in the Cù Chi area, meaning the sample may not be truly representative of the population. Moreover, this model only accounts for a certain proportion of the variability in the choice of accounting software for businesses in the Cù Chi District and does not explain most of the factors affecting the selection of accounting software. Nguyen Ngoc Hoang Khiem (2018) studied the factors influencing the selection of accounting software by businesses in the Southeastern provinces of Vietnam. The results showed that there are five factors affecting the choice of accounting software, ranked from strongest to weakest impact as follows: software features, after-sales service, user requirements, software cost, and the reliability of the provider, based on a survey of 143 samples. Huynh Thi Huong (2015) investigated the factors influencing the decision to select accounting software among small and SMEs in Ho Chi Minh City with a survey of 300 samples. The study identified the factors affecting the software selection decision as: user requirements, software features, the expertise of software company staff, the professionalism of the software company, after-sales service, and the cost of the software. Le Do Kim Ngan (2016) also studied the factors influencing the decision to select

accounting software among small and SMEs in Ho Chi Minh City, using a survey of 231 samples. The research investigated seven influencing factors: User requirements, software features, convenience, the reliability of the provider, support from the provider, cost and benefits, and perception. However, the research results indicated that there was not enough evidence to conclude that perception has an impact on the decision to select accounting software.

Nguyen Thi Qua (2018) examined 214 survey samples from construction enterprises in Ho Chi Minh City and found that there are five factors influencing the selection of accounting software, ranked by their impact as follows: software features, user requirements, software cost, the reliability of the software provider, and after-sales service. Doan Thanh Thao (2018) based on a review of both domestic and international studies, tested these findings with a survey of 116 logistics service companies in Ho Chi Minh City. The study identified the factors influencing the decision to select accounting software, which include: the quality of the accounting software, the customizability of the accounting software, the international features of the accounting software, the cost and benefits of using the accounting software, the IT environment and infrastructure, and the software provider.

Reflecting on the overview of research in Vietnam, the authors have found diverse factors influencing the selection of accounting software, depending on the researchers' focus, whether it be based on geographical area, specific industry, or the scale of small and medium-sized enterprises (which represent the majority in Vietnam). At the same time, the studies are limited by the small sample size, which may not be representative of the broader population. The survey subjects are also limited, as most studies have focused on accounting staff who are currently using software, not using it, or planning to use it, which may lead to biased research results.

Table 2. Summary of domestic research on factors influencing the decision to select accounting software for small and medium-sized enterprises

| Author | Title | Method | Research results | Limitations |
|--------------------------------|---|---|---|--|
| Nguyen Do Ngoc Phu (2017) | Factors influencing the selection of enterprise accounting software - an empirical study of businesses in Cu Chi District | A mixed research method was used, employing qualitative analysis to identify factors in accounting software selection through expert consultation, and quantitative analysis to test 165 of 204 businesses in Cù Chi District | The research identified factors influencing accounting software selection: user requirements, software functionality, provider reliability, support capability, cost, and after-sales service. | <p>The study's limitations include a small sample size of 165 due to non-probability sampling, which is insufficient for quantitative research.</p> <p>Access to managers and business owners was challenging, resulting in a majority of respondents being accounting staff, thus not representing the entire business population in Cù Chi District.</p> <p>The research focused solely on selected factors, overlooking other potential influences.</p> |
| Nguyen Ngoc Hoang Khiem (2018) | Factors influencing the selection of accounting software by businesses in the Southeast provinces of Vietnam | The qualitative research method assessed factors influencing accounting software selection based on theory and new factor exploration, while the quantitative assessment was conducted on 143 out of 175 survey samples. | The research identified five factors influencing accounting software selection in Southeast Vietnam, ranked by impact from strongest to weakest: software functionality, after-sales service, user requirements, software cost, and provider reliability, based on a survey of 143 samples. | The limitation is the small survey sample size compared to the number of businesses in the Southeast region, resulting in a lack of full representation of the area's business population. |
| Nguyen Bich Chau (2022) | Factors influencing the selection of accounting software in businesses in Cu Chi District | The qualitative method described and examined factors in accounting software selection through expert consultations, while the quantitative method validated the scale using 130 of 150 collected survey samples. | The study on factors influencing accounting software selection in Cu Chi District found that the most significant factor is software functionality, followed by user requirements, social influence, software cost, and the least influential factor is the software provider. | <p>Limitations include using a non-probability convenience sampling method with a sample size smaller than the total number of businesses in Cù Chi, making it unrepresentative of the population.</p> <p>The model only accounts for a portion of the variation in accounting software selection and fails to explain most influencing factors.</p> |

3. THEORETICAL FRAMEWORK

- Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by Davis (1989) based on the foundation of the Expectancy-Value Theory (Fishbein & et al, 1977) and the Theory of Reasoned Action (TRA) (Ajzen & et al, 1988).

The main content of the Technology Acceptance Model (TAM) is to provide an explanation of the intention to accept a new product. The two fundamental factors of the TAM are perceived usefulness and perceived ease of use. Perceived usefulness is the degree to which a person believes that using a particular system will enhance their performance (Davis, 1989). Perceived ease of use is the degree to which a person believes that using a particular system will be effortless.

- Application of the Technology Acceptance Model

The Technology Acceptance Model explains and predicts the acceptance of technological products, such as accounting software. Users are more likely to adopt accounting software if they perceive it as useful and easy to use, which fosters a positive attitude toward its usage. This attitude influences their intention to use the software, as it must align with business characteristics and the accounting system to be effective in management and decision-making. Software providers should develop solutions that meet user needs and enhance staff expertise to ensure beneficial software is supported by clear guidance.

- Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) (Ajzen, 1991) was developed from the Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1975) to address the limitations of TRA. The content of the Theory of Planned Behavior (TPB) introduces a third factor, perceived behavioral control, which refers to an individual's belief about how easy or difficult it is to perform a particular behavior. Attitude is measured by the perception of the attributes of the product. Consumers will pay attention to attributes that provide necessary benefits and vary in importance. Subjective norms refer to the perceptions of people related to the consumer (such as family, friends, colleagues) about whether the individual should or should not perform the behavior. In the Theory of Planned Behavior (TPB) model, Ajzen suggests that perceived behavioral control directly influences the intention to perform a behavior.

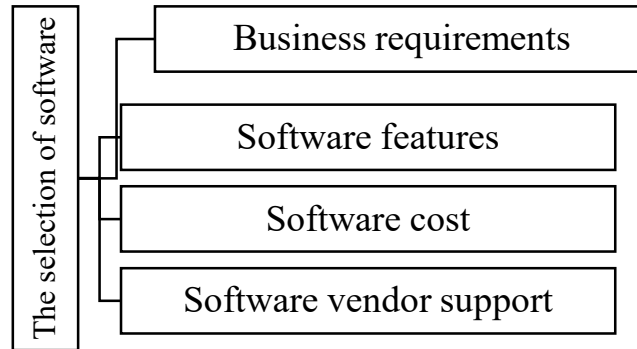
- Application of the Theory of Planned Behavior

The Theory of Planned Behavior (TPB) explains how perceived behavioral control, along with attitude and subjective norms, influences decision-making. When selecting accounting software, businesses must assess if their IT environment and infrastructure are suitable, and if the software cost aligns with their financial situation. TPB helps explain the relationship between factors like IT infrastructure, software cost, features, provider reliability, and after-sales service in the software selection process.

4. RESEARCH FINDINGS

Based on the review of previous studies and foundational theories, the research team has identified the following factors that influence the selection of accounting software in small and medium-sized enterprises (SMEs) today:

Proposed Research Model and Hypotheses



The following hypotheses are formulated:

H1: Business requirements influence the decision to select accounting software in businesses.

H2: The features of accounting software influence the decision to select accounting software in businesses.

H3: The price of the software influences the decision to select accounting software in businesses.

H4: Vendor support influences the decision to select accounting software in businesses.

The research model is as follows:

$$DAS = \beta_0BR + \beta_1SF + \beta_2SC + \beta_3SS$$

In which:

DAS is the dependent variable that influences the decision to select accounting software in businesses

BR, SF, SC, SS are the independent variables, namely: business requirements, software features, software cost, software vendor support

5. CONCLUSION

A review of studies shows that research on factors influencing accounting software selection in Vietnamese enterprises lacks comprehensive understanding. Existing studies primarily identify factors from a mixed perspective, leading to inconsistent systematization as researchers approach the topic based on their interests in specific regions or industries. Additionally, many studies adapt previously identified factors and sample sizes to fit their research goals, resulting in limited systematization and mostly small quantitative samples.

Some studies use surveys to support analysis and conclusions, but most focus solely

on identifying influencing factors at a statistical level, with limited mixed-methods research. To address these gaps, the research team proposes a model outlining key factors influencing accounting software selection, including business requirements, software features, software cost, and vendor support.

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PROMOTIONAL PROGRAMS AND THE FEAR OF MISSING OUT: IMPACTS ON IMPULSIVE BUYING BEHAVIOR OF YOUNG WOMEN ON TIKTOK COSMETIC LIVESTREAMS

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ABTRACT

To investigate the impact of the factors Promotion (PROMO) and Fear of Missing Out (FOMO) on Impulsive Buying Decisions (BD), the research mainly focused on female customers aged 18–40 (Park & Lin, 2020) who participated in purchasing cosmetics through livestream on TikTok. The author conducted a survey designed based on a 5-level Likert scale, sent it to 380 customers, and collected 242 valid responses. The data was analyzed using SmartPLs 4. The results of the study determined that promotion (PROMO) significantly affected impulsive buying intention (BI) and impulsive buying decisions (BD); however, the impact of fear of missing out (FOMO) on buying intention was not statistically significant but still affected buying decision. The study provides a practical perspective to help retailers understand the factors that influence shopping behavior and thereby come up with solutions to attract young female customers when shopping for cosmetics through livestreaming on TikTok.

Keywords: promotion programs, impulsive buying decisions, cosmetics livestream, TikTok, young women, fear of missing out (FOMO)

1. INTRODUCTION

Vietnam has 72.70 million social network users as of January 2024, which is 73.3% of the country's total population (Vietnam Digital, 2024). This figure highlights the significance of linking Vietnamese social networks and the subsequent emergence of new e-commerce trends. Specifically, TikTok Shop stands out from its competitors thanks to its livestream sales model, which allows buyers and sellers to engage directly. Its many features include being dynamic, attractive, easy to exchange, visually appealing and full of eye-catching products. This is especially true for its livestreamed cosmetics business, where a limited quantity of products creates an air of rarity and encourage customers to order. In addition, the product presenter consistently encourages shopping with discounts, free delivery, gifts with purchase, and other incentives. However, the author discovered during the research process that while many earlier studies in the nation have focused on online shopping in general, there is still a dearth of comprehensive research on the effects of each factor-participation in the livestream session, promotional programs, and fear of being missed-on customers' intention and decision to purchase cosmetics as young women in the context of livestreams on the TikTok platform. This analysis is necessary to better understand the psychological motivation of young consumers and to inform recommendations for promoting customer purchasing behavior.

2. LITERATURE REVIEW

This study's primary goal is to examine and assess variables including promotions, livestream session participation, and the apprehension of missing out on young women's rash buying decisions. Impulse buying is defined as unplanned purchasing behavior, triggered by environmental stimuli, leading to immediate buying actions. (Rook & Fisher, 1995). According to Stern, 1962 these decisions occur spontaneously, without going through a structured thinking process. In the context of online shopping, promotional program factors and user experience have been proven to influence impulsive buying behavior. (Flohr & Madlberger, 2013). Wongkitrungrueng and Assarut (2020) argue that the level of interaction in livestream sessions not only builds customer trust but also increases the likelihood of impulsive shopping behavior (Wongkitrungrueng & Assarut, 2020). Promotions play an important role in stimulating consumer behavior, especially during limited-time and limited-quantity sales events. (Shamout, 2020). FOMO is defined as the fear of missing out on exciting experiences or opportunities that others are having. (Przybylski et al., 2013). In e-commerce, FOMO is often exploited through limited time advertising campaigns, creating a sense of urgency and stimulating quick purchasing decisions (Bläse et al., 2024).

Vietnamese young women between the ages of 18 and 40 participated in the study. The primary focus of the research is on cosmetic brands' livestreams on TikTok. Customers who planned to shop during streaming sessions received questionnaires. The study's findings add to our understanding of impulsive buying behavior while also offering helpful advice to live streamers who sell makeup on TikTok to help them tailor their content to appeal to young women as their target audience.

3. METHODOLOGY

The degree to which consumers engage in the livestream session-that is, the amount of time they spend engaging with the vendor directly, listening to thorough product information, taking part in activities to win discounts and coupons, etc.-is referred to as participation. This feature boosts viewer engagement during livestreams and encourages quick and impulsive purchasing decisions (Lo et al., 2022). Thus, the first hypothesis is developed: When young women watch livestreams on TikTok, their intentions to shop are positively impacted by their participation in a livestream session.

Fear of Missing Out (FOMO) is a psychological phenomenon that makes it easier for customers to be lured into impulsive purchase because it causes them to worry that they will lose out on opportunities, unique experiences, opportunities, or rewards that they do not attain. Conduct to avoid missing out on goods, which results in the formation of buying intentions (Przybylski et al., 2013). The fear of missing out can be a potent motivator for customers to make last-minute purchase decisions because it can boost engagement and participation during livestream sessions (Hodkinson, 2019). Thus, hypothesis 2 is developed: when young women watch TikTok livestreams, their desire to purchase is positively influenced by their fear of missing out.

The psychological phenomenon of scarcity plays a significant role in incentivizing impulsive buying when buyers perceive that a product's number is restricted or that a promotion is only available for a brief duration. Consumers frequently take advantage of the chance to “close the deal” which creates a psychological pressure on them to decide very away (Lynn, 1992). In addition to raising perceived value, the sensation of fear of missing out also serves as a powerful catalyst for impulsive purchasing (Blaze et al., 2024). Scarcity has the power to make a product more appealing and desirable to buy (Fan et al., 2019). Thus, hypothesis 3 is developed: When young women watch livestreams on TikTok, their decisions to buy are positively influenced by their fear of missing out.

Promotions: incentives like discounts, freebies with purchase, buy one, get one free, and similar offers elicit a sense of anticipation, provide immediate gratification, and motivate consumers to make a purchase (Shamoun, 2020). Consequently, hypothesis 4 is established: Promotions provide a favorable influence on the purchase intentions of adolescent females who watch TikTok livestreams.

In addition to keeping consumers and raising their understanding of the value of the products, promotional initiatives like loyalty programs also stimulate customers' minds, which encourages impulsive buying (Youjae Yi & Hoosen Jeon, 2003). As a result, hypothesis 5 is established: When watching livestreams on TikTok, promotions have a positive effect on the purchasing decisions made by young women.

The extent to which a customer intends to purchase or desires to purchase a particular good or service is known as their buying intention. An intentional decision to shop is the result of thorough consideration.

They closely observe advertising and promotional messages when they want to buy, yet impulsive buying is frequently the outcome of sudden stimulus. They are easily motivated to engage in buying activity because they are frequently impacted by several reasons, including promotions and FOMO (fear of missing out) (Ajzen, 1991). The perceived utility of the goods, trust, attitude toward online shopping, promotions, interactions with sellers and other factors all play a role in shaping a buyer's desire to purchase (Pavlou & Fygenson, 2006). Impulsive purchases might cause regret since they are impulsive, impulsive and emotional rather than rational (Rook, 1987). Four categories of impulsive buying behavior were identified by (Stern, 1962): pure shopping, planned shopping, repeat shopping and suggested shopping. Every form of impulsive purchasing behavior has unique traits and is impacted by various situational and psychological elements. As a result, hypothesis 6 is established: When viewing TikTok livestreams, young women's purchasing selections are positively influenced by their purchase intentions.

Advertising, promotions and the allure of a product are examples of external stimuli that can lead to impulsive buying behavior, a unique type of spontaneous shopping behavior (Rook, 1987). Furthermore, psychological and emotional variables, such as the happiness and satisfaction one experiences when shopping, have a significant impact on impulsive buying behavior (Beatty & Ferrell, 1998). Livestreaming influences consumers' intention to buy because it allows for direct communication between the seller and the buyer, extensive product information, and the

opportunity to interact with visually appealing visuals that sellers test and inspect. Take part in unique marketing initiatives. This interaction helps customers feel more engaged and encourages them to make impulsive, fast purchases (Park & Lin, 2020).

Drawing from the previously discussed theoretical framework, the writer suggests the subsequent model:

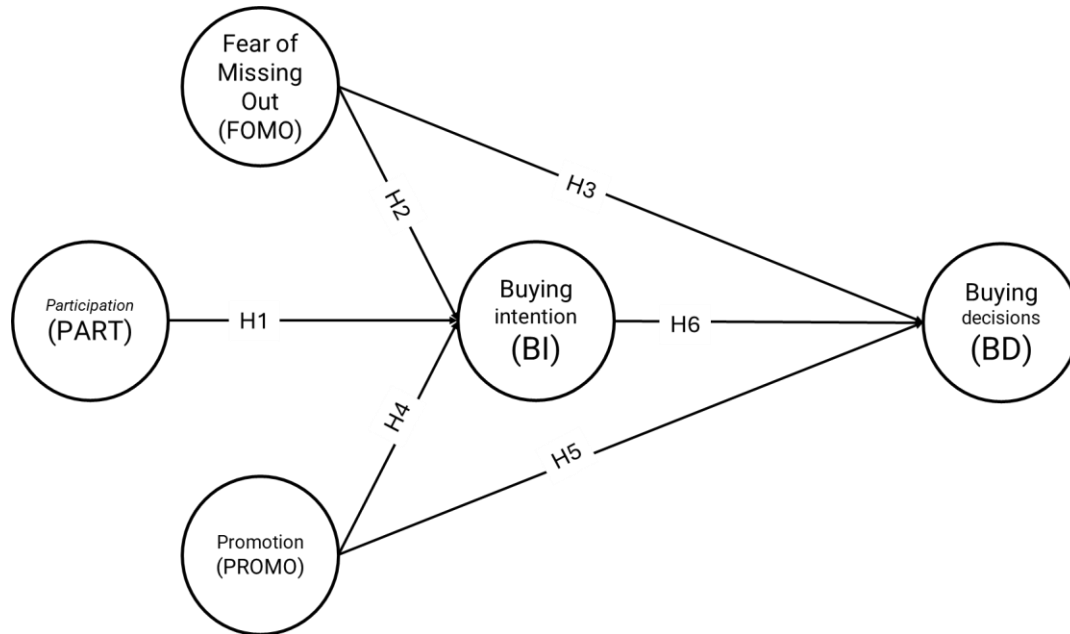


Figure 1. Model proposed by the author

Source: Suggested by author, 2024

The study concurrently used quantitative and qualitative methodologies. When it comes to the individual experiences of young female users who wish to purchase makeup on the TikTok platform, qualitative methodologies offer valuable insights. Accurate data to ascertain the correlations and effects of research factors are provided by quantitative methodologies.

The author first conducted in-depth interviews and discussions with the customers to obtain comprehensive information about the experiences and perspectives of young women customers on issues such as being drawn to promotions, livestreaming sessions on TikTok, or being afraid of running out of their favorite products if the supplier has very few left. Considering the results of the interview, the author modified the table as needed. The author then disseminated 380 survey questions via Google Form, 242 of which could be subjected to quantitative analysis. Between February and May of 2024, data will be gathered, and SmartPLS 4 will be utilized for analysis.

4. RESULTS AND DISCUSSION

After removing 4 variables with inappropriate indices such as: FOMO3, PART1, BI2, BI4, the model was rerun with the following results:

Table 1. Results of analysis of scale reliability and convergent validity

| Factors | PROMO | FOMO | BD | PART | BI | Cronbach's alpha | Composite reliability (rho_a) | Composite reliability (rho_c) | Average variance extracted (AVE) |
|---------|-------|-------|-------|-------|-------|------------------|-------------------------------|-------------------------------|----------------------------------|
| PROMO1 | 0.700 | | | | | | | | |
| PROMO2 | 0.777 | | | | | | | | |
| PROMO3 | 0.806 | | | | | 0.763 | 0.773 | 0.849 | 0.584 |
| PROMO4 | 0.771 | | | | | | | | |
| FOMO1 | | 0.762 | | | | | | | |
| FOMO2 | | 0.748 | | | | 0.698 | 0.732 | 0.828 | 0.617 |
| FOMO4 | | 0.843 | | | | | | | |
| BD1 | | | 0.671 | | | | | | |
| BD2 | | | 0.826 | | | | | | |
| BD3 | | | 0.639 | | | 0.774 | 0.794 | 0.84 | 0.514 |
| BD4 | | | 0.723 | | | | | | |
| BD5 | | | 0.713 | | | | | | |
| PART2 | | | | 0.859 | | | | | |
| PART3 | | | | 0.729 | | 0.767 | 0.814 | 0.863 | 0.678 |
| PART4 | | | | 0.875 | | | | | |
| BI1 | | | | | 0.721 | | | | |
| BI3 | | | | | 0.689 | 0.579 | 0.589 | 0.774 | 0.533 |
| BI5 | | | | | 0.778 | | | | |

Source: Author's research results, 2024

Using a combination of multiple reliability measures helps us have a more comprehensive view of the reliability of the variables. From the results in Table 1, the factors are: (1) PROMO with Cronbach's alpha: 0.763, rho_a: 0.773, rho_c: 0.849; (2) FOMO with Cronbach's alpha: 0.698, rho_a: 0.732, rho_c: 0.828; (3) PART with Cronbach's alpha: 0.767, rho_a: 0.814, rho_c: 0.863; (4) BI with Cronbach's alpha: 0.579, rho_a: 0.589, rho_c: 0.774; (5) BD with Cronbach's alpha: 0.774, rho_a: 0.794, rho_c: 0.84. Based on Rho_C, the overall reliability of the scales remained within an acceptable level. Some variables have an outer loading index slightly lower than 0.708 but are still retained because they have a better explanatory meaning for the model.

AVE (average variance extracted) is an important measure to evaluate the convergence of observed variables. The AVE results of the model are PROMO: 0.584, FOMO: 0.617, BD: 0.514, PART: 0.678, BI: 0.533, showing that all values are greater than the acceptable level: 0.5, demonstrating good convergence of the scale and ensuring accurate and reliable research results.

Table 2. Cross Loadings of the Model

| Variable | PROMO | FOMO | BD | PART | BI |
|----------|-------|-------|-------|-------|-------|
| PROMO1 | 0.7 | 0.196 | 0.26 | 0.208 | 0.239 |
| PROMO2 | 0.777 | 0.121 | 0.264 | 0.225 | 0.282 |

| Variable | PROMO | FOMO | BD | PART | BI |
|----------|-------|-------|-------|-------|-------|
| PROMO3 | 0.806 | 0.161 | 0.276 | 0.186 | 0.37 |
| PROMO4 | 0.771 | 0.086 | 0.179 | 0.164 | 0.329 |
| FOMO1 | 0.14 | 0.762 | 0.171 | 0.094 | 0.167 |
| FOMO2 | 0.112 | 0.748 | 0.182 | 0.192 | 0.053 |
| FOMO4 | 0.172 | 0.843 | 0.263 | 0.126 | 0.159 |
| BD1 | 0.231 | 0.201 | 0.671 | 0.259 | 0.291 |
| BD2 | 0.189 | 0.214 | 0.826 | 0.235 | 0.418 |
| BD3 | 0.098 | 0.182 | 0.639 | 0.131 | 0.167 |
| BD4 | 0.129 | 0.1 | 0.723 | 0.228 | 0.196 |
| BD5 | 0.381 | 0.22 | 0.713 | 0.386 | 0.413 |
| PART2 | 0.209 | 0.109 | 0.334 | 0.859 | 0.223 |
| PART3 | 0.158 | 0.142 | 0.295 | 0.729 | 0.151 |
| PART4 | 0.247 | 0.163 | 0.298 | 0.875 | 0.263 |
| BI1 | 0.393 | 0.13 | 0.239 | 0.146 | 0.721 |
| BI3 | 0.208 | 0.095 | 0.245 | 0.131 | 0.689 |
| BI5 | 0.276 | 0.14 | 0.465 | 0.274 | 0.778 |

Source: Author's research results, 2024

Based on the results from table 2, we see that the observed variables PROMO1, PROMO2, PROMO3, and PROMO4 have outer loadings of 0.700, 0.777, 0.806, and 0.771, respectively, higher than the cross-loading values on other latent variables such as FOMO, BD, PART, and BI. Similarly, for PART, the observed variables PART2, PART3, and PART4 have outer loadings of 0.859, 0.729, and 0.875, respectively, the highest compared to their cross-loading values. In addition, the observed variables FOMO1, FOMO2, and FOMO4 have outer loadings of 0.762, 0.748, and 0.843 on the FOMO latent variable, respectively, which are higher than their cross-loading values on other latent variables. The observed variables BI1, BI3, and BI5 have outer loadings of 0.721, 0.689, and 0.778 on BI, respectively, which are higher than their cross-loading values. Finally, the observed variables BD1, BD2, BD3, BD4, and BD5 also have the highest outer loadings on BD, with values of 0.671, 0.826, 0.639, 0.723, and 0.713, respectively. This proves that the model achieves good discrimination; the observed variables are not confused with other concepts in the model.

Table 3. HTMT Matrix

| Factors | PROMO | FOMO | BD | PART | BI |
|---------|-------|-------|-------|------|----|
| PROMO | | | | | |
| FOMO | 0.245 | | | | |
| BD | 0.375 | 0.331 | | | |
| PART | 0.325 | 0.239 | 0.447 | | |
| BI | 0.59 | 0.244 | 0.579 | 0.36 | |

Source: Author's research results, 2024

From the Heterotrait - Monotrait (HTMT) results in Table 3, it shows that the value of HTMT between PROMO and FOMO is 0.245, between PROMO and BD is 0.375, between PROMO and PART is 0.325, and between PROMO and BI is 0.590. The HTMT values between FOMO and BD are 0.331, between FOMO and PART are 0.239, and between FOMO and BI are 0.244. For the concept pair BD and PART, the HTMT value is 0.447; between BD and BI, it is 0.579; and between PART and BI, it is 0.360. All these values are lower than 0.85, showing that the concepts in the model are clearly distinguishable and different from other concepts.

Table 4. Total effects

| Impact levels of factors | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics ((O/STDEV)) | P values |
|--------------------------|---------------------|-----------------|----------------------------|--------------------------|----------|
| BI -> BD | 0.369 | 0.374 | 0.052 | 7.111 | 0.000 |
| CLKM -> BI | 0.347 | 0.349 | 0.062 | 5.62 | 0.000 |
| CLKM -> BD | 0.268 | 0.271 | 0.058 | 4.64 | 0.000 |
| FOMO -> BD | 0.209 | 0.219 | 0.063 | 3.318 | 0.001 |
| PART -> BI | 0.165 | 0.171 | 0.058 | 2.872 | 0.004 |
| PART -> BD | 0.061 | 0.065 | 0.025 | 2.467 | 0.014 |
| FOMO -> BI | 0.079 | 0.086 | 0.059 | 1.341 | 0.180 |

Source: Author's research results, 2024

From the research results presented in Table 4, buying intention (BI) affects buying decisions (BD): With a sample mean value of 0.374 and a standard deviation of 0.052, the T statistic reaches 7.111 and the P value is 0.000; thus, BI has a strong and statistically significant impact on BD. Promotional programs (PROMO) affect buying intention (BI) and buying decisions (BD). Promotional programs significantly affect BI, with a sample mean value of 0.349, a standard deviation of 0.062, a statistics T of 5.620, and a P value of 0.000. PROMO also directly affects BD, with a sample mean of 0.271, a standard deviation of 0.058, a T statistic of 4.640, and a P value of 0.000. Fear of missing out (FOMO) impacts buying decisions (BD): FOMO has a sample mean of 0.219, a standard deviation of 0.063, a T-statistic of 3.318, and a P-value of 0.001, showing the significant benefit. Participation in a livestream session (PART) affects buying intention (BI) and buying decisions (BD). PART affects BI with a sample mean value of 0.171, a standard deviation of 0.058, a T statistic of 2.872, and a P value of 0.004, and affects BD with a sample mean of 0.065, a standard deviation of 0.025, a T statistic of 2.467, and a P value of 0.014. Fear of missing out (FOMO) impacts buying intention (BI). This relationship is not statistically significant with a P value of 0.180.

5. CONCLUSIONS

Overall, the study has shown that young women's purchase intents and choices when viewing cosmetics livestreams on TikTok are significantly influenced by marketing elements, FOMO, and involvement in livestream sessions. The findings demonstrate that livestream sessions and promotions can significantly influence consumers' intentions and choices about impulsive

purchases. This result is entirely consistent with other studies (Bahrah & Fachira, 2021) which notes that scarcity can raise perceived value and encourage impulsive buying, and (Przybylski et al., 2013), which also emphasizes the importance of FOMO in driving unplanned shopping behavior. Like the findings of Wongkitrungrueng and Assarut's study shows that live streaming can help promote consumer engagement (Wongkitrungrueng & Assarut, 2020)

Several restrictions on this research: First, a thorough demographic analysis was not conducted; instead, the research sample was limited to Vietnamese young women between the ages of 18 and 40. For instance, "demographic data reveals that Gen Z makes up about 60% of the study population", which may have a major impact on impulsive purchasing behavior. As a result, it's possible that the outcomes do not accurately reflect the whole population. Second, while other platforms might possibly have distinct impacting aspects on impulsive shopping behavior, the study solely looks at TikTok. Subsequent studies ought to contemplate utilizing this strategy on diverse demographics and platforms. Further study techniques, such in-depth interviews or field studies, may also be able to shed further light on the variables influencing impulsive purchasing behavior in a wider range of situations.

This study has added to the body of knowledge about impulsive purchasing behavior related to livestreaming on the TikTok platform. In particular, the study has shed light on how, in the highly developed social network environment of today, marketing and livestream session participation affect young women's purchasing decisions. Nevertheless, fear of missing out was not statistically significant for the buying intention factor in this study, indicating that consumers' mindsets have changed and that they are no longer readily swayed by urges or product scarcity, even though it still has no bearing on their purchase decisions. These findings contribute to our theoretical understanding of impulsive purchasing behavior while also offering entrepreneurs useful advice on how to best promote and market their businesses during livestream events on the TikTok platform.

Several suggestions are made for companies that supply goods to the cosmetics sector, emphasizing that they concentrate on creating eye-catching marketing and engaging livestream sessions with viewers. These include start by evoking a sense of scarcity. To encourage prompt buying decisions, use time-restricted specials or limited product quantities. Second, promote consumer contact by inviting them to take part in live chat, ask questions, and instantly earn prizes during livestream sessions. Thirdly, appealing promotions: Businesses should design time-sensitive promotions with a limit or limited quantity of products to create a sense of scarcity, encouraging customers to participate in activities during livestream sessions like live chat, ask questions, and receive gifts right away. Discounts, free gifts, and buy one, get one free are effective ways to increase excitement and instant satisfaction for customers.

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EVALUATING THE EFFECTIVENESS OF HUMAN RESOURCE MANAGEMENT AT BAO SON HOTEL

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ABSTRACT

Human resources are the most crucial resource, with a profound impact on other resources in economic and social development for every country. This study evaluates the effectiveness of human resource management activities at Bao Son Hotel, a renowned establishment in the hospitality industry. The research aims to identify the strengths and areas needing improvement in the hotel's human resource management strategies, including recruitment, training, performance evaluation, and employee satisfaction. The study uses a research method combining quantitative surveys with qualitative interviews with hotel staff. The research finds that while the hotel excels in providing comprehensive training programs and creating a positive work environment, there are significant gaps in the performance evaluation process and career development opportunities. The results emphasize the need to improve the strategic alignment between human resource management activities and organizational goals to enhance overall operational efficiency and retain employees. Recommendations are provided to address the identified issues and improve human resource management effectiveness at Bao Son Hotel. This study contributes to a broader understanding of human resource management methods in the hospitality industry. It offers insights that can be applied to similar establishments to optimize their human resources.

Keywords: Effectiveness, Human Resource Management, Bao Son Hotel.

1. INTRODUCTION

With the goal of making tourism a key economic sector that develops in a green growth direction and becomes a leading global destination, tourism and hospitality contribute over 9-10% of Vietnam's GDP annually. However, the hotel industry in Vietnam is facing significant challenges due to the impacts of the Covid-19 pandemic, rapid social changes, and intense competition from commercial pressures. Human resource management is an essential function for any business, especially for hotels, where customer service and people-related activities are critical factors. Human resource management encompasses processes such as planning, recruitment, selection, training, reward and punishment, performance evaluation, and employee development. This system links activities to ensure that employees possess the necessary talents to achieve the organization's objectives. Numerous studies have highlighted the importance of customer service professionals as a key factor in delivering quality service. Additionally, the socialization of human resource management is viewed as a means to improve knowledge transfer and enhance employee satisfaction, morale, and commitment to the organization.

2. LITERATURE REVIEW

2.1. Overview of Research on Human Resource Management

Research on human resources (HR), overall HR development, and specifically HR in tourism has attracted the interest of scholars worldwide (Becker, 1964; Myers & Harbison, 1964; T. G. Baum, 1992; Nguyen Van Dinh, Tran Thi Minh Hoa, 2004; T. Baum & Szivasb, 2007; T. Baum, 2007; T. Baum et al., 2016; García-Lillo et al., 2018; Úbeda-García et al., 2013; Dudley et al., 2021; Al-Qassem, 2022). The term "Human Resource Management" emerged as a clearly defined field in the 1920s (at least in the USA). According to Swanson, the role of HR development is defined "within an organizational context," as noted by many other scholars, encompassing training and development, organizational development, performance improvement, organizational learning, career development, and management and leadership development. Therefore, HR development is primarily aimed at "improving performance and learning" (R. A. Swanson, 2001). Early scholars researching HR development agreed on a combination of HR development theories, including economic, systems, and psychological theories (R. A. Swanson, 2001).

Studies in the field of Human Resource Management (HRM) in the hospitality industry have emphasized the critical role of managing and developing human resources in ensuring service quality and customer satisfaction. According to Tansley et al. (2007), hotels need to focus on training and developing employees to enhance competitiveness. These studies also indicate that the application of effective HRM strategies not only helps to improve employee performance but also enhances their engagement and motivation.

We have chosen to align with the perspective of (R. A. Swanson, 2001).

2.2. Overview of Research on Evaluating the Effectiveness of Human Resource management

Many studies have employed models to evaluate HRM effectiveness, such as the Balanced Scorecard model (Kaplan & Norton, 1996) or the AMO model (Appelbaum et al., 2000), to measure factors like productivity, employee satisfaction, and retention rates. According to Tom Baum and Edith Szivas (2007), Human Resource Development (HRD) in tourism refers to providing the necessary capabilities, knowledge, and skills for human resources in the tourism industry. This includes activities such as training, education, learning, and development. In particular, in the hotel industry, evaluating HRM effectiveness must be linked to customer service and revenue indicators. The study by Chand & Katou (2007) shows a close relationship between HRM and business outcomes, affirming that effective HRM is a crucial factor in helping hotels maintain competitiveness in the market.

2.3. Specific Characteristics of Human Resource Management in Vietnamese Hotels

In Vietnam, studies on human resource management in the hospitality sector have highlighted several challenges, such as a shortage of high-quality human resources, high employee turnover rates, and limitations in training and employee development. The study by Nguyen Thi Minh Trang (2015) emphasized that to improve the quality of HR management, hotels need to

invest more in recruitment, training, and reasonable compensation policies. The research by Pham Dinh Thang (2018) focused on analyzing the specific characteristics of HR management in luxury hotels in Hanoi, including recruitment strategies, training, and personnel development. The study by Pham Van Dinh (2019) examined the challenges and opportunities in HR management at coastal hotels, with a focus on local factors and the influence of local culture. Additionally, there is a need to focus on building a strong corporate culture to retain employees and create a positive working environment.

2.4. Specific Research on Bao Son Hotel

In the specific context of Bao Son Hotel, evaluating the effectiveness of HR management can be approached through indicators such as employee turnover rates, employee satisfaction, and work performance. Reviewing compensation policies, training and development strategies, as well as welfare programs will help determine the effectiveness of HRM at the hotel. Through quantitative methods like employee surveys and performance data analysis, along with qualitative methods such as in-depth interviews and group discussions, the research will provide a comprehensive view of HRM at this establishment.

3. RESEARCH METHODS

3.1. Literature Review Method

To gather information from various sources and refer to related studies to achieve objective results, the authors applied the literature review method. This process involved searching for information from government organizations, the internet, reputable electronic websites, and published studies in books, newspapers, and scientific journals, as well as related theses and dissertations. The authors then analyzed, selected, and synthesized this content while providing evaluations and comments. Information with high accuracy was continuously updated to ensure the timeliness and relevance of the study.

3.2. Data Collection and Sampling

Data was collected from different management levels (11 individuals) and employees (52 individuals) at Bao Son Hotel. The survey method was chosen as it is considered the most effective way to reach a large number of respondents, and the necessary data could be obtained using questionnaires.

The management levels served as the central information hub for the business and maintained records related to hotel personnel. The questionnaires were administered directly at the hotel by management and staff. Each set included 30 questionnaires for employees and 1 questionnaire for human resource management.

We obtained all 11 responses from management and 52 valid responses from employees who returned the questionnaires.

4. RESULTS

4.1. Analysis of survey results

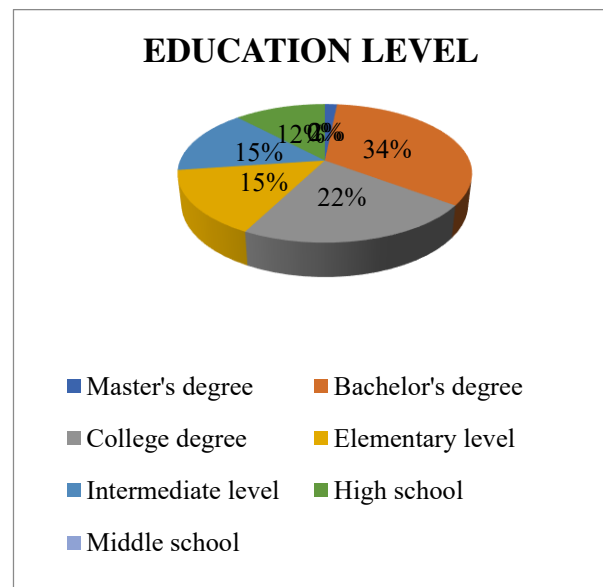
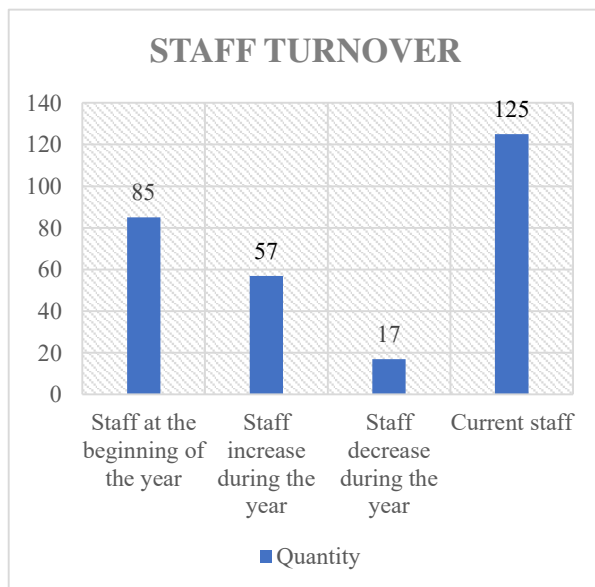
Table 4.1. Summary of Employee Satisfaction Survey Results at the Hotel

| No. | Proposed Criteria | Results | |
|-----|--|----------------------|----------------|
| | | Number of Agreements | Agreement rate |
| 1 | Nature of Work: 7 criteria | 63/63 | 100% |
| 2 | Work Environment and Conditions: 5 criteria | 59/63 | 94% |
| 3 | Income: 6 criteria | 55/63 | 87% |
| 4 | Benefits: 8 criteria | 52/63 | 83% |
| 5 | Training Opportunities: 7 criteria | 60/63 | 95% |
| 6 | Opportunities for Promotion and Career Development: 5 criteria | 54/63 | 86% |
| 7 | Leadership Style: 6 criteria | 61/63 | 97% |
| 8 | Intra-company Relationships: 6 criteria | 60/63 | 95% |

Thus, the in-depth survey results on employee satisfaction at the hotel, as shown in Table 4.1, indicate that staff are very satisfied with human resource management at the hotel.

4.2. Current State of Human Resource Management at Bao Son Hotel

- Workforce Situation at the Hotel



Source: According to data from the Human Resources Department

Figure 4.1. Report on Staff Changes in 2023

Figure 4.2. Report on the Educational Background of Hotel Staff

According to data from the hotel's Human Resources Manager, the number of employees at Bao Son Hotel has continuously increased over the years, reaching 125 employees by December

2023, after the Covid-19 pandemic. This increase was accompanied by more stringent recruitment requirements to attract a highly skilled and well-trained workforce, thereby reducing retraining costs and enhancing the ability to learn new skills and knowledge for the job.

- Current State of Human Resource Planning

Human resource planning is the first and critical step in human resource management. Proper implementation of this task helps the business remain proactive in response to changes in the business environment, while also ensuring a quality workforce that is sufficient in quantity and appropriate in timing. Understanding its importance, the management board of Bao Son Hotel always focuses on human resource planning. For this process to be effective, the first step requires accurate forecasting of human resource needs, followed by a comparison with the current workforce in each department, then proceeding with appropriate allocation, recruitment, or additional training.

- The steps in human resource planning include:

+ Forecasting demand and balancing supply and demand: At the beginning of the year, the management board and department heads will meet to determine the human resource needs for the upcoming year, including both the quantity and quality of labor. Departments will review the current number of employees and compare it with the current workload. If any department lacks staff, they will propose additional recruitment to the management board. This is based on forecasts of tourist numbers in the coming years.

+ Currently, the average growth rate of international tourists visiting Bao Son Hotel is 12% per year, while domestic tourists increase by 6% per year. It is forecasted that in 2024, the number of domestic tourists will reach 24,425, accounting for 34.35% of the hotel's total visitors; international tourists are expected to reach 46,690, accounting for 65.65% of the total visitors. Based on these figures, departments will review and propose the necessary number of employees to meet the increasing number of tourists in the coming years.

+ Balancing and allocating human resources: When there is a request for additional staff from departments, the Human Resources Department will balance the existing workforce, and if necessary, propose to the management board for recruitment approval. At the same time, the Human Resources Department also identifies training needs and coordinates with other departments to devise solutions.

+ If there is a surplus of staff in any department, employees will be transferred to other departments in need, and if there is still a surplus, they may be given unpaid leave or have their employment contracts terminated.

- Current State of Recruitment and Utilization of Human Resources

When the existing workforce is insufficient to meet the workload, or when an employee leaves, Bao Son Hotel will conduct recruitment to ensure tasks are completed. The recruitment process has undergone many changes. Previously, job postings were mainly published in local newspapers and involved hiring the children of existing employees. Now, the hotel uses other

more effective means such as posting on the hotel's Facebook page, the hotel's website, and major job sites like Vietnam Work, Top CV, LinkedIn, hotel job portals, etc. This allows more people to be aware of job openings at the hotel. It is crucial to find new, young, dynamic, and qualified staff. The working capacity of employees has gradually improved. According to data from the Human Resources Department, 512 applications were submitted in 2023. The number of candidates who passed the screening stage and participated in interviews was 216. The number of candidates who passed the interview and were hired was 102. This shows the attractiveness of job opportunities at Bao Son Hotel, which has attracted a large number of applicants interested in working there.

The tourism industry has distinct characteristics compared to other industries; employees must work in shifts, including day and night shifts. To meet work demands, employees in some departments, such as reception, housekeeping, and security, work around the clock. Employees in other departments, such as the kitchen and restaurant, have night shifts with fewer staff. Shift arrangements still ensure employees work 8 hours a day and 6.5 days a week. During major events, the hotel may mobilize additional staff from other departments to meet temporary demands.

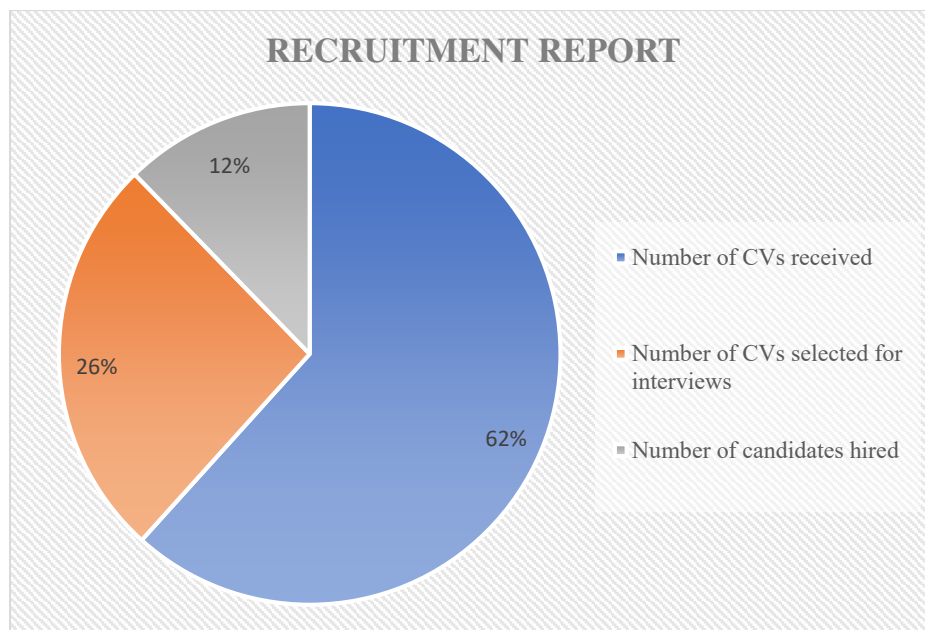


Figure 4.3. Recruitment Report for 2023

Source: According to data from the Human Resources Department

- Current State of Training and Human Resource Development

Human resources are the determining factor for the existence and development of an organization. Understanding this, in recent years, Bao Son Hotel has focused on training and developing human resources to build a team of highly skilled and knowledgeable staff to perform assigned tasks effectively. Each department has officers who are sent to receive specialized training and then pass on their knowledge to other employees.

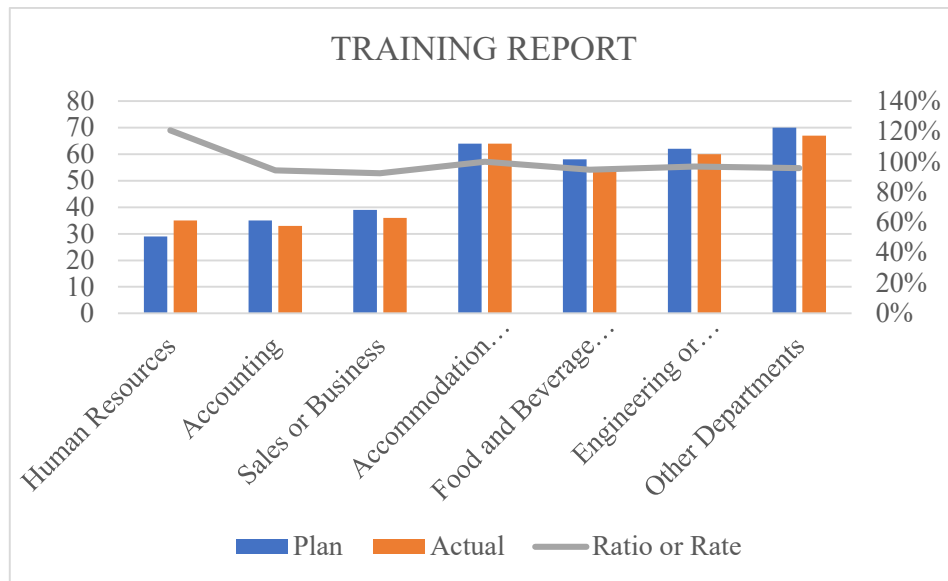


Figure 4.4. Training Report for 2023

Source: According to data from the Human Resources Department

For employees who voluntarily register for training programs outside the company's stipulated programs, if approved by their superiors and if the training process helps improve their skills, they will be supported in terms of time and work to focus on their studies. The training programs for various departments include:

+ Human Resources Department: Supported in taking courses on Labor Law, Insurance Law, training courses, and software implementation programs to better serve their work.

+ Accounting Department: The Chief Accountant and accountants are supported in taking classes on Accounting Law, Insurance Law, accounting software, and new state regulations on accounting.

+ Sales Department: Supported in taking courses on basic marketing and new marketing methods via the internet.

+ Other Departments: Reception, Room Service, Kitchen, Security, and Restaurant are offered specialized courses relevant to their roles.

Leaders are encouraged to participate in postgraduate training programs at prestigious universities and high-level management courses at reputable training centres in the city.

In 2023, the hotel organized 350 training courses with 87 Standard Operating Procedures (SOPs) for professional skills for departments such as Reception, Restaurant, Housekeeping, Bar, Kitchen, and Security.

- Salary and Benefits for Employees

+ Salary Structure

Salary and bonuses play a crucial role in enhancing labor productivity and reinforcing employee loyalty to the hotel. Therefore, salary calculation and payment must be done

transparently, and all related issues need to be resolved through communication between departments and between management and employees.

Bonuses and allowances are determined based on the responsibilities and duties of each employee. Employees with higher positions and greater responsibilities will receive higher bonuses and allowances.

+ Benefits:

Benefits are not paid directly in cash but are provided in the form of life-supporting advantages for employees. Benefits are divided into two main types:

+ Mandatory Benefits:

Including social insurance, health insurance, and unemployment insurance as per legal regulations, along with bonuses on holidays and Tet. The hotel also provides PTI health cards for employees and their families, depending on their level.

+ Additional Benefits:

Including rest and recreational policies with organized excursions, tours, and free tickets. The hotel organizes three trips per year, including a spring trip, a summer vacation, and an overseas trip for employees with outstanding achievements. Additionally, the hotel offers Paradise Bao Son tickets, ranging from 6 to 20 tickets per year depending on position and seniority. Employees and their families receive a 50% discount on medical services at Bao Son General Hospital. There is also a preferential policy for purchasing Bao Son real estate.

+ Work Environment and Equipment

Bao Son Hotel is committed to creating a positive work environment and providing maximum support for employees to enhance work efficiency. A friendly, open, and harmonious work environment helps strengthen the connection between management and employees.

The hotel also provides modern working facilities, such as high-quality computers and Smile software for the operations division and Base software for the office division, to improve labor productivity while attracting and retaining talent.

+ Competition and Rewards

The competition and reward system is an important tool to encourage employees to contribute and remain loyal to the hotel. Competitive activities are organized to motivate and promote personal development as well as employee work efficiency.

4.3. Overall Evaluation of Human Resource Management at Bao Son Hotel

4.3.1. Achievements

Improving the quality of human resources has always been an urgent requirement for every organization, as human resources play a decisive role in the success or failure of a business. Recognizing this, the management of Bao Son Hotel has made significant efforts in human resource management, building and developing its workforce to achieve the organization's common goals. Although there are still some limitations, Bao Son Hotel has achieved certain successes in the field of human resource management:

+ Building and developing a team of young, dynamic workers who are willing to learn and absorb new things to achieve higher work efficiency.

+ Creating a friendly work environment, with a cheerful, united, fair, and democratic atmosphere.

+ Continuously conducting training in all departments in various forms. Encouraging study at local educational and vocational institutions to improve employee skills and qualifications.

+ Over the years, company leadership, from the Board of Directors to department heads and deputies, has always been concerned about and supported employees. This support is not only about caring for employees' lives but also involves understanding and talking with employees to learn about their difficulties at work to provide help and create working conditions when needed. This helps employees feel secure at work, enhancing collective cohesion and increasing employee loyalty to the company.

+ The recruitment process has seen many innovations. Instead of mainly posting ads in local newspapers and hiring the children of current employees, the hotel now uses more effective methods, such as posting on the hotel's Facebook page, the hotel's website, and major job sites. This helps more people know about the hotel's recruitment needs. The important thing is to find new, young, dynamic, and qualified staff. The working capacity of employees has gradually improved.

4.3.2. Limitations and Causes

a. Limitations

Employees' foreign language skills are still low, with few able to communicate fluently in English within the hotel. Additionally, many tourists come from countries such as South Korea, Japan, and France, where many do not use or know English, while hotel staff do not know those languages.

Human resource planning is still rudimentary and lacks scientific rigor. It is often reactive—addressing staff shortages only when they occur in a department. This causes frequent staff shortages, especially during peak seasons.

The reward and recognition system mainly relies on the opinions of the Board of Directors and department heads, lacking a standard or clear regulation on when to reward and the basis for determining the reward value. Therefore, the reward system at the hotel has not effectively encouraged all employees to strive to complete their tasks.

The training and development of human resources have not received adequate attention. The training process often does not align with reality or meet the needs of those needing training, leading to low effectiveness.

The salary system still has many inconsistencies. Allowances are often calculated without a clear basis, and the salary employees receive does not match the effort they put in. Although the company's leadership has made progress in building a skilled, high-spirited workforce, the increasing market competition, with tourists from many countries speaking different languages, has revealed limitations in human resource management at Bao Son Hotel. In the future, the leadership needs to improve human resource planning, recruitment, training, and employee

evaluation to motivate employees to continue learning and working harder. Enhancing the level and quality of human resources is the most sustainable and effective competitive tool.

b. Causes

There are several reasons why human resource management at Bao Son Hotel still has many limitations; some of the main reasons can be identified as follows:

The hotel staff is ageing, with many employees working for 20-30 years, limiting their ability to learn. The hotel has not provided suitable support for employees to improve their language skills, and mutual learning within the hotel in this area is also very limited.

The importance of human resource planning has not been adequately assessed, so this task remains of low quality and temporary for the hotel.

The criteria for evaluating and grading employee performance have not been scientifically, fairly, and reasonably established.

The salary system is still uniform and egalitarian, not truly motivating employees to strive in their work.

Training and developing human resources have not been given due attention, and there is no appropriate investment policy for this important task.

4.4. Managerial Implications for Enhancing Human Resource Management at Bao Son Hotel

Recruitment: Improve the recruitment process by focusing on the quality of external candidates, especially from universities. Gradually shift recruitment towards those with a university degree to reduce training costs and enhance human resource capabilities.

Training and Development: Training is a long-term investment that helps the hotel have a skilled workforce, increasing productivity and competitiveness. A training plan needs to be developed based on capacity, job requirements, and skill development for different groups of employees, from management to direct labor. Special attention should be given to training in management, language, and IT skills.

Workforce Allocation and Utilization: Improve labor allocation, build clear job descriptions for positions, enhance management skills, and be flexible in workforce distribution. Cross-train employees to handle peak season overloads, reducing the need for seasonal hires.

Labor Relations: Create a positive work environment, improve facilities, enhance employee welfare, organize recreational activities, and reward employees to motivate and engage them.

Salary Management: Establish a fair and legal salary system based on work results and clear agreements. Ensure that salaries are commensurate with qualifications and work efficiency, creating motivation for employees.

5. CONCLUSIONS

The tourism industry is currently facing significant opportunities as Vietnam increasingly integrates into the global economy. The rapid increase in the number of foreign tourists coming to Vietnam not only creates jobs but also contributes to increasing income for local residents.

However, these great opportunities also come with significant challenges. Competition in the tourism industry is becoming increasingly fierce as the number of restaurants and hotels increases substantially. This situation presents an urgent need for businesses to improve and refine themselves to enhance their competitiveness. In this context, improving the quality of the workforce and innovating human resource management play a crucial role in creating and maintaining a sustainable competitive advantage.

Through the study conducted at Bao Son Hotel, the importance of human resource management for the development of a business becomes evident. This research has systematized the theoretical foundations of human resource management and analyzed the current state of HR management at the hotel, covering aspects such as labor allocation and utilization, salary, labor relations, training and development, and recruitment. The study has identified the strengths, limitations, and causes of the limitations in HR management at the hotel. Based on this, the study proposes five groups of solutions to improve human resource management at Bao Son Hotel, including labor allocation and utilization, salary, labor relations, training and development, and recruitment.

- Labor Arrangement and Utilization

Optimize Task Assignment: Ensure that tasks are assigned to the right individuals based on their capabilities and skills, thereby minimizing resource waste and increasing labor productivity.

Develop a Flexible Organizational Structure: Create a mechanism for flexible personnel allocation between departments when necessary, especially during peak tourist seasons, to ensure the hotel's operational efficiency.

Regular Performance Evaluation: Utilize clear KPI indicators to assess and improve work performance.

- Compensation

Build a Competitive Salary and Bonus System: Compare the hotel's salary policies with industry standards to establish a competitive compensation system that retains talent.

Enhance Incentive Bonus Schemes: Increase bonuses based on job performance and individual contributions to motivate employees to perform better.

Transparency in Salary Policies: Establish a public process for salary and bonuses to build trust and transparency in management.

- Labor Relations

Improve the Work Environment: Create a friendly, respectful, and supportive work environment to enhance employee engagement with the hotel.

Quickly Resolve Conflicts: Establish a transparent and rapid conflict resolution mechanism for labor disputes to prevent negative impacts on the workplace.

Enhance Dialogue Between Management and Staff: Conduct regular meetings between leadership and employees to listen to feedback and improve labor relations.

- Training and Development

Establish Continuous Training Programs: Provide regular training courses in soft skills, foreign languages, and professional competencies to enhance the quality of human resources.

Development-Oriented Training: Ensure that training programs are designed to help employees advance their careers, fostering long-term commitment to the hotel.

Encourage Learning from Practice: Create opportunities for employees to learn from different departments or gain practical experience with customers to enhance their skills.

- Recruitment

Improve Recruitment Processes: Use technology to identify potential candidates, improve the quality of recruitment, and shorten selection time.

Build a Recruitment Brand: Establish the image of Bao Son Hotel as an ideal workplace with good benefits and a professional environment to attract talented applicants.

Focus on Quality Recruitment: Ensure that the recruitment process rigorously selects employees whose skills align with the hotel's long-term development strategy.

To fundamentally and sustainably improve human resource management, it requires close attention from the leadership and the consensus of all staff members. The competitive environment is constantly changing, so human resource management also needs to be flexible and adapt to these changes. The author hopes that the proposed solutions will contribute to improving human resource management at Bao Son Hotel in a positive and sustainable direction.

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FRAMEWORK FOR BUDGET PROPOSAL PRIORITIZATION FOR STRATEGIC RESOURCE ALLOCATION IN UNIVERSITIES

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ABSTRACT

Universities worldwide face the challenge of optimizing limited financial resources while striving for excellence in their functions. Thus, an efficient budgeting process must be done to address the needs of the universities while ensuring that these needs are still within their fiscal space. The challenge of prioritizing university proposals for resource allocation is maintaining transparency and fairness along the process. Hence, this study was conducted to establish a framework for prioritizing budget proposals using a multicriteria decision-making tool called the Analytic Hierarchy Process (AHP). Six criteria were identified: alignment and relevance, impact and potential benefits, resource cost, relative need, urgency, and implementation readiness. Results revealed that urgency and implementation readiness were the top factors the respondents considered most important in prioritizing funding proposals. The findings underscore the necessity for universities to address immediate needs and capitalize on time-sensitive opportunities. Additionally, the study highlights the importance of aligning proposals with institutional goals, ensuring implementation readiness, and balancing cost considerations. The structured framework provided by AHP enhances transparency, rigor, and efficacy in resource allocation, offering valuable guidance to policymakers, administrators, and stakeholders.

Keywords: Analytic Hierarchy Process (AHP), decision-making framework, proposal prioritization, university budget allocation

1. INTRODUCTION

Universities worldwide face the significant challenge of optimizing their tight finances while striving for excellence in their primary functions as higher education institutions. Tight finances and scarce resources often hinder their development and ability to achieve global ranking and recognition (Chattopadhyay, 2022; Sharma & Sharma, 2021). This issue is particularly evident in public higher education institutions (HEIs) that rely heavily on state appropriations. Although universities are innovating to become more self-reliant, they still struggle to manage their fiscal space amidst numerous demands from both internal and external domains.

In most cases, funding for research, instruction, extension, or infrastructure development requires proponents to submit proposals for review by higher authorities. This raises the critical question: who gets a slice of the limited financial pie? Effective planning and budgeting approaches are necessary to carefully consider various proposals and their relative priorities. However, existing approaches often rely on subjective judgments or simple scoring systems, which can fail to capture the nuanced trade-offs and interdependencies among different funding requests (Libing et al., 2014). Budgets are frequently allocated based on historical patterns, neglecting a thorough evaluation of current institutional needs and priorities. Consequently, resources are often allocated less effectively than ideal, complicating the management of growing funding requests from numerous academic and administrative units.

Globally, senior officials and executives of higher education institutions employ various budgeting techniques to maximize budget allocation mechanisms. These techniques include incremental, zero-based, activity-based, central-based, and performance-based budgeting (West, 2023). However, the complexity of university processes sometimes reveals drawbacks in these approaches, such as budgetary slack, inflexibility, short-term orientation, and the need for solid checks and balances. This underscores the need for systematic policies to create a coherent method of budget allocation aligned with the strategic goals of universities (Conesa Carril et al., 2020; Mah'd & Buckland, 2009).

To address these challenges, multicriteria decision-making techniques like the Analytic Hierarchy Process (AHP) have proven efficient in financial planning processes. A key benefit of AHP is its ability to rank multiple factors more effectively, reducing the risk of rating bias and ensuring equitable evaluation of all proposals. AHP facilitates the determination of priority factors for special consideration in decision-making processes and has been effective in budget allocation across various contexts, including disaster management operations (Sharma & Sharma, 2021), cooperative alternatives (Huang & Chen, 2024), and healthcare systems and organizations (Homauni et al., 2023). AHP provides a structured method for considering multiple factors and available options, allowing decision-makers to structure complex problems into pairwise comparisons for more rational and transparent decisions (Lucas et al., 2017; Promentilla et al., 2018; Saaty, 1988).

Despite its effectiveness in other domains, AHP is not commonly used in university budgeting. This study aims to fill this gap by applying AHP to develop a framework for ranking proposals to inform university budget allocations. By adopting AHP, universities could improve existing mechanisms for allocating limited financial resources, introducing a more structured approach to evaluate various proposals and ultimately enhancing the efficiency of financial resource distribution.

2. LITERATURE REVIEW

Proposal prioritization of the university budget raises the issue of how to distribute resources efficiently. This is explored within several research works attempting to explain various factors interrelated to the budget distribution and decision mechanisms of the university and other public organizations. Various published reports focused on the need to use systematic methodologies, such as AHP, to improve budget allocation. AHP is a structured decision-making approach that can be utilized while ranking proposals vis-à-vis multicriteria (Vaidya & Kumar, 2006). AHP, considering project benefits, budget limitations, and stakeholders' interests, can introduce transparency and efficiency of practice in making contemporary universities' budget allocation.

Previous research has also tackled the idea that universities should be evidence-based in their budgeting practices. Thus, according to Ningtyas and Salomo (2020), in-depth evaluations should be carried out, and budget allocations need to be aligned with the identified needs to optimize resources, reduce wastage, and improve support for critical service provision. On the other hand, Mah'd (2014) emphasized a structural approach to university budgets, where the issue of accountability and departmental responsibility drives the process of resource allocation. This

makes it possible to build clear accountability mechanisms at all levels of the hierarchy, making the process of budget allocation more effective.

Another frequently raised issue is the institutional dynamic and its influences on budgetary reforms within the public university. Research works like those by Jalali Aliabadi et al. (2021) identified the interplay between stability and change in budgeting systems, underlying the necessity to understand the acts of different stakeholders in resource allocation processes. Thus, it is noted that budget allocation processes are complex and need structured methodologies, such as AHP, to overcome them. More so, past studies underscored the need to optimize resource allocation since the higher education sector faces budget cuts. Ideally, it is essential to determine proper resource allocation to maintain or increase the university's performance compared to its co-competitors. It has been shown that AHP can help determine the weights of project activities, providing a basis for evaluating resource allocation, quality standards preservation, project execution, and delivery.

AHP, in general, is a theory and a method for relative measurement. One of the advantages of using AHP is in the analysis of relative measurement of intangible quantities by applying pairwise comparisons between alternatives as inputs that produce a rating of alternatives (Brunelli, 2015). One research that applied AHP in the assessment was that of Lucas et al. (2017), wherein the utilization of AHP was in the systematic evaluation of an ICT workshop designed for teachers. In this assessment method, there were four major criteria identified, and it was further disaggregated into 24 sub-criteria, wherein their relative importance was solved based on the pairwise comparison of each criterion vis-à-vis to the other, which determined each relative weight of the use of each indicator that was used in the evaluation of the overall workshop evaluation index. Another research that incorporated AHP in the assessment was that of Chen et al. (2015) wherein the teachers' teaching performance was assessed employing the combination of fuzzy-AHP and fuzzy comprehensive evaluation method. Their research defined a performance evaluation index after determining the factors and sub-factors that measure and evaluate teaching performance.

The observations of those previously done works above set a perfect foundation for AHP applicability in the context of resource management within the university.

3. MATERIALS AND METHODS

3.1. Criteria Identification

- Alignment and Relevance

Alignment and relevance are crucial aspects that need to be addressed in budgetary planning to ensure that resources are allocated to support the organization's goals and objectives (Kwarteng, 2018). This needs to be ensured to maximize the effectiveness of resource allocation (Libby & Lindsay, 2010). This criterion assesses the degree to which the project, program, or proposal aligns with the university's overarching goals, mission, vision, and strategic direction. This criterion is also among the issues Acido & Kilongkilong (2022) raised in their study on resource management

practices of a higher education institution in the Philippines. Moreover, it was noted in the study of Ghonim et al. (2022) that strategic alignment has a significant and positive impact on decision effectiveness.

- Impact and Potential Benefits

Impacts and potential benefits assess how the project, program, or proposal will benefit the students, faculty, staff, the local community, and the university at large. It measures short- and long-term impacts, such as improved learning experiences, student retention, research productivity, and positive contributions to the university's reputation. Understanding the potential outcomes and benefits of investing in certain areas helps focus the priorities on the highest possible return on investment. This implies that the project needs to be aligned with the university's strategic plan to maximize the benefit to the entire organization (Johnson, 2019).

- Resource Cost

Resource cost focuses on the financial and resource implications of the project, program, or proposal. It involves estimating the costs associated with various aspects of the initiative, including personnel, equipment, facilities, and ongoing operational expenses. Evaluating resource costs helps determine the project's financial sustainability and alignment with the university's budgetary constraints. In essence, need for universities to find a balance between cost and achieving desired outcomes (Acido & Kilongkilong, 2022).

- Relative Need

Relative need assesses the importance of the project, program, or proposal within the context of the university's strategic priorities. It considers whether the initiative addresses critical needs that significantly impact the institution's performance, growth, and competitiveness compared to other potential projects. This factor is essential to consider as it would positively impact the competitive position of higher education institutions and their functions in the long run (Yurchyshena, 2022).

- Urgency

A sense of urgency is a critical success factor in resource planning (Basri, 2016). According to John P. Kotter, in his book "A Sense of Urgency," a sense of urgency is the crucial first step in leading successful organizational change. Kotter argues that without a true sense of urgency, any change effort is doomed to fail (Kotter, 2008). Urgency pertains to the time-sensitive nature of the project, program, or proposal. This evaluates the timeline for implementation, considering external factors, such as market trends, competition, regulatory changes, or emerging opportunities. Projects with higher urgency may require immediate attention to capitalise on timely advantages.

- Implementation Readiness

Implementation readiness considers the preparedness of the university to execute the project, program, or proposal effectively. It includes evaluating the availability of necessary skills, expertise, and capacity, as well as the existence of a well-structured project plan and clear communication channels. This criterion also assesses whether any prerequisites need to be met before the initiative can commence. In the Philippines, the Department of Budget and Management

(DBM) stipulates implementation readiness as a major requirement for the preparation of agency budget proposals for funding by the government (National Budget Memorandum No. 151, s. 2024 Budget Priorities Framework for the Preparation of the FY 2025 Agency Budget Proposals under Tier 2, 2024). DBM requires this to optimize the allocation of limited fiscal space while giving priority to programs and projects that can be implemented and completed within the fiscal year.

Figure 1 presents the hierarchical structure of the prioritization of project proposals for resource allocation based on the above-identified criteria. Meanwhile, Table 1 presents how each criterion differs from the other criteria.

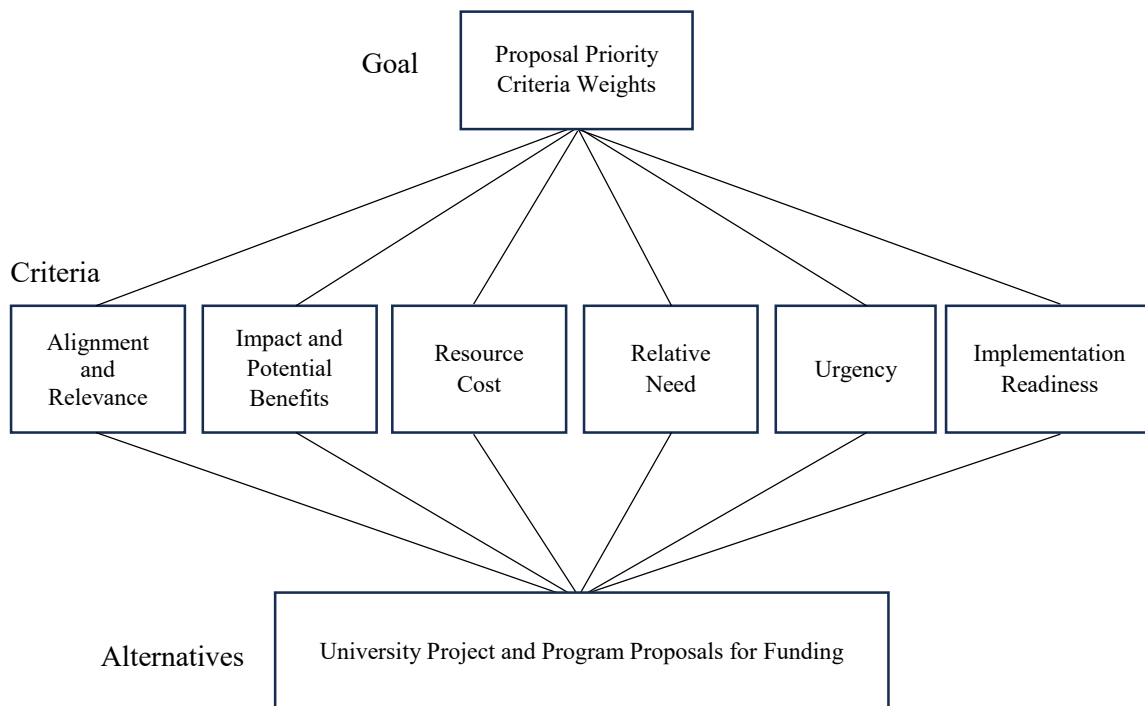


Figure 1. AHP hierarchical structure on prioritization of project proposals for resource allocation

Table 1. Definition, key considerations, and the difference of each criterion compared to the other

| Criterion | Definition | How it Differs from Other Criteria |
|-------------------------------|---|--|
| Alignment and Relevance | Assesses how well a proposal aligns with the university's strategic goals and priorities | Focuses on strategic fit, not outcomes, cost, criticality, time sensitivity, or preparedness |
| Impact and Potential Benefits | Measures the potential positive outcomes and impact a proposal can have on the university | Focuses on outcomes, not strategic fit, cost, problem addressed, timing, or preparedness |
| Resource Cost | Evaluates the financial and resource implications of a proposal | Focuses on cost, not strategic fit, outcomes, importance, time sensitivity, or preparedness |
| Relative Need | Evaluates the importance and necessity of a proposal compared to others | Focuses on criticality, not strategic fit, outcomes, cost, time sensitivity, or preparedness |

| Criterion | Definition | How it Differs from Other Criteria |
|--------------------------|--|---|
| Urgency | Focuses on the immediate necessity or time sensitivity of a proposal | Focuses on timing, not strategic fit, outcomes, cost, importance, or preparedness |
| Implementation Readiness | Assesses how prepared a proposal is to be executed successfully | Focuses on preparedness, not strategic fit, outcomes, cost, importance, or immediate action |

3.2. Analytic Hierarchy Process and its Application in the Prioritization Study

Using Saaty’s Conventional AHP numerical scale for verbal judgments presented in Table 2, the identified expert respondents consisting of the select Executive Committee, Administrative Committee, Academic Committee, and other Teaching and Support personnel in the University of Science and Technology of Southern Philippines (USTP) Claveria Campus, Philippines, were asked to complete the pairwise comparison questionnaire provided to them to compare the six prioritization criteria identified: (1) alignment and relevance, (2) impact and potential benefits, (3) resource cost, (4) relative need, (5) urgency, and (6) implementation readiness. Their responses were given their equivalent numerical value, and their geometric mean were computed. Each indicator’s geometric mean was inputted into the pairwise comparative judgment matrix (PCJM). A PCJM is a positive reciprocal square matrix A of size n (Equation 1):

$$A = \begin{bmatrix} 1 & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{n1} & \cdots & 1 \end{bmatrix} \quad \text{where } a_{ij} = \frac{1}{a_{ji}} \quad (1)$$

Where A is the positive reciprocal square matrix and n is the size of the reciprocal square matrix. a_{ij} a nonzero value that estimates the ratio (w_i/w_{ij}) of the elements’ weights in the i th row to that of the element in the j th column (Lucas et al., 2017). To determine the weights of the relative importance of each criterion, several questions based on the comparison of the elements were generated using the formula in Equation 2.

$$N_{PQ} = \frac{n(n-1)}{2} \quad (2)$$

where: N_{PQ} is the total number of pairwise questions.

Table 2. Saaty’s Conventional AHP numerical scale for verbal judgments (Saaty, 1988)

| Numerical Value | Verbal Judgement |
|-----------------|------------------------------|
| 1 | Equally important |
| 3 | Moderately more important |
| 5 | Strongly more important |
| 7 | Very strongly more important |
| 9 | Extremely more important |

An example pairwise question is presented in Figure 2.

Comparing “**Alignment and Relevance**” and “**Impact and Potential Benefits**” *
 which of the two criteria is more important in resource allocation?

Alignment and Relevance

Impact and Potential Benefits

They are equally important

If not equally important, how important is your choice over the other?

Moderately more important

Strongly more important

Very strongly more important

Extremely more important

Figure 2. Pairwise comparison question in comparing “Alignment and Relevance” and “Impacts and Potential Benefits”

The verbal judgments of the respondents for each comparison were converted into numerical form following equation 1 using Saaty’s fundamental 9-point scale provided in Table 1. For example, if two indicators are classified as equally significant, this means that the corresponding value of 1 was given to each indicator. If indicator *a*, however, is rated extremely more relevant than indicator *b*, then indicator *a* gets a value of 9, and indicator *b* gets 1/9.

The ratio-scale priority weights and the consistency of these judgments (expressed as consistency ratio) were computed using AHP’s principal right eigenvector method shown in equation 3, which can also be done by using the normalized row geometric mean technique (Lucas et al., 2017)

$$Aw = \lambda_{\max} w; \sum_{i=1}^n w_i = 1(3)$$

where *w* is the normalized eigenvector whole λ_{\max} is the principal eigenvalue of the pairwise comparison matrix *A* of order *n*. If the comparative judgments a_{ij} is expressed numerically with a known ratio of weights (w_i/w_{ij}) and these judgments are cardinally consistent such that $a_{ik} = a_{ij} \times a_{jk}$, $\lambda_{\max} = n$ that is the number of elements being compared. On the other hand, for inconsistent pairwise comparison matrices, $\lambda_{\max} > n$. Such deviation from *n* is expected as the subjective

judgments are approximations of the ratio-scale priority weights. To measure the consistency in judgments, equation 4 was used

$$CR = \frac{CI}{RI} \quad (4)$$

where *CI* is referred to Saaty's consistency index defined by Equation 5

$$CI = \frac{\lambda_{\max} - n}{n - 1} \quad (5)$$

and *RI* value depends on *n* and it is the average consistency index of randomly generated reciprocal matrices. Note that at most ten percent of this *RI* is suggested by Saaty as the tolerable value for *CI* of the pairwise comparative judgment matrix, i.e., $CR < 0.10$.

4. RESULTS AND DISCUSSIONS

The responses of the expert respondents were analyzed using the Analytic Hierarchy Process (AHP), and Table 3 presents the pairwise comparison judgment matrix based on the responses of the expert respondents. The values in Table 3 are reflected in decimal form to better represent the geometric mean of the respondents' responses. It can be noted that the values at the upper and the lower diagonals are reciprocals of each other.

Table 3. Pairwise comparison judgment matrix

| Criteria | AAR | IPB | RC | RN | U | IR |
|----------|------|------|------|------|------|------|
| AAR | 1 | 0.93 | 0.98 | 0.36 | 0.35 | 0.42 |
| IPB | 1.07 | 1 | 1.53 | 1.08 | 0.63 | 0.75 |
| RC | 1.02 | 0.66 | 1 | 1.33 | 0.43 | 0.79 |
| RN | 2.81 | 0.93 | 0.75 | 1 | 0.59 | 0.67 |
| U | 2.89 | 1.59 | 2.32 | 1.70 | 1 | 1.75 |
| IR | 2.40 | 1.33 | 1.27 | 1.48 | 0.57 | 1 |

AAR – Alignment and Relevance; *IPB* – Impact and Potential Benefits; *RC* – Resource Cost; *RN* – Relative Need; *U* – Urgency; *IR* – Implementation Readiness

By normalizing the pairwise comparison judgment matrix, we finally get the eigenvalue, which represents the relative weight of each criterion in the decision-making process. Table 4 shows the normalized pairwise matrix and the computed eigenvalue.

Table 4. Normalized pairwise matrix with the computed eigenvalue

| | AAR | IPB | RC | RN | U | IR | Eigenvalue |
|-----|------|------|------|------|------|------|------------|
| AAR | 0.10 | 0.15 | 0.13 | 0.06 | 0.11 | 0.09 | 0.1047 |
| IPB | 0.10 | 0.16 | 0.20 | 0.16 | 0.18 | 0.15 | 0.1607 |
| RC | 0.09 | 0.10 | 0.12 | 0.18 | 0.11 | 0.14 | 0.1226 |
| RN | 0.25 | 0.15 | 0.10 | 0.15 | 0.17 | 0.13 | 0.1617 |
| U | 0.24 | 0.23 | 0.28 | 0.23 | 0.26 | 0.30 | 0.2542 |

| | | | | | | | |
|----|------|------|------|------|------|------|--------|
| IR | 0.22 | 0.21 | 0.16 | 0.22 | 0.17 | 0.19 | 0.1961 |
|----|------|------|------|------|------|------|--------|

AAR – Alignment and Relevance; IPB – Impact and Potential Benefits; RC – Resource Cost; RN – Relative Need; U – Urgency; IR – Implementation Readiness

A consistency test was done to determine whether the respondent's judgments were consistent, and the consistency measures of each criterion were presented in Table 5.

Table 5. Consistency measures of the criteria

| Criteria | AAR | IPB | RC | RN | U | IR | Consistency Measure ($\frac{\text{row sum}}{\text{row eigenvalue}}$) |
|----------|------|------|------|------|------|------|---|
| AAR | 0.10 | 0.15 | 0.13 | 0.06 | 0.10 | 0.09 | 6.1189 |
| IPB | 0.11 | 0.16 | 0.21 | 0.17 | 0.18 | 0.15 | 6.1260 |
| RC | 0.10 | 0.10 | 0.12 | 0.19 | 0.11 | 0.15 | 6.1597 |
| RN | 0.28 | 0.15 | 0.11 | 0.16 | 0.17 | 0.14 | 6.1851 |
| U | 0.26 | 0.22 | 0.29 | 0.24 | 0.25 | 0.30 | 6.1452 |
| IR | 0.24 | 0.21 | 0.16 | 0.23 | 0.17 | 0.20 | 6.1660 |

AAR – Alignment and Relevance; IPB – Impact and Potential Benefits; RC – Resource Cost; RN – Relative Need; U – Urgency; IR – Implementation Readiness

As noted in Table 6, the consistency ratio (CR) of the derived criteria weights is 0.0242, which is significantly lower than the 0.10 threshold, suggesting that the respondents' judgment is relatively consistent. From here, we draw out that based on the judgment of the expert respondents, in prioritizing proposals for resource allocation, we follow this judgment: Urgency > Implementation Readiness > Relative Need > Impact and Potential Benefits > Resource Cost > Alignment and Relevance.

The highest weight assigned to urgency (0.2542) suggests that proposals' immediate needs and time-sensitive nature play a critical role in resource allocation decisions (Kotter, 2008). This implies that projects or initiatives addressing pressing issues or opportunities must be given precedence in university funding allocation. The university should be prepared to swiftly respond to emerging needs or opportunities to maintain competitiveness and relevance.

Table 6. Consistency Ratio Computation

| AHP Parameter | Formula | Value |
|----------------------|--|--------|
| Principal eigenvalue | λ_{\max} = mean of the consistency measure | 6.1502 |
| Consistency Index | $CI = \frac{\lambda_{\max} - n}{n - 1}$ | 0.0300 |
| Random Index | RI at n=6 | 1.24 |
| Consistency Ratio | $CR = \frac{CI}{RI}$ | 0.0242 |

Following urgency, implementation readiness (0.1961) came second in terms of criteria weight, indicating that the feasibility and preparedness of a proposal for execution are crucial factors. This implies that projects with well-defined plans, resources, and structures are favored for efficient implementation (Burek, 2014). Universities should focus on enhancing project management capabilities and providing necessary support to ensure the successful execution of prioritized initiatives. It is also interesting to note that this criterion got the second-highest weight, considering that in the Philippine budget prioritization set by the Department of Budget and Management (DBM), implementation readiness gets a significant weight in the evaluation of agency proposals (National Budget Memorandum No. 151, s. 2024 Budget Priorities Framework for the Preparation of the FY 2025 Agency Budget Proposals under Tier 2, 2024). In fact, in the evaluation of Tier 2 Proposals for Capital Outlay funding, implementation readiness within the fiscal year is scored 30 points where the agency gets all or nothing based on RTF-SUCS BPA No. 4 dated May 3, 2023 (Laceras, 2023).

Meanwhile, relative need (0.1617) and impact and potential benefits (0.1607), almost had similar weights. This is not an unexpected result, considering that both factors are relatively associated with the university's strategic direction. Both factors are outlined in the strategic plan to address the critical needs of the university and provide positive outcomes (Johnson, 2019; Yurchyshena, 2022).

Interestingly, the weight of the criteria for resource cost is only 0.1226, which suggests that while cost considerations are important, they are not the primary determinants in prioritizing funding allocation. This indicates that in order to manage their resources effectively, colleges should use a proactive approach that strikes a balance between cost-effectiveness and meeting strategic priorities and pressing demands.

Lastly, alignment and relevance had the lowest weight (0.1047), suggesting that other factors have more influence over them. This does not, however, ultimately lessen their value. Proposals must align with the university's mission, vision, values, and strategic objectives to maintain coherence and promote synergy among various activities. Prioritizing initiatives that directly support an institution's fundamental mission and strategic aims while staying relevant to the changing requirements of the community and stakeholders is essential for universities.

These guide the university officials and the top management in deciding which proposal gets funding. This answers the critical question: who gets a slice of the limited financial pie?

The practical implications of the implementation of the AHP extend beyond the specific findings of the present study in order to develop a generalizable framework for application by any other institution. Therefore, adopting the AHP for various universities will make the decision-making process regarding resource distribution streamlined, methodical, transparent, and fair. This enables the ranking of proposals innumerable by different criteria, including urgency, readiness of implementation, and potential effect on the university strategy's objectives, thereby ensuring that important needs and high-impact projects get the right amounts of funding.

AHP also helps bring a set of different perceptions to the level of different respondents, allowing one to have the perception of stakeholders both within and outside the university. Such

an inclusive approach enriches the evaluation process, and therefore, the funding decisions taken get legitimacy and acceptance. Engagement of stakeholders means that the prioritization process incorporates a large pool of insights so that the resource allocation is more informed and balanced.

These criteria and processes for prioritization, thus, need to be reviewed and improved on a regular basis to ensure an effective resource management process. This will put a university in a position to optimally use its scarce financial resources in response to the ever-changing needs and challenges in support while ensuring excellence in its three core functions of education, research, and community engagement. The AHP decision-aid tool, in this regard, will be a strategic asset in the hands of universities in achieving the various set objectives and, at the same time, help make budgetary processes transparent and accountable in the long run.

5. CONCLUSIONS

This study examines university funding proposal prioritization by taking on the Analytic Hierarchy Process (AHP). Multiple expert respondents made pairwise comparisons in determining criteria weights to arrive at a systematic decision-making framework. In totality, the results draw attention to the relative importance of six criteria: Urgency > implementation readiness > relative need > impact and potential benefits > resource cost > alignment and relevance. Urgency emerges as the primary driver of such resource allocation decisions, therefore underpinning the justification for universities to address immediate needs and take time-sensitive opportunities seriously for institutional competitiveness and relevance. Applying the above implications trickles down to the university planning and budgeting processes. It realizes a transparent, rigorous, and efficient process of providing resources with integrity. The capacity to optimize limited resources and increase accountability for results from the funded initiatives is realized when the universities align with the goals of the institution, meet the needs of the stakeholders, and indicate their ability to implement. Policymakers, administrators, and other stakeholders will find a strong resource in this structured framework, allowing smarter investment in education, research, and societal impact. Hence, universities should consider using the AHP framework, as captured in this study, to increase transparency, rigor, and efficiency in the process of resource allocation. This means that the institution should weigh multiple criteria systematically and leverage expert judgment to ensure the appropriateness of funding decisions for the strategic goals for which they are created and deliver the greatest impact. It is also important for universities to periodically assess and refine their prioritization processes based on feedback and changes witnessed in priority areas and those brought about by changes in external conditions. Periodic assessment may also open up areas of improvement, thus making the process rational and adaptive to the changing needs and opportunities. Furthermore, effective communication and stakeholder involvement are key to getting buy-in and support for funding decisions. Universities should actively engage faculty, staff, students, and external partners for feedback, allay fears, and build a common understanding of funding priorities and the set criteria for allocating resources. More research and development work shall be carried out to improve and refine AHP methodology in university funding allocations. Future studies may be done on innovative approaches, the application of new criteria or indicators,

and verifying the framework's application across different institutional settings to further enhance knowledge in investment and resource planning and budgeting.

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NON-COMPETE AGREEMENTS IN LABOR RELATIONS: COMPARATIVE STUDY OF THE LAWS OF MALAYSIA, SINGAPORE, PHILIPPINES, INDONESIA AND VIETNAM

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ABSTRACT

During the production and business process, enterprises must allow employees to access, exploit and use trade secrets to perform their tasks. Therefore, employees are sometimes the most dangerous competitors of an enterprise because they can access the enterprise's trade secrets and bring them to serve competitors or start their own business to compete with the former employer. Contracting non-compete agreements is considered one of the effective ways to prevent the disclosure of trade secrets by employees. Despite the benefits for enterprises, non-compete agreements have a negative impact on the right to work of employees. Therefore, different legal systems have different approaches to this type of agreement. In this article, the author analyzes the regulations on non-compete agreements in labor relations in some ASEAN member states, including Vietnam. On that basis, the author gives some suggestions for building a legal framework on non-compete agreements in ASEAN countries to harmonize the law in the ASEAN community.

Keywords: ASEAN; labor relation; non-compete agreement; trade secret.

1. INTRODUCTION

In the context of the 4th Industrial Revolution and fierce global competition, enterprises tend to create and use competitive advantages to survive and develop sustainably in the marketplace. In order to protect these competitive advantages, keeping information confidential or trade secrets is extremely important. Signing non-compete agreements with employees is one way for enterprises to protect their trade secrets. A non-compete agreement, which can be a clause in an employment contract or an independent agreement, is an agreement between an employee and an employer that the employee may not work for a competitor, or engage in business that competes with the former employer, for a specified period of time after the termination of the employment contract. Entering into these agreements helps businesses limit the risk of trade secrets being disclosed by employees, especially employees who participate in the process of creating trade secrets or have the ability to access trade secrets during the course of work. However, this type of agreement negatively impacts employees' rights. Specifically, the employee's right to work, often considered a constitutional or human right, will be limited by the non-compete agreement. Therefore, some countries are quite cautious in recognizing the legal effect of this type of agreement.

The Association of Southeast Asian Nations (ASEAN) was established on August 8th, 1967 and officially had the status of a juridical person since the ASEAN Charter was signed by member states on November 20, 2007 (effective from December 15, 2008) (Hanoi Law University, 2013, p.18). Article 4 of the ASEAN Charter clearly identifies the 10 ASEAN member states as Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. December 31st, 2015 marked a new development milestone of ASEAN when the ASEAN Community (AC) was officially established with three pillars: (i) ASEAN Political Security Community (APSC); (ii) ASEAN Economic Community (AEC); and (iii) ASEAN Socio Cultural Community (ASCC) (Nguyen Sy Tuan & Le Thi Thanh Huong, 2017). In the AEC, free movement of labor is identified as one of the core elements (Bui Thi Ngoc Lan, 2018). The issue of free movement of labour is also identified as one of ASEAN's goals, specifically, Article 1(5) of the ASEAN Charter clearly stipulates: *“To create a single market and production base which is stable, prosperous, highly competitive and economically integrated with [...] facilitated movement of business persons, professionals, talents and labour; [...]”*. To facilitate the free movement of labour, the AEC Blueprint 2025 identifies, starting with Mutual Recognition Arrangements (MRAs), will allow practitioners in eight professional sectors (engineering services, nursing services, architectural services, surveying qualifications, medical practitioners, dental practitioners, accountancy services, tourism professionals) to practice in other ASEAN countries (ASEAN, 2015).

In order for employees to be able to move freely and easily within the ASEAN member states, it requires that the labor legal framework of these member states have certain similarities. However, in non-compete agreements in labor relations (NCAs) cases, the laws of member states are still very different. Therefore, in this article, the author introduces and analyzes the legal framework on NCAs in some ASEAN member countries. On that basis, the author makes some suggestions on the legal framework on NCAs, which ASEAN member countries can consider in the process of perfecting their national laws, aiming towards *“One Vision, One Identity, One Community”*.

2. LITERATURE REVIEW

NCAs are not a new legal issue. Research on NCAs has been conducted by scholars around the world since quite early. Among them, the research of Blake (1960) is one of the typical studies related to the balance of interests of the parties to NCAs. In this article, Blake (1960) analyzed both the pro and con views of NCAs. Based on his analysis, Blake (1960) proposed the following recommendations: (i) NCAs should only be applied to employees in senior positions within the enterprise whose future activities are likely to cause significant damages to the enterprise; (ii) NCAs should be tailored to the circumstances of each employee (if this is not possible, appropriate employee categorisation should be undertaken and the content of NCAs should be tailored to minimise the burden on specific groups of employees); (iii) The content of NCAs needs to be flexibly adjusted to suit changes in practice, even being ready to terminate an NCA when it is felt to be no longer appropriate; (iv) Employers should consider providing financial support to employees who are unemployed due to non-compete obligations.

In addition to general studies on NCAs, studies on the legal framework on NCAs in ASEAN member countries are also analyzed and inherited by the author. For instance, studies by Phang (2000), Nadiyya (2021), Ashtaputre, Joglekar and Amandha (2022), Purnamasari, Syarief and Shahrullah (2023), Pomoy and Necesario (2023) have generalized the regulations on NCAs of Malaysia, Singapore, Philippines and Indonesia. Regarding the legal framework on NCAs in Vietnam, there are typical studies namely Doan Thi Phuong Diep (2015), Do Van Dai and Le Ngoc Anh (2019). Studies in Vietnam, in general, tend to support the view that the effectiveness of NCAs should be recognized, while setting limits or conditions for these NCAs to take effect at the same time.

3. METHODOLOGY

In this article, the author uses the comparative legal method as the main research method. The author uses this method to clarify the similarities and differences between jurisdictions in ASEAN regarding NCAs. Specifically, the author studies the laws on NCAs of Malaysia, Singapore, Philippines, Indonesia and Vietnam. Based on the results of comparative legal research, the author gives some suggestions for building a legal framework on non-compete agreements in ASEAN countries to harmonize the law in the ASEAN community.

In addition to the comparative legal method, the author also uses the written law analysis method and the judgment research method to analyze the legal framework on NCAs in some ASEAN member countries. Accordingly, in member states following the Civil Law tradition, where statutes are the most important source of law, the written law analysis method is the main method used to clarify legal issues on NCAs. In contrast, in member states following the Common Law tradition, where precedents are the most important source of law, the judgment research method is the main method used to clarify legal issues on NCAs.

4. RESULTS AND DISCUSSION

4.1. Malaysian law on NCAs

Article 28 of the Contract Act 1950 of Malaysia clearly states that: “Every agreement by which anyone is restrained from exercising a lawful profession, trade, or business of any kind, is to that extent void”. This Article also sets out three exceptions: (i) agreement not to carry on business of which goodwill is sold; (ii) agreement between partners prior to dissolution; and (iii) agreement between partners during continuance of partnership. The exceptions provided do not cover NCAs, so these agreements must comply with Article 28 of the Contract Act 1950 of Malaysia (Nadiyya, 2021). Besides, Malaysian labor law tends to prioritize protecting the rights of employees. For example, Article 7 of the Employment Act 1955 of Malaysia provides that any agreement less favourable to the employee than that provided by law shall be void. Thus, with these provisions of the Contract Act 1950 and the Employment Act 1955, NCAs that restrict employees from working for competitors or self-employment to compete with the former employer are invalid in Malaysia (Do Van Dai & Le Ngoc Anh, 2019).

4.2. Singapore law on NCAs

The foundation of Singapore's legal system is derived from England. The principles of common law and equity law were adopted into Singapore from the Second Charter of Justice 1826 (Phang, 2000). In 1993, the Parliament of Singapore passed the Application of English Law Act. Accordingly, the application of common law and equity has been officially stipulated in Article 3 of this Act. Therefore, it is understandable that there is no Singapore statute that mentions NCAs. In other words, the legal framework on NCAs depends on Singapore case law.

In Singapore, the courts apply the restraint of trade doctrine to assess the validity and enforceability of NCAs. Accordingly, an NCA is only acceptable if the employer can demonstrate that it has a legitimate interest which needs to be protected (Goh, Lee & Tham, 2014). In *Man Financial (S) Pte Ltd v Wong Bark Chuan David*, the Singapore Court of Appeal (2008) held that NCAs are generally unenforceable unless it can be shown that they are reasonable in protecting legitimate property rights (intellectual property rights). In this case, the restraint of trade doctrine is only applicable to the recognition of the legitimacy of NCAs if there is a public policy underlying the application of this doctrine and favors the maintenance of free trade agreements (the Singapore Court of Appeal, 2008).

In *Smile Inc Dental Surgeons v Lui Andrew Stewart*, the Singapore High Court (2011) reiterated the view that an NCA will not be enforceable if the employer fails to demonstrate that the provision is necessary to protect its legitimate proprietary interests and that the agreement is reasonable. Additionally, in this case, the Singapore High Court also set out the criteria for assessing the reasonableness of an NCA: (i) There exists a legitimate proprietary interest to be protected; (ii) The content of the agreement must be reasonable for the interests of the parties; (iii) The content of the agreement must be reasonable in reference to the interests of the public (the Singapore High Court, 2011).

When considering an NCA, the courts in Singapore require:

Firstly, an NCA must be limited to a certain period of time. Depending on the specific circumstances, the court may determine how long the non-compete obligation arising from this agreement is reasonable. Typically, an NCA with a time limit of 2 years or less may be considered.

Secondly, an NCA must be limited to a certain geographical space. If an NCA has no geographical limitations, the court may find the content of the agreement unreasonable. Similar to determining time limits, determining appropriate geographic limits depends on the specific case. However, in principle, the geographical scope should be limited to jurisdictions where the employer has actual (rather than intended) business operations and the relevant employee has been engaged in the employer's business operations. For example, in *MoneySmart Singapore Pte Ltd v Artem Musienko*, the Singapore High Court (2024) held that an NCA with a geographical limitation within Southeast Asia was unreasonable because the employer was only based in Singapore. In another case, *Shopee Singapore Private Limited v Lim Teck Yong*, the Singapore High Court (2024) concluded

that the NCA was unreasonable when it “*exclude Lim (employee) from being employed in all the markets where Shopee (employer) was operating, even though these are markets Lim was not even working in or had no responsibilities for, or had no specific information about, in the 12 months preceding the Termination Date*”.

Thirdly, an NCA must be limited to certain professional activities. If an NCA does not contain any limitations on the scope of professional activity, the court may declare it invalid. For example, in *Powerdrive Pte Ltd v Loh Kin Yong Philip and others*, the Singapore High Court (2018) declared an NCA, which was not confined to working for a rival company in the same or similar capacity as that in which the employee was working when employed by the previous employer, invalid. In general, an NCA must be limited to activities in which the employee is engaged in the business of the employer (Nguyen Thi Thanh Huong, Nguyen Thi Thu Ha, Nguyen Dinh Huy & Melissa Tan, 2023). For example, in *HT SRL v Wee Shuo Woon*, the Singapore High Court (2019) held that: “*Where an employer seeks to proscribe the types of business in which an employee may become engaged once employment is over, he can do so if he can establish a close connection between the restriction and the work done by the employee prior to leaving*”.

4.3. Philippine law on NCAs

In the Philippines, there is no provision for determining the validity or enforceability of NCAs (Guzman, Leong-Pambid, Valdecantos & Li, 2019). In *Dai-Chi Electronics Manufacturing vs Villarama*, the Supreme Court of the Philippines (1994) held that although an NCA dispute may be based on a provision in an employment contract, an NCA between an employer and an employee is not governed by the Labor Code of the Philippines but by the Civil Code of the Philippines. NCAs are generally accepted by Philippine courts on the basis of the principle of freedom of contract. Article 1306 of the Civil Code of the Philippines provides this principle as follows: “*The contracting parties may establish such stipulations, clauses, terms and conditions as they may deem convenient, provided they are not contrary to law, morals, good customs, public order, or public policy*”. Corresponding to this provision, Article 1159 of the Civil Code of the Philippines provides: “*Obligations arising from contracts have the force of law between the contracting parties and should be complied with in good faith*”.

Rolando C. Rivera vs Solidbank Corporation (the Supreme Court of the Philippines, 2006) is often considered a landmark case in determining the validity of NCAs in the Philippines. In this case, the Supreme Court of the Philippines (2006) affirmed that: “*freedom to contract must not be unreasonably abridged*”. However, the Supreme Court of the Philippines (2006) also required: “*Courts should carefully scrutinize all contracts limiting a man’s natural right to follow any trade or profession anywhere he pleases and in any lawful manner*”. Finally, the Supreme Court of the Philippines (2006) held that in assessing the validity of an NCA, the court should consider the following factors: “*(a) whether the covenant protects a legitimate business interest of the employer; (b) whether the covenant creates an undue burden on the employee; (c) whether the covenant is injurious to the public welfare; (d) whether the time and territorial limitations contained in the covenant are reasonable; and (e) whether the restraint is reasonable from the standpoint of public policy*”. About a year later, in the case of *Daisy B. Tiu vs Platinum Plans Phils. Inc.*, the Supreme

Court of the Philippines (2007) stated more simply that: “*a contract in restraint of trade is valid provided there is a limitation upon either time or place and the restraint upon one party is not greater than the protection the other party requires*”.

In contrast to other jurisdictions in ASEAN, the legal trend in the Philippines appears to be to protect business interests through litigation against former employees. Philippine law regulates non-compete agreements in a way that is more favorable to employers and with overall public policy considerations.

4.4. Indonesian law on NCAs

In Indonesia, there are no regulations that directly regulate NCAs. Therefore, to determine the validity of these agreements, it is necessary to consider the regulations in the relevant fields. However, the issue of NCAs in Indonesia is the conflict between protecting the legitimate interests of employers and the constitutional rights of employees. Specifically:

From a contract law perspective, Article 1601x of the Indonesian Civil Code provides that: “An agreement between the employer and the laborer, which restricts the latter-mentioned, following the termination of his employment, in his capacity to be employed in a certain manner shall be valid only if it has been agreed with an adult laborer in writing or in a regulation”. Based on this provision, in theory, Indonesian law allows employers and employees to enter into NCAs. However, Article 1335 of the Indonesian Civil Code also provides: “Any agreement without a cause, or concluded pursuant to a fraudulent or implausible cause, shall not be enforceable”. Thus, if an NCA has unreasonable content, it will be void under Article 1335 of the Indonesian Civil Code. In addition, Article 52(1(d)) Law No. 13 of 2003 Concerning Manpower of Indonesia also requires a working agreement that does not contravene public order, morality and legislation in force.

From the perspective of human rights law, Article 28D(2) of the Indonesian Constitution recognizes the right to work, specifically “*every person shall have the right to work and to receive fair and proper remuneration and treatment in employment*”. The right to work is also stipulated in Article 38(2) of Law No. 39 of 1999 Concerning Human Rights of Indonesia, according to which “*everyone has the right to free choice of employment and the right to just conditions of work*”. Law No. 13 of 2003 Concerning Manpower of Indonesia also recognizes the right to freedom of choice of employment and freedom of movement of employees in Article 31 and Article 38(2). Thus, NCAs that restrict the employees’ right to work appear to violate the employees’ constitutional and human rights. In this light, NCAs can be considered invalid because they do not meet the objective requirements for the validity of an agreement based on the provisions of Article 1320 of the Indonesian Civil Code.

4.5. Vietnamese law on NCAs

Similar to Indonesia, current Vietnamese law does not have direct provisions on NCAs. Although Article 21(2) of the Vietnamese Labor Code 2019 has provisions allowing employers and employees to enter into agreements to protect the employer’s business secrets. Specifically,

Article 21(2) of the Vietnamese Labor Code 2019 stipulates: *“If the employees’ job is directly related to the business secret, technological know-how as prescribed by law, the employer has the rights to sign a written agreement with the employee on the content and duration of the protection of the business secret, technology know-how, and on the benefit and the compensation obligation in case of violation by the employee”*. However, along with this provision, Article 15(2) of the Vietnamese Labor Code 2019 also sets out the principle: *“Freedom to enter into an employment contract which is not contrary to the law, the collective bargaining agreement and social ethics”*. Therefore, scholars still debate whether NCAs are valid in Vietnam or not (Do Van Dai & Le Ngoc Anh, 2019).

One of the cases involving NCAs was settled by Vietnam International Arbitration Centre (VIAC) and the People’s Court of Ho Chi Minh City in 2018. Accordingly, VIAC (2018) accepted the employer’s request to compel the employee who signed an NCA to compensate for damages for violating this agreement. When considering the employee’s request to annul the arbitration award, the People’s Court of Ho Chi Minh City (2018) stated that: *“In this case, Ms. T (employee) and Company X (employer) voluntarily signed the NCA. When signing, Ms. T had full civil act capacity according to the provisions of law. She was not forced, deceived or imposed employer’s will to sign the NCA. Therefore, the NCA is valid”*. Through this case, it can be seen that the viewpoint of VIAC and the People’s Court of Ho Chi Minh City is to recognize the validity of NCAs based on the principle of freedom of contract.

However, in another case with similar content, the People’s Court of Ho Chi Minh City (2019) held that NCAs violated the provisions on the right to work under Article 35(1) of the Vietnamese Constitution 2013, the provisions on the rights of employees under Article 5(1(a)) and Article 10(1) of the Vietnamese Labor Code 2012 (currently the 2019 Labor Code), and the principle of employment under Article 4(1) of the Law on Employment 2013 of Vietnam. With the reason of protecting the right to work of employees, in another similar case, the People’s Court of Dong Nai province also ruled that NCAs were invalid. Specifically, the People’s Court of Dong Nai province (2020) stated: *“Regarding the content of the two parties’ agreement in the above-mentioned labor contract, the Trial Panel based on Article 10 of the Labor Code stipulates that “Employees are allowed to work for any employer and in any place not prohibited by law”. Therefore, the agreement of the parties at Point e, Article 3.2 of the labor contract is not in accordance with the law”*.

In short, because current Vietnamese law does not clearly stipulate whether or not to recognize the validity of NCAs, there are many conflicting views in the process of resolving cases related to this type of agreement. Vietnamese judicial practice in Vietnam also shows that the issue of balancing the interests of the parties to this agreement has not yet been raised and assessed in both cases of recognition and non-recognition of the validity of NCAs. In the judgments and decisions of dispute resolution agencies in Vietnam that the author has researched, the explanations for these judgments and decisions almost never mention the issue of balancing the interests of the parties or the limits of the agreement to protect business secrets in labor relations.

Some suggestions for building a legal framework on NCAs in ASEAN countries

Based on the study of the laws of some ASEAN member countries, the author makes some suggestions on the legal framework on NCAs that ASEAN member countries can consider in the process of perfecting their national laws, aiming towards “*One Vision, One Identity, One Community*”.

Firstly, jurisdictions in ASEAN should recognize the validity of NCAs in a limited way. The positive impacts of recognizing the validity of NCAs for enterprises can be listed as: (i) having an influence on research efforts and encourage enterprises to undertake projects in new technological areas (Conti, 2013); (ii) improving the efficiency of business operations (Friedman, Landes & Posner, 1991); (iii) encouraging enterprises to invest more in developing their human resources (Posner, Triantis & Triantis, 2004). However, NCAs cause negative impacts on employees such as: (i) restricting employees’ right to work (Marx & Fleming, 2012); (ii) weakening the bargaining power of employees to employers (Blake, 1960); (iii) wasting the employee’s own resources (U.S Department of the Treasury, 2016). However, the option of limitedly recognizing the validity of NCAs will ensure both the legitimate interests of employers and the rights of employees. From a macro perspective, this option harmonizes both economic growth and social equity goals, aiming at the goal of sustainable social development (Nguyen Thi Nga, 2006).

Secondly, while the validity of NCAs should be recognised, jurisdictions in ASEAN should also set limits to ensure a balance in the interests among the parties. The limitations of NCAs can be: (i) limits on the application of NCAs; (ii) limits on the types of employees who can enter into NCAs; (iii) limits on the duration and geographic scope of NCAs. In addition, to ensure the benefits of employees, jurisdictions in ASEAN may also require employers to pay financial compensation to employees when employees perform non-compete obligations.

5. CONCLUSIONS

In short, at present, the laws on NCAs in jurisdictions in ASEAN are not uniform. There are member states that ban NCAs, for example Malaysia. There are other member states that only accept the validity of NCAs in a very limited way, for example Singapore. Some member states recognize NCAs in a way that protects the interests of employers, for example the Philippines. Some member states, such as Indonesia and Vietnam, do not have a clear legal framework on NCAs. The inconsistency in the laws of ASEAN member countries will make it difficult for employees to move within ASEAN, thereby creating barriers to the formation of an ASEAN Community with the goal of “*One Vision, One Identity, One Community*”. From that practice, the author recommends that jurisdictions in ASEAN should build a legal framework on NCAs in the direction of limited recognition of this agreement, while setting limits or conditions for the validity of this agreement to ensure a balance of interests between employers and employees.

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FACTORS AFFECTING THE EFFECTIVENESS OF THE INTERNAL CONTROL SYSTEM IN VIETNAMESE AGRICULTURAL ENTERPRISES

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ABSTRACT

The more businesses expand, the risk of corporate fraud increases. Internal control systems play an important role in preventing and detecting fraud in businesses. Therefore, business managers want to improve the effectiveness of the internal control system.

This article was conducted to study the factors that affect the effectiveness of the internal control system, thereby proposing solutions to improve the effectiveness of the internal control system in Vietnamese agricultural enterprises. The study uses qualitative research methods combined with quantitative research through testing scale reliability, exploratory factor analysis and multiple linear regression model analysis with survey data from Vietnamese agricultural enterprises. Research results show that there are six factors affecting the effectiveness of the internal control system in Vietnamese agricultural enterprises including Control environment, Risk assessment, Control activities, Information and communication, Monitoring activities, and Enterprise characteristics. Based on the findings, we also offer several recommendations to enhance the role of the internal control system in preventing and detecting fraud, thereby improving business efficiency in Vietnamese agricultural enterprises.

Keywords: effectiveness, internal control system, Vietnamese agricultural enterprises.

1. INTRODUCE

The development of a market economy has created a favorable business environment for enterprises, but it has also posed many challenges. In the current era of international economic integration and development, businesses must face numerous risks and challenges as they strive to compete in the marketplace. Enterprises need to find every possible way to enhance their competitiveness by effectively utilizing existing resources to achieve their goals. Therefore, designing and operating an effective internal control system is crucial, as it helps businesses detect, prevent, and avoid risks during operations, thereby improving operational efficiency (Herath, S.K. & Albaraqi, N., 2017).

With the overall development of the economy, Vietnamese agricultural enterprises have experienced rapid growth in recent times, significantly impacting the sustainable development of the economy. However, managers in these enterprises often perform their duties based on legal regulations and personal experience, without a truly comprehensive and scientific understanding of the internal control system in the new economic context. They have yet to establish specific control policies and procedures that align with the unique characteristics of their operations. Therefore, in this study, the author will identify and assess the factors affecting the effectiveness of the internal control system in Vietnamese agricultural enterprises. This will serve as a

foundation to help business managers improve the construction, design, and operation of effective internal control systems within their organizations.

2. RESEARCH OVERVIEW

COSO is a committee of the US National Council on Combating Fraud in Financial Reporting. In 1992 the Commission issued its first COSO report. This is the first document in the world to provide a complete and systematic definition and factors that constitute internal control. By 2013, the COSO Committee updated and improved the report issued in 1992, to increase understanding, clarity, and ease of application in practice, suitable for the times.

According to the COSO 2013 Report, “Internal control is a process that is influenced by the board of directors, management, and other personnel of an organization, and it is designed to provide reasonable assurance regarding the achievement of objectives in the areas of operations, reporting, and compliance”. Additionally, the COSO 2013 Report outlines that the internal control system comprises five interrelated components, which are presented in the form of 17 principles to explain the fundamental concepts related to the five components of the internal control system. These components include control environment, risk assessment, control activities, information and communication, and monitoring.

Annukka Jokipii (2010), *Adagye, I. D. (2015)*, Amudo, A. and Inanga, L. (2009) conducted a study on the internal control system and the effectiveness of internal control systems in medium and large-sized companies. The research results indicated that to measure the effectiveness of an internal control system, it is essential to consider the effectiveness and efficiency of operations, the reliability of information, and compliance with laws and regulations. Additionally, the full presence and proper functioning of the five components related to each type of organizational objective will ensure the effectiveness of the internal control system.

The studies by Ewa, E. (2012), *Babatunde et al. (2013)*, *Tatiana Dănescu (2012)*, Kakucha, W. (2009) evaluated the impact of the internal control system on financial performance. In these studies, the internal control system was measured by factors including control environment, risk assessment, control activities, information and communication, and monitoring.

Nyakundi et al. (2014), Zipporah Njoki. (2015) examined the impact of the internal control system on the financial performance of manufacturing companies in Kenya. Studys found that most manufacturing companies have a control environment as one of the internal control functions of the organization, which significantly influences the financial performance of the companies. Studys concluded that manufacturing companies with effective internal control systems achieve better financial performance compared to those with weak internal control systems.

Thus, studies on internal control systems have clarified the nature, role, and components of the internal control system. These studies mainly evaluate the factors affecting the internal control system based on the five components of the internal control system according to the COSO 2013 Report.

3. METHODOLOGY

In this study, the author uses a combination of qualitative and quantitative research methods. The qualitative research is conducted through a literature review of the research issues, along with in-depth interviews and group discussions with experts to explore the factors influencing the effectiveness of internal control systems in Vietnamese agricultural enterprises.

3.1. Research hypotheses

Building on previous research and adjusting to fit the characteristics of Vietnamese agricultural enterprises, as per expert opinions, the author proposes a research model on the factors affecting the effectiveness of the internal control system in Vietnamese agricultural enterprises, as shown in Figure 1 below:

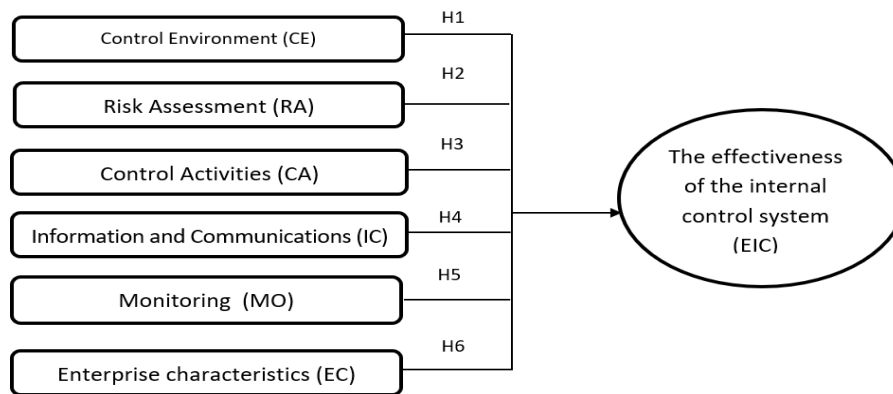


Figure 1: Proposed Research Model

Accordingly, the expected research hypotheses include:

(H1): The control environment has a positive impact (+) on the effectiveness of the internal control system in Vietnamese agricultural enterprises.

(H2): Risk assessment has a positive impact (+) on the effectiveness of the internal control system in Vietnamese agricultural enterprises.

(H3): Control activities have a positive impact (+) on the effectiveness of the internal control system in Vietnamese agricultural enterprises.

(H4): Information and communications have a positive impact (+) on the effectiveness of the internal control system in Vietnamese agricultural enterprises.

(H5): Monitoring has a positive impact (+) on the effectiveness of the internal control system in Vietnamese agricultural enterprises.

(H6): Enterprise characteristics have a positive impact (+) on the effectiveness of the internal control system in Vietnamese agricultural enterprises.

3.2. Research data

The study uses primary data collected from survey forms sent to managers of Vietnamese agricultural enterprises. The survey consists of two parts: Part 1 is general information, and Part 2 includes questions on a 5-level Likert scale about the influence of factors on the effectiveness of internal control systems in Vietnamese agricultural enterprises.

Regarding sample size, according to J.F. Hair et al. (2006), for exploratory factor analysis (EFA), the sample size must be at least five times the number of items in the scale. In this study, there are a total of 26 observed variables of 6 independent variables used in the factor analysis, so the minimum required sample size is 130 observations. To ensure objectivity and reliability, the author sent out 365 survey forms and received 348 valid responses to include in the analysis. To collect data for the study, the author conducted the survey using a non-probability sampling method, and the survey was carried out by sending emails containing a link to the questionnaire created using Google Docs.

3.3. Data analysis

Data collected from the survey questionnaire was processed using SPSS 20.0 software. First, the study evaluated the reliability of the scale, requiring a Cronbach's Alpha value greater than 0.7. Then, an Exploratory Factor Analysis was conducted to determine the scale's "convergent validity" and "discriminant validity", with the following requirements: factor loading greater than 0.5, KMO coefficient between 0.5 and 1, Sig. value less than 0.05, and total variance explained greater than 50%. The factor extraction method used is the Varimax factor rotation method. Next, the study re-tested the reliability of the scale with Cronbach's Alpha coefficient after removing inappropriate indicators and analyzing correlations between variables. Finally, conduct multiple regression model analysis to evaluate the influence of each independent variable on the dependent variable.

4. RESEARCH RESULTS AND DISCUSSION

4.1. Evaluate the reliability of the scale

The experimental test results show that all variables have an appropriate total variable correlation coefficient greater than 0.3 and have a Cronbach's Alpha coefficient greater than 0.6, so all variables are suitable for further analysis (Table 2).

Table 2: Results of testing the reliability of the scale

| Biến | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|--|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| Control Environment (CE): Cronbach's Alpha = 0.862 | | | | |
| CE1 | 10.07 | 3.874 | 0.670 | 0.841 |
| CE2 | 10.08 | 3.919 | 0.706 | 0.825 |
| CE3 | 10.07 | 3.843 | 0.741 | 0.811 |
| CE4 | 10.11 | 3.910 | 0.720 | 0.819 |
| Risk Assessment (RA): Cronbach's Alpha = 0.864 | | | | |
| RA1 | 12.84 | 5.613 | 0.662 | 0.841 |
| RA2 | 12.70 | 5.452 | 0.697 | 0.833 |
| RA3 | 12.20 | 5.325 | 0.717 | 0.828 |
| RA4 | 12.13 | 5.431 | 0.644 | 0.846 |
| RA5 | 12.18 | 5.021 | 0.710 | 0.830 |
| Control Activities (CA): Cronbach's Alpha = 0.840 | | | | |
| CA1 | 9.60 | 3.110 | 0.655 | 0.807 |
| CA2 | 10.10 | 3.298 | 0.660 | 0.803 |

| | | | | |
|---|-------|-------|-------|-------|
| CA3 | 9.68 | 3.211 | 0.700 | 0.785 |
| CA4 | 9.55 | 3.303 | 0.680 | 0.794 |
| Information and Communications (IC): Cronbach's Alpha = 0.839 | | | | |
| IC1 | 13.40 | 5.538 | 0.618 | 0.813 |
| IC2 | 13.36 | 5.498 | 0.621 | 0.812 |
| IC3 | 13.37 | 5.370 | 0.644 | 0.806 |
| IC4 | 13.51 | 5.196 | 0.678 | 0.796 |
| IC5 | 13.32 | 5.533 | 0.650 | 0.805 |
| Monitoring (MO): Cronbach's Alpha = 0.805 | | | | |
| MO1 | 10.05 | 3.398 | 0.606 | 0.763 |
| MO2 | 9.99 | 3.124 | 0.633 | 0.749 |
| MO3 | 9.99 | 3.282 | 0.590 | 0.770 |
| MO4 | 10.04 | 3.042 | 0.654 | 0.739 |
| Enterprise characteristics (EC): Cronbach's Alpha = 0.836 | | | | |
| EC1 | 10.10 | 3.388 | 0.642 | 0.806 |
| EC2 | 10.13 | 3.470 | 0.676 | 0.789 |
| EC3 | 10.16 | 3.407 | 0.666 | 0.794 |
| EC4 | 10.17 | 3.513 | 0.690 | 0.784 |
| The effectiveness of the internal control system (EIC): Cronbach's Alpha = 0.848 | | | | |
| EIC1 | 10.11 | 4.028 | 0.736 | 0.785 |
| EIC2 | 10.08 | 4.227 | 0.646 | 0.824 |
| EIC3 | 10.13 | 4.130 | 0.737 | 0.786 |
| EIC4 | 10.05 | 4.213 | 0.629 | 0.832 |

Source: Results of data processing on SPSS software

4.2. Exploratory factor analysis (EFA)

Exploratory factor analysis with independent variables is detailed in Table 3.

Table 3: Rotated Component Matrix

| | Component | | | | | |
|-----|-----------|-------|-------|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| RA5 | 0.813 | | | | | |
| RA3 | 0.806 | | | | | |
| RA2 | 0.799 | | | | | |
| RA1 | 0.765 | | | | | |
| RA4 | 0.724 | | | | | |
| IC4 | | 0.796 | | | | |
| IC5 | | 0.772 | | | | |
| IC2 | | 0.766 | | | | |
| IC3 | | 0.759 | | | | |
| IC1 | | 0.739 | | | | |
| CA3 | | | 0.817 | | | |
| CA4 | | | 0.805 | | | |
| CA2 | | | 0.784 | | | |

| | | | |
|-----|-------|-------|-------|
| CA1 | 0.776 | | |
| EC4 | | 0.803 | |
| EC2 | | 0.800 | |
| EC3 | | 0.789 | |
| EC1 | | 0.747 | |
| CE4 | | | 0.797 |
| CE2 | | | 0.771 |
| CE3 | | | 0.758 |
| CE1 | | | 0.717 |
| MO4 | | | 0.812 |
| MO2 | | | 0.780 |
| MO3 | | | 0.759 |
| MO1 | | | 0.743 |

Source: Results of data processing on SPSS software

Table 4: KMO and Bartlett's Test

| | | |
|--|------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | 0.869 |
| Approx. Chi-Square | | 4029.497 |
| Bartlett's Test of Sphericity | df | 325 |
| | Sig. | 0.000 |

Source: Results of data processing on SPSS software

Research results show that 26 observed variables are grouped into 6 factors, all observed variables have factor loadings greater than 0.5. The KMO coefficient is 0.869 (range from 0.5 to 1); The Eigenvalue value is equal to 1.339 (greater than 1); The total variance extracted is 66.326 % (greater than 50%); The Bartlett test has a significance level of 0.000 (less than 5%). Thus, the independent variables satisfy two conditions "Convergent validity" (observed variables converge on the same factor) and "Discriminant validity" (observed variables belonging to this factor are distinct with other factors).

Table 5. Results of exploratory factor analysis of dependent variable

| Observation variable | Component |
|----------------------|-----------|
| | 1 |
| EIC3 | 0.864 |
| EIC1 | 0.864 |
| EIC2 | 0.802 |
| EIC4 | 0.788 |

Source: Results of data processing on SPSS software

The results of the exploratory factor analysis (EFA) for the dependent variable show that the analysis extracted a factor (The effectiveness of the internal control system) with a KMO index of

0.818 (greater than 0.5), The Eigenvalue index is 2.756 (greater than 1), the total variance extracted is 68.903% (greater than 50%), the Bartlett test has a significance level of 0.000 (less than 5%). So, the variable the effectiveness of the internal control system (EIC) qualifies as a dependent variable to be included in the analysis of the next steps.

4.3. Multiple linear regression analysis

To evaluate the suitability of the multiple linear regression model, the author uses the adjusted coefficient of determination (R^2). This coefficient reflects how well the independent variables in the regression model explain the variation in the dependent variable. The F-test is employed to assess whether there is a linear relationship between the dependent variable and the entire set of independent variables. If the significance level (Sig) is less than 0.05, it indicates that the multiple linear regression model is appropriate and can be used. Additionally, the Durbin-Watson value is utilized to check for the presence of first-order serial autocorrelation (Table 6).

Table 6. Results of multiple linear regression analysis

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|--------------------|----------|-------------------|----------------------------|---------------|
| 1 | 0.738 ^a | 0.545 | 0.537 | 0.45096 | 2.168 |

Source: Results of data processing on SPSS software

The analysis results show an adjusted R^2 coefficient of 0.537, indicating that the independent variables in the model explain 53.7% of the variation in the dependent variable, while the remaining 46.3% is due to external factors and random error. The Durbin-Watson coefficient is 2.168, which falls within the acceptable range of 1.5 to 2.5, suggesting that there is no first-order serial autocorrelation. According to the ANOVA results, the F-value is 67.959, and the significance level (Sig) for the F-test is 0.000, which is less than 0.05. This indicates that the multiple linear regression model is suitable for the dataset.

Table 7. Results of the regression model of influencing factors

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|-------|------------|-----------------------------|------------|---------------------------|--------|-------|-------------------------|-------|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | -0.846 | 0.229 | | -3.698 | 0.000 | | |
| | CE | 0.276 | 0.049 | 0.267 | 5.667 | 0.000 | 0.600 | 1.667 |
| | RA | 0.274 | 0.047 | 0.235 | 5.792 | 0.000 | 0.808 | 1.237 |
| | CA | 0.184 | 0.046 | 0.162 | 4.002 | 0.000 | 0.814 | 1.228 |
| | IC | 0.179 | 0.045 | 0.154 | 3.965 | 0.000 | 0.886 | 1.129 |
| | MO | 0.189 | 0.045 | 0.165 | 4.159 | 0.000 | 0.852 | 1.174 |
| | EC | 0.181 | 0.046 | 0.164 | 3.951 | 0.000 | 0.774 | 1.292 |

Source: Results of data processing on SPSS software

The significance (Sig) values from the t-tests for the regression coefficients of all independent variables are less than 0.05, indicating that each independent variable is meaningful in explaining the dependent variable, and no variable is eliminated from the model. The Variance Inflation Factor (VIF) coefficients for all independent variables are less than 2, which suggests that there is no multicollinearity. Additionally, all the regression coefficients are greater than 0, meaning that the independent variables in the analysis have a positive impact on the dependent variable.

Table 8: Statistics on the impact level of factors

| Independent variable | Standardized β coefficient value | Order of impact |
|----------------------|--|-----------------|
| CE | 0.267 | 1 |
| RA | 0.235 | 2 |
| CA | 0.162 | 5 |
| IC | 0.154 | 6 |
| MO | 0.165 | 3 |
| EC | 0.164 | 4 |

Source: Results of data processing on SPSS software

5. DISCUSSION AND RECOMMENDATIONS

The research results show that the 6 independent factors are all significant and have a positive impact on the dependent variable. Specifically:

The control environment is considered by Vietnamese agricultural enterprises to be the most influential factor in the effectiveness of their internal control systems. This environment shapes the enterprise's culture, influences the control awareness of every member of the organization, and is regarded as the most critical component for establishing a solid foundation for the design and operation of the internal control system. Therefore, Vietnamese agricultural enterprises need to commit to integrity and ethical values, enhance the independence and supervisory functions of the Board of Directors, and create a well-coordinated organizational structure. Additionally, businesses should develop specific plans for recruitment, training, and human resource development. Managers should implement attractive policies to attract highly qualified professionals while also establishing clear and specific standards for employee evaluation, rewards, and discipline to foster a professional working environment.

Risk assessment is regarded as the second most significant factor in the effectiveness of internal control systems by Vietnamese agricultural enterprises. Effective risk assessment enables businesses to thoroughly identify potential risks and assess the severity of their impact on achieving business objectives. This serves as a crucial foundation for establishing and operating an effective internal control system. Therefore, managers should proactively identify risks, develop processes to evaluate and analyze them, and create strategies to mitigate the adverse effects of risks that could threaten business activities. Risk assessment can be based on historical

data or involve collecting information from both internal and external sources to evaluate changes in the business environment.

Monitoring is the third factor that affects the effectiveness of the internal control system. In practice, all activities within an enterprise need to be monitored continuously and adjusted as necessary. Enterprises should carry out regular and periodic monitoring to promptly detect and address violations and fraud. Additionally, each department should establish a clear and specific reporting system to identify deviations from established targets and plans, enabling timely identification of the causes and the implementation of corrective actions.

Business characteristics are the fourth most influential factor in the effectiveness of the internal control system. Agricultural enterprises often face long, seasonal production and business cycles, substantial investment capital, and numerous risks from the external environment. Therefore, these businesses need to focus on controlling investment capital, developing flexible and scientifically-based production plans, and identifying and managing risks at each stage of the business cycle. Additionally, with international economic integration, increased competition, and the growing trend towards a green economy, businesses encounter new challenges in control and management activities. The internal control system must be designed and operated to ensure both operational efficiency and strong social responsibility.

Control activities are the fifth most influential factor in the effectiveness of the internal control system. Control policies and procedures ensure that management directives are implemented and necessary risk mitigation actions are taken to achieve business objectives. Given the diverse and complex nature of agricultural production activities, agricultural enterprises need to design control procedures tailored to each specific activity. Vietnamese agricultural enterprises should enhance the review processes for managers at all levels and ensure a reasonable division of responsibilities among departments and individuals.

Information and communication are considered the sixth most influential factors in the effectiveness of the internal control system. Businesses need to ensure the complete, clear, and timely dissemination of information to all employees through various means, particularly by leveraging advancements in information technology. This helps in creating a comprehensive information and communication network to respond promptly to production and business needs. Agricultural enterprises should diversify effective channels for information exchange both within and outside the organization. Additionally, businesses must implement information security measures to prevent unauthorized access, and ensure data is preserved and backed up promptly.

6. CONCLUSION

To investigate the influence of various factors on the effectiveness of internal control systems in Vietnamese agricultural enterprises, the author employed a combination of qualitative and quantitative research methods. The research findings indicate that all six selected factors positively affect the effectiveness of the internal control system in these enterprises. Among these factors, the control environment has the greatest impact, followed by risk assessment. These results provide a basis for enhancing the internal control systems of Vietnamese agricultural enterprises.

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THE DEVELOPMENT OF THE CIRCULATORY AGRICULTURAL ECONOMY IN LAM DONG PROVINCE – OPPORTUNITIES AND CHALLENGES

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ABSTRACT

In the country's development orientation for the period 2021–2030, Documents of the 13th National Congress, our Party clearly stated that we must "build a circular, environmentally friendly economy," considering the development as the circular economy is a new model, bringing new motivation to develop the country. Lam Dong Province is a plateau province with much potential to develop a circular economy in agriculture, so developing the application of a circular economy model for local development is extremely necessary. The presentation describes an overview of the circular economy, points out the advantages and disadvantages of developing a circular economy in agriculture in Lam Dong, and then offers solutions and suggestions for Lam Dong Province to develop a circular economy.

Keywords: circular agricultural economy, opportunities and challenges, Lam Dong province

1. INTRODUCTION

By 2030, Lam Dong will become a province with rapid, comprehensive and sustainable development based on a green and circular economy; become a fairly developed province in the country; be a dynamic economic region of the Southern Central Highlands Sub-region on the basis of regional and intra-regional linkages. These are major and important orientations identified by Lam Dong Provincial Party Committee in the Action Program to implement Resolution No. 23-NQ/TW, dated October 6, 2022 of the Politburo on socio-economic development orientations and ensuring national defense and security in the Central Highlands region to 2030, with a vision to 2045 in Lam Dong province. To achieve that goal, "*Lam Dong Provincial Party Committee also set a target of striving for the province's GRDP per capita to reach about 135 million VND (equivalent to 5,100 USD) by 2030; the proportion of the agriculture, forestry and fishery sector accounts for about 32.06% of GRDP; the industry-construction sector accounts for about 24.66%; the service sector accounts for about 43.28%*"². According to Lam Dong Provincial Party Committee, the above goals and orientations have been thoroughly grasped and deployed to each Party Committee, locality and unit in the province; on that basis, each agency, unit and locality proactively concretizes tasks and implementation solutions to ensure effectiveness, close to the actual situation and development requirements of the locality, agency and unit.

² No. 23-NQ/TW, dated October 6, 2022 of the Politburo on socio-economic development orientations and ensuring national defense and security in the Central Highlands region to 2030, with a vision to 2045 in Lam Dong province.

2. THEORETICAL BASIS AND RESEARCH METHODS

Approach: to clarify the research purpose, the paper approaches in the following directions: combining the following research methods: scientific abstraction, logic combined with history, statistics, analysis, comparison and synthesis, summarizing practices.

Theoretical approach to circular economic development in Lam Dong province from the perspective of Political Economy.

Approaching from research practice, analyzing circular economy in Lam Dong province to meet the general structure of Vietnam's economy and promote international economic integration until 2030.

In addition, the paper also uses the method of collecting documents and texts on policies and laws inside and outside Lam Dong province; collecting information from projects, reports, and articles on relevant official information pages.

2.1. The circular economy and its operational principles

According to the Ellen MacArthur Foundation definition: “The circular economy is a system that restores and regenerates through proactive and design. It replaces the concept of “end of life” of materials with the concept of recovery, moving toward the use of renewable energy, away from toxic chemicals that compromise reuse, and aiming to minimize waste through the design of materials, products, technical systems, and business operation models within this system”³. Or according to the British Standards Institute (BSI): “The circular economy is a system in which resources are recovered or reused, and material flows are transformed into inputs for continued production. export. export. This activity has been fueled by rapid urbanization, climate change, technological advances, and increasing demand for finite natural resources”⁴.

“The purpose of the circular economy is to extend the useful life of products and increase the productivity of resources. All “wastes” from a consumer production process must be considered as raw materials from other consumer production processes, whether they are by-products or resources derived from a process in different industries or recycled resources for the natural environment. This approach contrasts with the widely used linear economic model”⁵. It can therefore be understood in principle that the circular economy is an economic model in which design, production, and service activities aim to extend the life of materials in production and consumption. At the same time, focus on eliminating negative impacts on the environment, aiming for sustainable development. This is determined through three objectives: (i) addressing the depletion of input resources of production; (ii) overcoming environmental pollution in the development of production; and (iii) harmoniously combining economic growth with environmental protection. To achieve this goal, the circular economy works according to the following fundamental principles:

³ Ellen MacArthur Foundation, 2012, Towards the Circular Economy Vol.1

⁴ British Standards Institute (BSI) (2020)

⁵ Dang Van Sang, Developing a circular economy: International experience and implications for Vietnam, Financial Review period 1, March 2021.

First, biotechnology is prioritized. Consumer goods are made of biomaterials, and their use is based on the "cascade" principle: these biocomponents are used for many different purposes before returning to the biosphere cycle.

Second, prioritize the use of clean energy and renewable energy. Accordingly, to reduce product losses (by recycling and upgrading), it is necessary to use more energy. There are two main sources of energy available: energy (renewable energy) and labor. The conditions of a circular economy can only be met by using renewable energy sources.

Third, prioritize systems with high connectivity. Systems with diverse internal connections are often highly resistant and flexible to unexpected impacts from the external environment. Diversification in ways of doing business, business models, and production systems also requires the establishment of mutual relationships between business networks and with many suppliers and various customers.

Fourth, high systematic thinking. This is the only system that focuses on the nonlinear features of the system, especially the loop feedback, and the combination of unsustainable environmental factors with feedback responses often leading to unpredictable outcomes. At many different levels and scales in the circular economy, systems operate in coordination with each other, from which dependencies emerge and create feedback loops that help strengthen the economy, anchoring the flexibility of the circular economy.

Fifth, design products that can be reused many times. The problem of waste will be solved to the maximum extent, the biochemical ingredients of the product are designed so that they can be reused in a new cycle.

The circular economy in agriculture is defined as a closed-loop production process through the application of scientific and technological advancements, biological technology, and physical technology. Waste and by-products are recycled to serve as input materials for the cultivation and processing of agricultural, forestry, and aquatic products, generating safe, high-quality products, reducing waste and losses, minimizing waste, and contributing to increasing people's awareness of reusing by-products, waste in production, and environmental protection.

2.2. Potential and opportunities for developing a circular economy in Lam Dong province

“Lam Dong is a mountainous province in the SouthCentral Highlands region, situated across the Lam Vien - Di Linh - Bao Loc plateaus, at an average elevation ranging from 800m to 1,500m above sea level. It covers a natural area of 9,773.54 km² (the 7th largest in the country) and had a population of 1,312,900 people in 2019, comprising 43 different resident ethnic groups”⁶. The province boasts substantial potential and advantages in natural and social conditions for the development of tourism in general, including agricultural tourism. Due to its temperate and cool climate year-round, Lam Dong offers diverse natural landscapes, including the famous city of Da Lat with its thousands of flowers. It is characterized by a wide variety of native and introduced

⁶ Electronic information portal Lam Dong province (2022)

flower species, blooming abundantly throughout the year. The city also stands out for its cherry blossoms, which bloom vigorously in spring, creating a distinctive feature for the area.

Lam Dong is renowned for its vast pine forest area of “over 22,000 hectares, notably housing the LangBiang Biosphere Reserve. The region features dozens of waterfalls and large picturesque lakes such as the Cam Ly Waterfall, and Dankia - Suoi Vang Tourist Area, among others. With a diverse biological forest covering over 597,000 hectares”⁷, Lam Dong has established the Bidoup Nui Ba National Park, the Cat Tien National Park, recognized as a national scenic spot.

Furthermore, the province is situated within the key economic region in the south, benefiting from a convenient transportation system encompassing road and air travel. It is interlinked by various national highways, including 20, 27, 27C, 28, and 55, connecting Lam Dong to cities such as Ho Chi Minh City, Bien Hoa, Nha Trang, Gia Nghia, Phan Thiet, Buon Ma Thuot, Phan Rang Thap Cham, and Cam Ranh, along with port clusters like Thi Vai, Cai Mep, Cam Ranh, Vinh Tan (Binh Thuan). Additionally, it has provincial routes 721, 722, 723, 724, and 725 linking Lam Dong to the South Central, Southeast, and Central Highlands regions. For air travel, the Lien Khuong International Airport, located 30 km south of Da Lat, offers daily domestic flights to Ha Noi, Hai Phong, Vinh, Da Nang, Ho Chi Minh City, Can Tho, Phu Quoc, Thanh Hoa, Thua Thien Hue, and versa vice. Moreover, international flight routes are available to Wuhan (China), Bangkok (Thailand), Seoul (South Korea), Kuala Lumpur (Malaysia), and vice versa. These transportation facilities foster economic development and cooperation, including a circular agricultural economy with provinces in the region and several countries worldwide.

Besides, it is the leading locality in the country in agricultural production applying high technology with “*more than 60,200 hectares, accounting for 20% of the cultivated land area*”⁸. Agricultural models are grown in greenhouses and net houses with automatic, intelligent irrigation systems, hydroponic farming methods, and many new superior plant varieties (the total planted area of the province in the year 2020 reaches over 386,000 hectares). Many specialized farming areas are large-scale, “*such as vegetables over 70,000 hectares, flowers on 9,300 hectares, tea on 12,000 hectares, and coffee on 174,000 hectares*”⁹. Many combined vegetable and flower farms have created an advantage for Lam Dong to attract tourists to visit and experience tourism activities. On the other hand, Lam Dong also possesses many intangible cultures, such as the cultural space of Central Highlands Gongs, woodblocks of the Nguyen Dynasty, and traditional cultural activities of ethnic minorities that have created many agricultural products unique to the locality.

In addition, the leadership of Lam Dong province has promptly issued numerous appropriate directives and policies, including Resolution No. 07-NQ/TW “*on the development of high-quality tourism for the period 2016 - 2020, with a vision to 2025 within Lam Dong province*”; Plan No. 7021/KH-UBND for the implementation of “*Vietnam's Tourism Development Strategy until 2030 within Lam Dong province*”; Decision No. 1499/QD-UBND of the People's Committee of Lam Dong province regarding the implementation of Resolution No. 08/NQ-TW dated January 16,

⁷ Electronic information portal Lam Dong province (2022)

⁸ Electronic information portal Lam Dong province (2022)

⁹ Electronic information portal Lam Dong province (2022)

2017 of the Provincial Party Committee's 11th Congress, term 2020 - 2025. These directions serve as the foundation for Lam Dong's tourism sector to aim towards green and sustainable tourism development. Furthermore, since 2018, Lam Dong has been implementing the Code of Conduct for civilized tourism within the province and actively promoting it through various means. At all levels, sectors, organizations, tourism businesses, and the local community, there is an increasing awareness of the role and position of the tourism industry, along with an enhanced understanding of legal compliance and responsibilities of organizations and individuals in tourism operations. There is also active participation in the management and protection of the natural and social environment in tourism activities.

The Department of Culture, Sports, and Tourism of Lam Dong province has signed memorandums of cooperation with the Thai - Vietnamese Business Association, JeJu Olle Foundation, and the Social Investment Fund of South Korea to develop the tourism market and attract international visitors to the region. Annually, various departments, localities, and relevant units construct plans for promotion, publicity, and tourism promotion, contributing to enhancing the Da Lat - Lam Dong tourism brand internationally. *“Characterized by its unique tourism offerings, the entire province boasts over 2,500 tourism accommodation establishments with more than 29,400 rooms. This includes 40 luxury hotels ranging from 3 to 5 stars with over 3,900 rooms. There are 51 tourism and transportation businesses, including 32 international tour operators and 19 domestic ones. From 2016 to 2019, the number of tourists visiting Da Lat-Lam Dong steadily increased each year, with an average growth rate of 8.9% per year. The average growth rate of overnight tourists was 11.9%, with international visitors accounting for 10.1% of total overnight stays. In 2019 alone, Lam Dong welcomed over 7 million tourists (with nearly 6 million in Da Lat). Between 2016 and 2019, Lam Dong's total tourism revenue reached 52.164 trillion VND, representing 2% of the country's total tourism revenue. In 2020, due to the impact of the Covid-19 pandemic, the number of tourists visiting Lam Dong significantly decreased to 2.658 million tourists (a 53.9% decrease compared to the same period in 2019), with 4 million visitors for sightseeing and relaxation (a 44.1% decrease compared to the same period in 2019)”*¹⁰. The people of Lam Dong are known for their industriousness, creativity, keen business acumen, hospitality, and guest-friendliness. Many agricultural households have effectively applied scientific and technological advancements to produce green agricultural products while integrating experiential tourism within their farms. Additionally, there is a considerable workforce directly involved in serving the tourism industry (around 13,000 workers) who are well-trained in professionalism, expertise, and foreign languages, with approximately 80% of these workers meeting the requirements of the tourism service business in general. This potential presents a significant opportunity to combine circular agricultural economic development with local tourism.

Lam Dong province is actively promoting investment and enhancing the investment and business environment to attract foreign direct investment (FDI) and leverage scientific and technological advancements in key sectors such as tourism, agriculture, urban management, etc. The province is continuing to implement 8 major projects from the 2016-2020 period, namely:

¹⁰ Electronic information portal Lam Dong province (2022)

Dan Kia - Suoi Vang Tourist Area; Dau Giay - Lien Khuong Expressway; Tan Phu Industrial - Agricultural Zone; Hoa Binh Center; the project for water supply, collection, and treatment in Bao Loc City; Dai Ninh Lake Tourism Area; Dong Thanh Lake; and Kazam Lake. Additionally, there are investments in 9 new projects: Prenn Lake Tourist Area; Phu Binh Industrial Zone; developing Da Lat into a smart city; infrastructure improvement projects to support agricultural development in Lam Dong province; Sa Pung - Bao Loc Mountain Tourism Area; the construction of the Lien Khuong - Prenn Urban Area; Nam Song Da Nhim Urban Area in Duc Trong district; Ta Hoet Lake; and upgrading National Highway 27 (Phi Nom - K'Rong No Bridge), 27C, 28B, and 55. Furthermore, there is a focus on investing in flower trading centers, commercial centers, supermarket systems, central markets, etc., creating a favorable foundation for the development of a circular agricultural economy in the near future.

2.3. Difficulties and challenges in developing a circular agricultural economy in Lam Dong

In addition to the advantages of developing a circular economy model in agriculture, Lam Dong province faces the following challenges:

First, although the government and localities have many policies on the circular economy to apply to agricultural development, due to technological difficulties and a lack of investment resources for the recycling industry, waste (solid waste and wastewater) from agricultural activities has not yet formed a link as well as the market of the circular economy.

Second, the lack of management, land use, technical infrastructure and water, energy and food resources in circular agricultural economic activities.

Third, developing a circular agricultural economy at the scale necessary to cope with climate change and resource scarcity in Lam Dong is not easy, especially when the systems and financial mechanisms have been built for a long time to strengthen the linear economy (based on the principle of exploiting natural resources to make products, using them, and then disposing of them into the environment). The gradual dismantling of the linear economy requires the synergy of the government, provincial agencies, businesses, investors, consumers, and other sectors of the economy.

Fourth, the development of a circular economy in agriculture will significantly impact the core economic activities of various sectors in Lam Dong province, especially agricultural and industrial production, which play a crucial role in driving meaningful changes. For some businesses in Lam Dong, this means adapting their business models to accommodate these changes.

Fifth, the challenges related to the capital need to be addressed, and businesses pursuing circular economy strategies will have to develop logistical infrastructure in Lam Dong to support the provincial economy. This entails seeking capital markets to fund circular agricultural economic projects.

Sixth, investors in the province still do not fully understand the circular agricultural economy. Not all enterprises agree on the definition of a circular agricultural economy business model, and the application of ESG (Environmental, Social, and Governance) solutions for investment decision-making is becoming a predominant trend, posing challenges for businesses.

Seventh, currently, there is a scarcity of experts in the field of circular economy and circular agriculture economy in Vietnam, particularly in Lam Dong province. Lam Dong has not yet provided education or established training programs for this specific field. Achieving a circular agricultural economy necessitates a competent team of experts capable of addressing every stage from design to the final reuse and recycling of waste from the circular agricultural economy.

Eighth, Vietnam, as well as Lam Dong, lacks the necessary legal framework for the operation of a circular agricultural economy. Without effective implementation of this aspect, the development of the circular agricultural economy will likely remain spontaneous and experience inherent negative consequences.

Ninth, Lam Dong also lacks a set of criteria for identifying, assessing, summarizing, and accurately classifying the level of development of the circular agricultural economy. Additionally, the circular agricultural economy requires waste sorting and cleaning before reuse and recycling, posing a significant challenge to the practical operation of Lam Dong's economy.

3. SOME RECOMMENDED SOLUTIONS FOR DEVELOPING CIRCULAR AGRICULTURAL ECONOMY IN LAM DONG PROVINCE

The development of circular agriculture economy is considered a form of sustainable agricultural development due to the benefits it brings to the agricultural sector and the participating communities. This model can diversify commercial activities, address issues related to a lack of market consumption in agriculture, create employment opportunities in rural areas, and increase the agricultural production value for farmers through various commercial forms. Furthermore, the circular agricultural economy also stimulates local businesses to establish and participate in agricultural product distribution. To develop the circular agricultural economy in Lam Dong, the implementation of the following solutions is province necessary:

First, it's essential to establish and enforce a policy framework prioritizing the development of agriculture with clean technology, reusing and recycling agricultural waste, considering this waste as a resource.

Second, prioritizing the minimization of plastic waste and nylon bags discharged into the environment, and comprehensively addressing the issue of agricultural waste, particularly by raising public awareness about waste segregation at the source, facilitating the collection and transportation for easier reuse and recycling.

Third, it is recommended that the government soon issue standards, regulations, and instructions related to the collection, transportation, and reuse of "waste" including agricultural waste. Lam Dong province strengthens extensive propaganda about the quality and efficiency of material use and develop the market for materials from "waste"... On the other hand, there needs to be incentives for businesses to treat and consume materials that absorb "waste" from agricultural activities.

Fourth, Lam Dong can learn a lot from domestic experience, experts from previous countries have succeeded with circular agricultural economic models such as Sweden, Denmark, Finland, Japan, China, Canada, Israel, and Singapore...

Fifth, it is crucial to formulate policies that specifically target economic actors, especially private entities, to operate circular agricultural economy models. Encouraging and creating mechanisms for the development of the private sector within a competitive market landscape will provide ample investment opportunities for private entities to engage in the development of the circular agricultural economy.

Sixth, valuing technological innovation as a crucial determinant of success when implementing the circular agricultural economy model in Lam Dong, and integrating circular agricultural economy with the development of tourism, technology, and the digital economy.

Seventh, enhancing exchanges and cooperation with provinces domestically and countries internationally to learn from experiences and transfer the latest technologies to facilitate the transformation of agriculture in Lam Dong from a linear economy to a circular agricultural economy.

Eighth, training to enhance professional capabilities for officials within the province in the field of circular agricultural economy.

Ninth, create awareness among producers and people in the province about their responsibilities towards products during circular agricultural economic activities. At the same time, provide the people of the province with comprehensive information, techniques and ways to classify all types of "waste", including agricultural waste at source.

4. CONCLUSIONS

The province's economic structure is shifting towards a green economy and circular economy associated with transforming the growth model towards improving efficiency based on high technology, digital transformation and high added value. Along with rapid and sustainable economic development, Lam Dong province will focus on raising awareness throughout the political system about the role of culture, culture is both a pillar and a foundation for social development; continue to preserve and promote the unique cultural values and fine traditions of the nation, especially ethnic minorities from the Central Highlands; effectively exploit the advantages and values of cultural identity to develop the economy - society, develop tourism. Develop Da Lat city into a city of culture and art.

It is necessary to carry out communication work well by propagating, guiding, raising awareness and transferring scientific and technical advances on circular economy in agricultural production to farmers. Develop extensive communication programs for all subjects, train and advise farmers to improve their knowledge of circular economy models in agricultural production. Linking circular economy development with new rural construction, and integrating the content of Vietnam's Circular Economy Development Project into the local socio-economic development strategy.

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PUBLIC CONCERNS ABOUT THE CHALLENGES OF URBAN VEGETABLE GARDENING IN HANOI, VIETNAM

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ABSTRACT

Urban vegetable gardening has been widely explored in academic literature, yet research focused on this practice in Hanoi, Vietnam, remains limited. This study seeks to fill that gap by examining urban vegetable gardening from the viewpoint of vegetable consumers. The research provides valuable insights into the public's concerns about the challenges of urban gardening, contributing to the broader discussion on urban agriculture, sustainability, and food security. Through a stratified sampling method, 70 urban vegetable growers across various urbanized areas of Hanoi were surveyed. The study identifies both political and technical challenges faced by these gardeners. Politically, it highlights the lack of governmental support for urban gardens, which are often excluded from formal urban planning policies. This oversight results in insufficient funding, resources, and infrastructure for urban gardening, limiting its potential for growth and sustainability. On the technical side, many consumers reported a significant lack of knowledge about home vegetable gardening, especially in space-constrained environments. Additionally, some gardeners struggle with composting odors and are concerned about the safety of their home-grown vegetables, particularly due to urban pollution and a lack of understanding of organic farming practices. To address these issues, the study suggests integrating urban vegetable gardening into governmental urban food system strategies, improving educational outreach, and fostering community engagement through workshops, social media, and accessible resources. These efforts could enhance the success and sustainability of urban vegetable gardening in Hanoi.

Keywords: Urban vegetable gardening, public concern, SWOT analysis

1. INTRODUCTION

Urban vegetable gardening, a practice encompassing rooftop gardens, community plots, container gardening, and vertical farms, has been recognized for its potential to transform urban environments by integrating greenery into densely built areas. This practice is gaining traction due to its ability to provide fresh, local produce, enhance urban aesthetics, and offer recreational opportunities for city dwellers. Urban vegetable gardening's forms range from small personal gardens to larger community gardens, utilizing techniques like raised beds, and hydroponics, to maximize space efficiency. Typically maintained by individuals, community groups, or local organizations, often with municipal support, Urban vegetable gardening is becoming a crucial component of sustainable urban development. It addresses key issues such as food security, environmental degradation, and social well-being, offering solutions to urban challenges.

Despite the extensive literature on the roles of urban vegetable gardening, research specific to Hanoi, Vietnam, remains limited. This study aims to address this gap by investigating public

concerns about the challenges of urban vegetable gardening in Hanoi. Through a stratified sampling methodology, the research surveyed 70 urban vegetable growers across diverse urbanization levels within the city.

2. LITERATURE REVIEW

Urban vegetable gardening contributes to sustainable urban development by enhancing aesthetics and transforming unused spaces into productive areas. Green spaces reduce the urban heat island effect, improve air quality, and promote biodiversity (Sanyé-Mengual et al., 2016; Vávra et al., 2018). Moreover, urban vegetable gardening can significantly reduce organic waste through composting kitchen scraps and garden waste, contributing to a circular economy and reducing the burden on municipal waste management systems (Loan et al., 2019; Orsini et al., 2013). Furthermore, by growing food locally, urban vegetable gardening reduces the carbon footprint of transporting food over long distances, supporting climate change mitigation efforts (Sanyé-Mengual et al., 2016; Vávra et al., 2018).

Urban vegetable gardening provides a multitude of benefits across environmental, social, and economic dimensions. Environmentally, it transforms unused urban spaces into green areas, mitigating the urban heat island effect, improving air quality, promoting biodiversity, and contributing to waste reduction through composting (Loan et al., 2019; Orsini et al., 2013; Sanyé-Mengual et al., 2016; Vávra et al., 2018). Socially, it fosters community engagement and cohesion by creating gathering spaces for sharing knowledge and experiences, enhances food security with access to fresh, pesticide-free produce, promotes physical and mental health, and serves as an educational tool for sustainable food systems and agricultural practices (Do, 2021; Orsini et al., 2013; Saediman et al., 2021; Vávra et al., 2018). Economically, urban vegetable gardening reduces household grocery expenses, stimulates local economies by creating jobs, supports local food systems, and maximizes the use of limited urban space through efficient gardening techniques (Orsini et al., 2013; Saediman et al., 2021; Thaman, 1995).

Despite the benefits, urban vegetable gardening faces significant challenges, particularly due to a lack of government support and the difficulties encountered by residents. Many urban areas struggle with limited resources, including funding and tools. Gardeners often rely on grants and creative solutions, like tool-sharing programs, to overcome these barriers (Brown & Carter, 2003; Clinton et al., 2018).

Lack of land and space is also a major barrier. Urban gardeners must comply with complex environmental laws and spend large sums of money on growing facilities. Even when they do, they struggle without the agricultural knowledge to grow their own food at home. Engaging with local officials and forming partnerships with schools or non-profits can help mitigate these challenges (Eriksen-Hamel & Danso, 2010).

3. METHODOLOGY

3.1. Sample

Due to limited urban land, the study selected representatives from Van Chuong, Viet Hung, and Dang Xa areas to capture diverse urbanization levels. The three selected locations for the

survey clearly illustrate the differences between the criteria of the inner city and suburban areas, as well as residential areas inwards/towns versus urban areas.

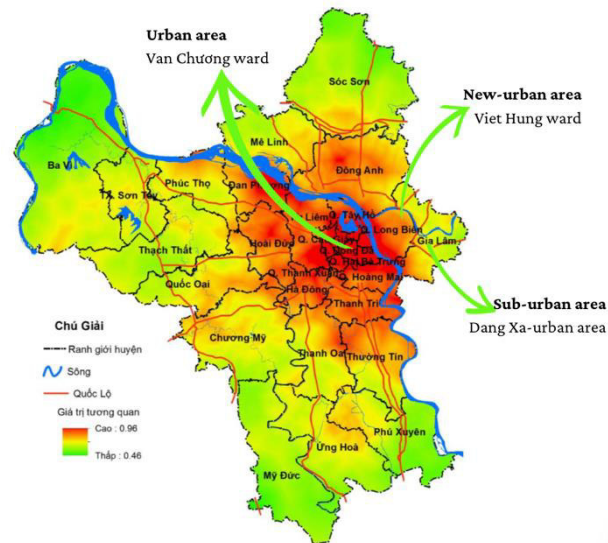


Figure 1. Hanoi urban map and the 3 survey areas

Through observation and discussions with local authorities, we quickly assessed the areas using several approaches, such as: 1) housing space (apartment buildings, individual houses), 2) vegetable growing locations (balconies, sidewalks, home gardens, etc), and 3) types of technology used in vegetable growing. A large sample size is important for ensuring a high level of representativeness. However, due to limited time and budget, the study can only approach 120 households using stratified sampling, with 40 households in each of the three research areas. In addition to in-depth interviews, the observation method was employed in this research to gather more information about the situation and challenges urban consumers face in self-provisioning.

3.2. Data calculation and analysis

In this study, questions related to motivation for homegrown with a five-point Likert scale which was selected as the main instrument in this study's survey. Average scores were calculated for the Likert scale ranging from Strongly Disagree =1 to Strongly Agree =5, allowing for determining composite score tendencies. The average score is calculated by multiplying the proportion of samples within each selected scale (ranging from 1 to 5) and dividing it by the total sample size. Data analysis involved descriptive and comparative methods, using SPSS and Excel, with ANOVA to identify significant sample differences.

4. RESULTS

4.1. Samples' characteristics

The survey was conducted among 120 households in an urban area with 70 vegetable grower, focusing on their vegetable gardening activities. The data collected covered various

aspects such as household demographics, types of vegetables grown, gardening methods used, and challenges encountered in urban environments. In terms of gender, the group was fairly balanced between males and females. The age of the participants varied, but the majority were middle-aged. In terms of educational level, the majority of the participants had a university degree or higher. Their occupations were also diverse, ranging from civil servants, workers to self-employed people. The average household income was mainly at the average level, with families of 3-4 members being the most common. In general, the group of survey participants had a fairly high level of education, stable income, and relatively stable family structure. Overall, the majority of respondents were middle-aged and post-middle-aged with average incomes in urban Vietnam (from 7 to 10 million VND, equivalent to approximately 286 to 409 USD).

4.2. Consumers' self-provisioning vegetable situation in Hanoi city

The situation of home-grown vegetables is shown in Figure 1.

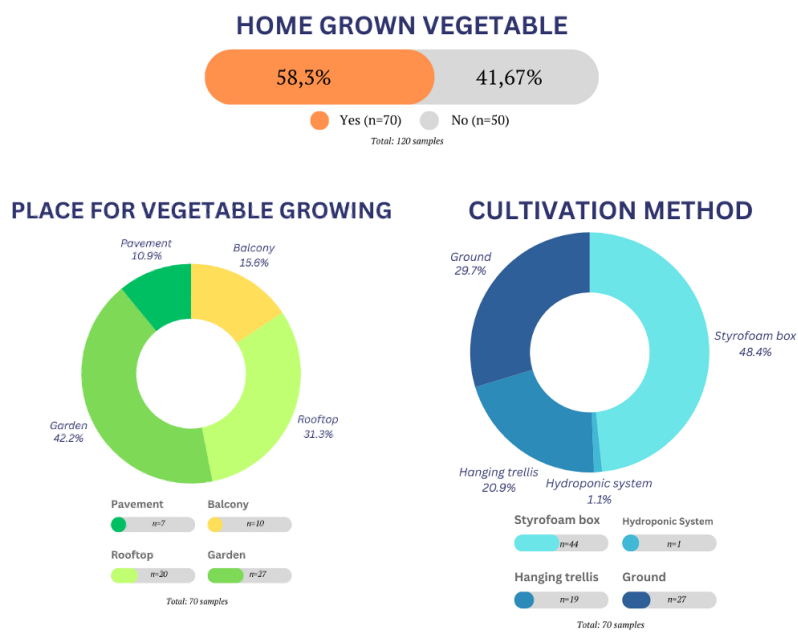


Figure 1. Situation of home-grown vegetables in Hanoi city

According to Figure 1, 58.33% of consumers grow vegetables at home to provide for themselves.

Due to limited land for home-grown vegetables among urban residents, places for growing vegetables include balconies, rooftops, gardens, pavements, and yards. Among these, the most popular places for self-provisioning vegetables of urban residents in Hanoi city are gardens (38.57%) and rooftops (28.57%). Following these are growing vegetables on balconies (14.29%), pavement (10.00%), and yards (8.57%).

Various cultivation methods for growing vegetables among urban consumers include styrofoam boxes, hydroponic systems, hanging trusses, and traditional growing methods. The most popular method for urban residents to self-provision vegetables is the styrofoam box, chosen by

62.86% of the total respondents. This is an easy growing method for everyone, including beginners or those growing for many years. Styrofoam containers and plastic boxes are items that can be easily found right in every household. We just need more soil, seeds, and a suitable planting space to start growing vegetables at home. This method is suitable for households with small areas, even households that still place Styrofoam containers to grow vegetables in the garden. However, the number of vegetables in the Styrofoam box can only meet a small part of daily consumption, and the vegetables grown are mainly leafy vegetables and herbs. Following this are traditional growing methods (38.57%) and hanging trellises to save space (27.14%). It can be seen that the aeroponics and hydroponics methods will help people save time on care and input material, but they require more investment costs than traditional soil farming methods, therefore, only 1 consumer (1.43%) in our survey practices the hydroponic system.

4.3 Public concerns about urban vegetable gardening in Hanoi city

From deep interview urban residents and local authority officers, there are various challenges related to urban vegetable gardening in Hanoi city.

The study highlights various challenges faced by urban home gardening from both political and technical perspectives. Politically, it points out that urban gardens have not received sufficient attention and support from the government. Despite their potential to improve food security and create green spaces within cities, these initiatives often lack formal recognition and are not integrated into urban planning policies. This lack of government support leads to insufficient funding, resources, and infrastructure necessary for maintaining and developing urban vegetable gardens. As a result, citizens face significant difficulties in expanding their gardening efforts, sustaining their gardens, and achieving the desired outcomes.

From a technical standpoint, home vegetable gardening also encounters substantial obstacles. Many consumers report a lack of basic knowledge about how to grow vegetables at home, especially in confined spaces like balconies, rooftops, or other small urban areas. This lack of understanding not only affects crop yields but also leads to inefficient use of the available space, resulting in outcomes that do not meet expectations. Furthermore, managing odors during the composting process is a major challenge for many, making it difficult for them to maintain a clean and pleasant living environment.

Additionally, another concern raised by many consumers is food safety. They worry that homegrown vegetables might be contaminated by urban pollution, including dust, chemicals, and other hazardous waste. This concern is exacerbated by the lack of knowledge about safe and effective organic farming practices. The lack of understanding affects not only the quality and safety of the food but also reduces people's confidence in their ability to provide clean and healthy food at home.

Overall, these challenges underscore the need for better coordination between government support policies and efforts to raise awareness and technical skills among citizens, making urban home gardening a sustainable and effective solution in the future.

Thus, we see that support from the government or reputable organizations in the effort to support people to self-implement and meet their vegetable growing needs is extremely important.

Below are some of the people's interview opinions when asked “*Ông/bà có kiến nghị gì với UBND về công tác hỗ trợ giúp việc trồng rau tại nhà có hiệu quả hơn? ” (Do you have any recommendations for the People's Committee on support work to help grow vegetables at home more effectively?)* collected during our investigation:

“Hỗ trợ nguồn giống tốt để phục vụ bà con có nhu cầu trồng rau tại nhà; Tuyên truyền cách trồng rau qua loa phát thanh để đảm bảo người dân được nghe những thông tin hữu ích.

Translation:

Support good seed sources to serve people who want to grow vegetables at home; Propagate vegetable growing methods through loudspeakers to ensure people hear useful information.” (Au. Thi Chiem, personal interview, Viet Hung Ward, September 2023)

“Chính phủ có thể tài trợ cho các dự án giáo dục miễn phí về trồng rau tại nhà, các chương trình nhằm mục đích giúp người dân trồng và sản xuất rau mà không cần mua ngoài thị trường; UBND có thể đầu tư vào các dự án trang trại đô thị hoặc khu vườn trên mái nhà

Translation:

The government can fund free education projects on home vegetable growing, programs aimed at helping people grow and produce vegetables without having to buy them from the market; People's Committees can invest in urban farm projects or rooftop gardens” (Tran. Ngo Hoang, personal interview, Dang Xa urban-area, September 2023)

“Tổ chức các buổi họp nhóm, câu lạc bộ cho những người thích trồng rau tại nhà để mọi người tham gia chia sẻ kinh nghiệm kiến thức

Translation:

Organize group meetings and clubs for people who like to grow vegetables at home so that everyone can participate in sharing experiences and knowledge.” (Nguyen. Thi Tinh, personal interview, Van Chuong Ward, September 2023)

A SWOT analysis reveals various strengths, weaknesses, opportunities, and threats associated with this practice. **Strengths** of urban vegetable gardening include the strong sense of community among participants and the environmental benefits it provides. Many residents have already begun growing their own vegetables, which helps reduce the urban heat island effect, improve air quality, and increase biodiversity. Additionally, access to fresh, pesticide-free produce enhances public health (Chalmin-Pui et al., 2021). However, several **weaknesses** hinder the widespread adoption of urban gardening. One major issue is the lack of governmental support, which results in insufficient resources and infrastructure for urban gardeners. Many residents also lack the necessary knowledge to grow vegetables in small spaces and face challenges in managing odors from composting (Loan et al., 2019). Additionally, concerns about food safety arise due to potential contamination from urban pollution (Pham & Turner, 2020). On the other hand, there are several **opportunities** to advance urban vegetable gardening in Hanoi. The development of community projects and partnerships with non-governmental organizations (NGOs) or private enterprises could provide much-needed support. Increasing public awareness through educational programs and leveraging social media to disseminate information could also enhance community participation. Moreover, governmental investment in infrastructure, such as rooftop gardens and

urban farms, could greatly benefit the practice (Sanyé-Mengual et al., 2016). Despite these opportunities, urban vegetable gardening faces several **threats**. The difficulty in controlling the quality of soil and water in urban environments can compromise the safety of home-grown produce. Additionally, a lack of coordination between stakeholders could impede the effectiveness of urban gardening initiatives. Finally, climate change and unpredictable weather patterns pose significant risks to the sustainability of urban agriculture (Vávra et al., 2018).

To address these challenges, it is essential to enhance governmental and organizational support. The government should implement policies that support urban vegetable gardening by providing quality seeds, developing infrastructure like rooftop gardens, and offering free educational programs to equip residents with the necessary skills. This could be done in collaboration with NGOs and private enterprises to ensure the availability of resources and to create more sustainable projects (Sanyé-Mengual et al., 2016).

Another crucial solution is to increase public awareness and education. Organizing workshops, forming clubs, and creating support groups can facilitate knowledge-sharing and encourage more residents to engage in urban gardening. Utilizing social media platforms to disseminate information and share success stories can further bolster community involvement (Chalmin-Pui et al., 2021).

Improving infrastructure and ensuring the quality of gardening inputs are also vital. Investment in smart irrigation systems, organic fertilizers, and quality control of soil and water can help maintain the safety and sustainability of urban gardens. Establishing community gardens where the government can oversee and manage input sources will ensure the safety and quality of the produce (Loan et al., 2019).

Finally, fostering cooperation among all stakeholders is key to the success of urban vegetable gardening. Encouraging collaboration between residents, government officials, and community organizations can lead to more effective and coordinated efforts. Introducing reward programs for individuals or groups that contribute significantly to urban gardening can motivate further participation and innovation (Vávra et al., 2018).

5. CONCLUSION

Urban vegetable gardening in Hanoi presents a complex array of challenges that stem from both public concerns and the perspectives of vegetable consumers. Throughout this research, the intricate dynamics of urban agriculture have been explored, particularly within the context of a rapidly urbanizing city like Hanoi. The findings underscore the significance of addressing these challenges to promote a sustainable Urban vegetable gardening ecosystem.

The study reveals that public concerns about Urban vegetable gardening in Hanoi are primarily centered around issues of food safety, environmental impact, and space constraints. Consumers are increasingly aware of the benefits of locally sourced produce, yet they are also wary of potential risks, such as contamination from urban pollutants. These concerns highlight the need for stringent safety regulations and better public awareness campaigns to build trust in urban-grown vegetables.

From the perspective of vegetable consumers, the research indicates that while there is a growing interest in urban vegetable gardening, there are significant barriers to its widespread adoption. These include limited access to suitable gardening spaces, lack of knowledge, and the time required to maintain a garden. Addressing these barriers through policy support, educational programs, and community initiatives could encourage more widespread participation in urban vegetable gardening.

In conclusion, for urban vegetable gardening to thrive in Hanoi, it is crucial to address the identified challenges through a multi-faceted approach. This includes improving public infrastructure, enhancing regulatory frameworks, and fostering community engagement. By doing so, Hanoi can develop a more resilient and sustainable urban food system that benefits both consumers and the environment.

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GREEN CREDIT DEVELOPMENT: EXPERIENCES OF SOME BANKS IN THE WORLD AND VIETNAM, LESSONS FOR THE BANK FOR AGRICULTURE AND RURAL DEVELOPMENT OF VIETNAM

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ABSTRACT

The green economic trend is inevitable for sustainable development. Like many countries in the world, Vietnam has had many solutions to promote the green economy. Commercial banks play the role of an intermediary link, indirectly affecting the environment through customer activities. Therefore, one of the responsibilities of banks is to actively and proactively manage environmental and social risks in internal operations, while proactively seeking and exploiting environmentally friendly products and business opportunities. Green credit is the credit that banks issue for production and business projects that do not cause risks or aim to protect the environment. Therefore, developing green credit at commercial banks is a trend and an urgent requirement. Based on the above reality, in this article, the author studies international experience in developing green credit and lessons for the Bank for Agriculture and Rural Development of Vietnam.

Keywords : Green credit development; Vietnam Bank for Agriculture and Rural Development

1. INTRODUCTION

Recently, the contents of green credit and green banking are urgent issues, attracting great attention from the community as well as the banking system in Vietnam. As a leading commercial bank in the field of agriculture and rural development, the Bank for Agriculture and Rural Development of Vietnam (Agribank) is deeply aware of the risks when Vietnam's agriculture is facing a series of challenges from climate change. Therefore, Agribank is determined to take the lead in implementing the direction of the State Bank of Vietnam on promoting green credit, integrating green development strategies into the Bank's development strategy. Since 2016, Agribank has implemented a preferential credit program for green and clean agriculture with unlimited capital scale, initially 50,000 billion VND. Agribank is effectively implementing 7 policy credit programs and lending under 2 national target programs in agriculture and rural areas. During the implementation process, Agribank also encountered some difficulties in developing green credit, the complex problem of appraisal techniques is also a huge obstacle, leading to the scale of green credit still being limited and not corresponding to the expectations of banks and the economy. Therefore, learning from the experiences of some banks in the world and in Vietnam is very necessary for the development of green credit at Agribank.

2. RESEARCH OVERVIEW

1. Yujun Cui et al. (2018), *The Impact of Green Lending on Credit Risk in China*, Sustainability, vol. 10, June 2018

This study examines the impact of green lending on credit risk in China . The aim of this study is to explore whether green lending is less risky than non-green lending. Based on a five-year dataset of 24 Chinese banks, the study used panel regression techniques, including two-stage least squares regression analysis and random effects panel regression, to examine whether a higher proportion of green lending reduces banks' NPL ratio. The results show that the allocation of more green lending to the total loan portfolio reduces banks' NPL ratio. The study concludes that the institutional pressure from China's green lending policy has a positive impact on both the environmental and financial performance of banks.

2. Ke Zhang et al. (2021), *Can green credit policy improve environmental quality? Evidence from China*, Journal of Environmental Management, vol. 298, November 2021

This paper addresses the question of whether green credit, an environmental policy tool, has achieved the desired effect in improving the environment in China from both theoretical and empirical perspectives. Using panel data from 30 provincial-level administrative regions in China from 2007 to 2016, a fixed-effects model and gray correlation analysis method are used to examine the effects and mechanisms of green credit on China's environmental quality. The results show that green credit improves China's environmental quality overall. Green credit can reduce environmental pollution through three mechanisms: improving enterprise operating efficiency, promoting enterprise innovation, and upgrading industrial structure. However, there are regional differences in the emission reduction effects of green credit. Green credit improves environmental quality more in resource-based regions than in non-resource-based regions; The emission reduction effect is significant in regions with developed financial markets, but not significant elsewhere. The results suggest that green credit policies should be differentiated by region to achieve emission reduction targets more effectively. [64]

3. Wei Yin et al. (2021), *The determinants of green credit and its impact on the performance of Chinese banks* , Vol. 286, March 1, 2021, Page 124991

The study examines the determinants of green credit and the impact of green credit on the profitability and credit risk of Chinese banks. This study uses bank-level data for the period 2011–2018 and it applies the Generalized Method of Moments (GMM). The paper contributes to the understanding of green credit policy in China by examining the determinants of green credit policy and its relationship with bank profitability and credit risk. The study finds that large and profitable banks tend to lend more green credit. Interestingly, there is no significant impact of bank risk on green credit policy. In other words, risk management is not a significant barrier for banks to issue green credit. The study finds that state- owned banks are more likely to issue green credit. Furthermore, green lending activities have a significant impact on the profitability and risks faced by these banks. One of the most striking findings of this study is that while green lending increases the profitability of non-state-owned banks and reduces their risk, state-owned banks provide green credit at the expense of their profits. This may be due to the Chinese government's ambition to promote state-owned banks to play a leading role in green lending.

4. Research by Dang Anh Tuan and Pham Hien Luong (2020) : Evaluate the results of green credit development at BIDV Bank and make some recommendations to promote the

development of green banking activities at commercial banks in general and BIDV in particular such as: raising awareness of banks; supporting commercial banks in green credit appraisal; strengthening the legal framework for green credit.

5. Tran Thi Xuan Anh, Tran Thi Thu Huong (2021) : Developing green credit contributes to promoting circular economy in Vietnam . The study shows that circular economy is considered a key development orientation of Vietnam in the period of 2021-2030 in promoting harmonious development between economy and environment. Green credit policy is an important solution to implement circular economy goals through green investment project loans.

3. RESEARCH METHODS

Statistical method: This method is used to present data related to green credit development related to the research topic. The data is arranged in a logical order, ensuring logic and science.

Comparison method: Used to compare green credit balance over the years, thereby proposing solutions to increase green credit balance at the bank.

Analytical method: Used throughout the entire content of the article, to clarify how green credit is developed in banks around the world, thereby drawing lessons for Agribank.

Synthesis method: Based on this method, the author synthesizes lessons learned and information collected according to each content and presents them systematically to serve the research process.

4. THEORETICAL BASIS

According to the World Bank: Green credit is financial or investment products designed to support businesses, investments or projects that have a positive impact on the environment, while meeting financial, environmental and social standards .

Asian Development Bank (2013): Green credit is a series of policies, systematic arrangements and implementation by banks to provide loans or other financial instruments that promote energy conservation and emission reduction .

Accordingly, green credit is defined as financial and investment activities that have a positive impact on the environment, including activities to protect, maintain and improve environmental quality, as well as sustainable socio-economic development activities. Since then, other financial institutions have also begun to develop green financial policies and products, including commercial banks and international financial institutions. Currently, green credit is considered one of the important tools to promote sustainable development and minimize the impact of business activities on the environment.

5. RESEARCH RESULTS

5.1. Experience of some banks in the world and Vietnam

Bank GIB Bank in UK

GIB Bank - The UK Green Investment Bank is a successful example in developing green credit .

With the aim of greening the economy through investment in innovative, environmentally friendly regional projects that lack private sector support such as offshore wind energy, energy efficiency, waste, bioenergy and onshore renewable energy sources, GIB promotes the development of green credit and financial services through the following aspects:

- Green product deployment: During 2018-2019, GIB expanded its investment mandate to large-scale renewable energy sources such as hydropower projects under 8 MW and wind power projects under 18 MW. Overseas projects in South Africa, East Africa and India are also starting to develop and are funded by the Department of Energy and Climate Change (DECC) with an initial capital of 200 million GBP. To date, GIB has invested in 68 green infrastructure projects and seven funds such as UK pension funds, private equity funds, etc., while also committing 2.6 billion GBP to the UK's green economy. Increasing transparency and expanding investment flows into sustainable development projects: GIB has expanded its reach to more than 200 organizations around the world.

Vision and impact: GIB has demonstrated its vision and impact by promoting the development of green industries and minimizing the negative impacts of business activities on the environment and society. GIB is also one of the pioneering banks in investing in carbon emission reduction projects, actively contributing to global efforts to combat climate change.

About GIB's influence: Over the past decade of operation, GIB has made an important contribution to promoting the development of green projects, enhancing transparency and reducing risks for banks and financial institutions in investing in sustainable development projects. This helps orient the policies and operations of other financial institutions towards sustainable development, while expanding the flow of investment capital into green projects, making a positive contribution to building a sustainable economy and society.

About GIB's experience in developing green credit: GIB is a typical example for financial institutions in developing green credit and investing in sustainable development projects. GIB has built an effective green investment system, from policy orientation and green investment criteria, to investment trust activities in green projects, while helping to mobilize capital from the stock market, debt market and risk pricing in financial markets through enhancing transparency and expanding investment capital flows into sustainable development projects.

Making smart investments in green projects: GIB has made investments in green projects such as wind power, solar power, hydropower and other renewable energy projects, aiming to reduce the carbon footprint of the economy. GIB has financed these projects by attracting private funds and creating a favorable investment environment for investors interested in green projects.

Enhanced transparency and risk management: GIB has set out to enhance transparency and risk management in its investment activities. These activities include assessing and managing environmental and social risks, and enhancing transparency and enabling potential investors to evaluate GIB's green investment projects.

Creating a financial mechanism to support sustainable development: GIB has carried out financial activities such as issuing green bonds and other forms of financing to support sustainable development and investment in green projects. This is a new financial mechanism to promote investment in green projects and at the same time create a positive investment environment for investors interested in sustainable development.

Supporting the development of green technologies: GIB has supported companies to develop new green technologies to help increase energy efficiency and reduce carbon emissions. This will help reduce negative impacts on the environment and at the same time promote green economic development. [3]

CGB Bank in the US

Connecticut Green Bank is the first green bank in the United States, established in July 2011, with the purpose of developing programs that leverage private capital to generate long-term, sustainable financing to support energy efficiency and clean energy measures in residential, commercial and industrial sectors. CGB identifies green investment objectives and positive environmental outcomes as unique objectives integrated into the bank's investment strategy. CGB evaluates the green impact of projects in a clear and quantitative manner, giving priority to green projects and excluding unsustainable investments. The green investment strategy is implemented across the bank's overall investment portfolio. The Bank has increased its provision of working capital loans to solar companies and deployed financial instruments to support green investments and products, including the Commercial Project Finance for Clean Energy (C-PACE) facility, which helps commercial, industrial and residential project owners access long-term financing for energy-smart buildings through a voluntary assessment on their tax bills. The capital provided for C-PACE is secured by collateral. In addition, CGB issues bonds to attract private investment in clean energy projects. CGB also deploys soft finance instruments such as project appraisal, technical assistance, policy coordination, investment matching, etc. to support businesses in implementing green development projects and ensuring the sustainability of such projects. Since 2013, CGB has attracted increasing private sector capital through hard green investment support tools such as capital support and soft finance tools such as detailed project appraisal, technical support, policy coordination, and investment connection. [4]

Banks in France

BNP Paribas is the largest banking group in France and the sixth largest in the world, with total assets of approximately USD 2,360 billion. BNP Paribas has been actively developing green credit services by withdrawing from the dirty energy sector. The group aims to reduce greenhouse gas emissions to 2.41 teqCO₂/FTE by 2020, lower than 2.72 in 2016. To achieve this goal, BNP Paribas has decided not to finance projects in the transportation, export of shale oil and gas, coal mining, coal-fired power generation and projects related to tobacco production and trading. In addition, the bank has proactively issued green bonds to mobilize medium- and long-term capital to finance environmentally friendly projects. Overall, BNP Paribas has valuable experience in developing green credit and is one of the pioneering banks in applying environmentally friendly financial solutions. [4]

Experience in developing green credit of ICICI Bank India

ICICI Bank. The bank has taken several initiatives in developing NHX services and is among the eight banks in India that are playing a key role in addressing the challenges of climate change. The bank's green initiatives include:

- Regarding awareness raising : The Bank organizes NHX-related events on special days to raise awareness of customers and bank employees about environmental protection ; The Bank, through the media, encourages customers to use paperless services such as online money transfer payments and electronic reporting registration. In addition, in the coal industry, the Bank has helped customers and employees to be aware of the carbon emissions of these projects. The Bank has built a program that connects agencies such as banks, governments, businesses and other organizations to participate in planning projects to finance biodiversity issues and conserve wildlife habitats.

- Regarding the development of green credit at the bank: The bank provides green loans for vehicles and green loans for housing. The bank supports customers by reducing 50% of processing fees for energy-efficient vehicles to encourage customers to use eco-friendly vehicles. The bank lends to eco-friendly housing projects using renewable energy with low-interest credits + The bank has launched an environmental management program with the Bombay Natural History Society (BNHS) to plan funding for projects on biodiversity and wildlife habitat protection. ICICI has been awarded the Green Governance Award for its efforts in promoting NHX activities.

- Regarding capital mobilization for green investment projects, the Bank seeks partners such as green organizations and non-governmental organizations to take advantage of green capital for green projects. [4]

German Bank for Reconstruction - KfW

KfW is a German development bank known for its focus on sustainable finance. KfW provides finance and support for a wide range of projects aimed at promoting sustainable development in Germany and around the world. In terms of sustainable finance, KfW offers a range of products and services designed to promote environmental and social sustainability. This includes financing renewable energy projects, energy efficiency measures and sustainable transport, as well as programmes supporting sustainable urban development, biodiversity conservation and climate adaptation. KfW is also strongly committed to transparency and accountability in its sustainability activities. The bank regularly publishes sustainability reports that provide detailed information on the bank's performance in areas such as carbon emissions, resource use and stakeholder engagement. Overall, KfW's focus on sustainable finance has made it a leader in promoting environmental and social sustainability in the German and global financial sector.

Green loans made by KfW IPEX-Bank with a special green finance framework are certified (by an external certification body, which provides a second-party opinion) to ensure that both the business and the bank can be absolutely sure that KfW is having a positive impact on the environment and climate.

In the sustainability guidelines, the Bank's Guide to Environmentally and Socially Sound Finance, they provide specific appendices, guiding businesses to properly implement their commitments . And there is a classification of environmental and social projects and some potential impacts .

ING Bank (Netherlands)

ING Bank is a leading financial institution that places sustainability at the heart of its strategy. To finance sustainable economic activities: ING Bank offers a range of sustainable finance solutions, including green loans and bonds, as well as advice and support for clients seeking to transition to a low-carbon economy. In addition, ING Bank promotes a culture of sustainability by engaging with employees, customers and stakeholders on sustainability issues and encouraging sustainability-focused innovation. The bank also regularly publishes sustainability reports to provide transparency on its performance and progress towards achieving its sustainability goals.

ING has been climate neutral since 2007 and has committed to moving close to zero coal-fired power generation and thermal coal mining by 2025. The bank aims to have a net energy positive mortgage portfolio by 2050 and has ambitiously aligned its Dutch commercial real estate portfolio to a below two degree target by 2040, ten years ahead of target. ING has signed up to the Poseidon Principles to reduce CO2 emissions by 50% by 2050 and aims for its automotive portfolio to outperform the market in terms of carbon intensity in the short term.

The bank has pioneered sustainable finance by financing billions of euros in renewable energy projects and linking loan interest rates to a company's environmental, social and governance performance. ING continues to launch innovative sustainable finance products to encourage companies to measure their ESG goals. In addition, ING committed €14.6 billion in climate finance in 2017 and aims to double this amount by 2022 to organisations that fight climate change and have a positive impact on society and the environment. ING launched Sustainable Investing in 2018 to support sustainable scale-up with a positive environmental impact in areas such as the energy transition, the circular economy and water supply or treatment. [4]

Joint Stock Commercial Bank for Investment and Development of Vietnam

BIDV is one of the major banks in the Vietnamese banking system. Recognizing the role and significance of sustainable growth and green economy for the overall Vietnamese economy, right from the time of building the business strategy for the period 2021 - 2025 with a vision to 2030, BIDV has aimed for sustainable development throughout the bank's operational goals, making green credit a priority in the development strategy.

Since 2019 , BIDV has cooperated with international organizations to research and issue policy frameworks for sustainable financial development and ESG risk management, specifically : Environmental and social risk management framework applied to loans from international capital sources (ESMS) ; Sustainable loan framework ; Green bond framework according to the green bond principles of the International Capital Market Association (ICMA) and Environmental risk management policy in credit granting activities... BIDV's green bond framework is highly appreciated by Moody's Credit Rating Organization for its transparency, compliance with

international principles as well as capital use management and reporting measures with a very good score of SQS2.

BIDV actively participates in international forums on environmental protection such as COP 26, 27, 28... to grasp the goals, orientations and trends, and market shifts towards sustainable development. At the same time, it studies and approaches foreign financial institutions and international organizations to explore cooperation possibilities to promote cooperation related to ESG such as signing a Memorandum of Understanding (MOU) with the Global Green Growth Institute (GGGI) on support in issuing green bonds, technical support and sharing information on feasible green projects, working with the Ministry of Natural Resources and Environment to grasp the progress of implementing JETP capital in Vietnam...

By the end of 2023, the bank had financed over 1,500 customers with 1,900 green credit projects/schemes . The total outstanding loan balance reached over VND 73,000 billion, accounting for nearly 5% of BIDV's total outstanding loan balance. In particular, the main fields are clean energy, renewable energy; followed by the fields of natural environment protection, ecological environment restoration and natural disaster prevention...

Regarding Experience in monitoring, evaluating project effectiveness and reporting methods to regulatory agencies . BIDV has conducted strict post-disbursement monitoring to assess customers' payment capacity and credit risk. However, this monitoring mainly focuses on financial aspects. Green credit reporting has been conducted , complying with the quarterly reporting regime to the State Bank according to the form prescribed in Official Dispatch No. 9050/NHNN-TD dated November 3, 2017. [4]

5.2. Lessons learned from developing green credit for the Bank for Agriculture and Rural Development of Vietnam

Green credit plays an important role in the development of a sustainable economy in general and the development of the Bank for Agriculture and Development in particular. For Agribank, the author proposes to learn lessons from both emerging and developed economies. This includes establishing a specialized department for green credit in the bank and gradually moving towards the establishment of an independent green bank like developed economies. Specifically as follows:

First, Raise awareness of Agribank's Board of Directors about credit

The experience of implementing green credit activities in many banks must come from the awareness of bank managers, thereby unifying actions and pioneering the implementation of green projects. It can be said that the concept of green credit has only appeared in Vietnam in recent years. Therefore, bank managers themselves are still quite vague in their awareness of green credit. Meanwhile, banks play a very important role in providing capital for the economy, creating cross-sectoral impacts on all fields. First of all, Agribank can improve the understanding of bank employees about green credit and green credit services through training sessions.

Second, Agribank needs to develop a strategy for developing green credit services.

- In the immediate future, the Bank needs to develop a roadmap for green credit services in line with the country's green growth strategy and international integration trends. With existing

green credit services based on the application of technology platforms such as e-banking services, Agribank needs to complete transactions quickly, safely and accurately. At the same time, the Bank needs to build and design green credit services that suit the needs of customers. Based on lessons learned from ICICI Bank in India, Agribank needs to support green credit development through interest rate support, loan conditions, and collateral.

- Banks should simultaneously issue a list of green projects that the bank will finance and projects that are restricted from being financed due to their adverse environmental impacts, as demonstrated by GIB Bank.

- Banks all have strategies to create capital sources to meet TDX needs such as issuing green bonds following the experience of BNP Paribas bank or finding partners to build capital sources such as MICICI bank India.

Third, Agribank should establish a specialized department to design and develop green credit services, while understanding customers' needs for green investment.

Based on the experience of IDBI Bank of India and SocGen of France, it is necessary to establish a specialized unit for research, consultancy and operation of green credit services (TDX), especially green project financing services. This unit will also manage budget allocation for green credit-related activities, including: budget for green finance; budget for climate change risks and budget for marketing and capacity building in this field. Green credit services need to be deployed along the supply chain from research, project consultancy to financing and providing support solutions.

Fourth, Agribank needs to strengthen cooperation with international financial institutions to receive financial support, as well as develop guidelines for managing environmental and social risks in credit granting activities . The bank has taken initial steps in building a policy framework to identify green projects to protect the environment, which are relatively highly appreciated. However, the bank Refer to the classification of environmental protection projects according to the State Bank's guidelines and refer to the KfW (Germany) sustainability principles guide, guiding businesses to properly fulfill their commitments. Agribank establishes a system of support tools including interest rate policies, limits, loan terms and the establishment of a TDX fund.

Fifth, Improve the capacity of staff in developing green credit for Agribank . In loans supporting green projects, bank staff need to be able to evaluate and appraise projects from an environmental perspective, using new technology and techniques, as well as the ability to evaluate and analyze the impact of projects on the social environment; need to organize training in appraisal and lending for energy-saving projects effectively; identify projects that are sustainable and consistent with the green credit development strategy.

Sixth, information should be disclosed and made transparent in the annual development report according to international standards . According to BIDV's experience, Agribank should disclose and make transparent information in the annual development report. This will encourage Agribank to increase its responsibility to the social community through financial support for projects related to the environment and increased social supervision.

Seventh, developing technology and applying information technology in green credit activities is also an important factor . Agribank should invest in and take advantage of modern information technology applications to collect, analyze and provide information related to green investment quickly and accurately. Applying information technology will help banks effectively monitor and control loans, assess environmental risks and make more appropriate investment decisions.

6. CONCLUSION

Thus , through the experience of developing green credit at banks around the world and commercial banks in Vietnam, the article has drawn 7 lessons for the Vietnam Bank for Agriculture and Rural Development in developing green credit. This is a premise for banks to fulfill their social responsibilities in business.

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BUILDING AN INDEPENDENT AND AUTONOMOUS ECONOMY OF VIETNAM IN THE PROCESS OF INTERNATIONAL ECONOMIC INTEGRATION

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ABSTRACT

In recent years, the world and regional situation has been volatile, with crises, embargoes, conflicts and wars in politics, economics and trade, increasing domestic instability if the country depends heavily on the outside. From there, the Party and the Government have set out orientations to build an independent and autonomous Vietnamese economy in the process of international economic integration. First of all, the article studies the current status of the Vietnamese economy to what extent it is independent and autonomous in the fields of production, trade, investment, technology and human resources. However, through data from reliable documents and the results of research projects, it shows that the Vietnamese economy still has certain limitations in the above fields, specifically, FDI enterprises still dominate. On that basis, the article proposes solutions on long-term development strategy policies for Vietnam to overcome current limitations to move towards greater independence and autonomy in the future; thereby helping Vietnam develop stably, sustainably and reduce dependence on the outside.

Keywords: Vietnam, independent and autonomous economy, economic integration, international economic integration

1. INTRODUCTION

Whether in the conditions of a self-sufficient economy or a market economy, the requirement to build an independent and autonomous economy is always posed to all economies, especially in the context of international economic integration taking place deeply in the world, the requirement of independence and autonomy becomes more urgent because integration is increasingly expanded, dependence and impact always occur if an economy does not ensure its autonomy and independence.

Recently, the world economy has become less stable, there are conflicts, even trade wars, economic wars or economic sanctions between countries, making the economies of countries easily vulnerable, manipulated and becoming victims in the process of international economic integration due to lack of independence and autonomy. Most recently, the 2008 financial crisis that started in the US has spread throughout the world, causing many economies to struggle and go into recession; The public debt crisis of some countries such as Greece and Spain also affected the economies of Europe and several other countries; the trade war between the US and China has also affected economic groups and economies among the two sides, affecting related partners;

currently, the war between Russia and Ukraine has caused Russia to be embargoed with a series of economic and political sanctions from countries such as the US, EU, Japan... for Russia, causing the Russian economy to be almost isolated from the outside world.

In addition, the fact that North Korea, Iran and Cuba are being economically embargoed by developed countries, including the US, showing that the lack of independence and economic autonomy is very harmful to the long-term development of the country. Even China is now being publicly embargoed by the US on semiconductor chips in particular and some high-tech products in general to prevent the development of this country. Therefore, in addition to the positive impacts of the international economic integration process, the international economic integration process always comes with risks and challenges. Similarly, Vietnam has also experienced a long period of economic embargo and blockade, so it understands the meaning of dependence, blockade and embargo from the outside, so the Party and State of Vietnam have had a policy of building an independent and autonomous economy very early to ensure the economy has stable, long-term and sustainable development.

2. LITERATURE REVIEW

Building an independent and autonomous Vietnamese economy in the process of economic integration is a hot topic in recent years when the process of deep integration requires both independence and autonomy, so many works of authors have studied this issue from different aspects and perspectives. Here are the results of works discussing this issue as follows:

When talking about Vietnam's orientation on building an independent and autonomous economy in the process of international economic integration, the papers all take the orientations and viewpoints in the documents that the Party and Government of Vietnam issued since the country has opened its economy. In 1991 Vietnam had the viewpoint of cooperation and making friends with all countries in the world based on the principle of equality and mutual benefit, by 2001 emphasizing the building of an independent and autonomous economy in the process of international integration and by 2021 reaffirming the need to build an economy in the direction of multilateralization and diversification to avoid dependence on one market or on one partner (Linh, 2020), (Son, 2021), (Hien V. V., 2021), (Nguyen Minh Phong et al, 2022), (Dung, 2023), (Phuc, 2023).

Most authors mentioned about building an independent and autonomous economy for all types of enterprises, but (Nguyen Minh Phong et al, 2022) only emphasize the role of the State economy. In which, State-owned enterprises play a leading role, creating momentum for the development of the non-state sector. According to the author, State-owned enterprises by 2022 held assets of VND 9.93 trillion with 09 economic groups, 20 general corporations, 06 banks, 01 state financial institution with a total of 930 affiliated enterprises. Besides, the paper pointed out the limitations of the current economy including: The awareness of building an independent and autonomous economy is not really suitable for the context of the country's economic development in the context of globalization; The competitiveness of the economy, of domestic enterprises and goods is not strong enough and Vietnam still has a large trade deficit with China along with a number of other factors that are both short and weak such as human resources; slow shift in economic structure, an increase in public debt, low investment efficiency. Similarly, according to

(Linh, 2020), building an independent and autonomous economy is assessed in terms of production, investment capital, trade and the economy's resilience to fluctuations in the world. In which, the project pointed out that production, export and trade have depended heavily on external economies such as FDI enterprises. These limitations mentioned by (Nguyen Minh Phong et al, 2022) and (Linh, 2020) will be an obstacle to the goal of economic independence and autonomy.

When talking about solutions to build an independent and autonomous economy, (Linh, 2020) proposed a group of solutions to improve the capacity of consumer goods production, diversify the financial market and flexibly use of fiscal and monetary policy tools. A group of solutions to strongly develop science and technology and innovation, diversify trade partners, according to (Linh, 2020), (Nguyen Minh Phong et al, 2022) and (Son, 2021). A group of solutions to train and improve the qualifications and quality of human resources; improving the legal system in accordance with international treaties and international commitments that Vietnam has signed, were proposed by (Son, 2021), Duong (Linh, 2020). In addition, the development of strong Vietnamese enterprises to become the backbone of the country's economy because according to (Son, 2021) (Dung, 2023) the situation of losses, debts and waste in state-owned enterprises has not been improved while the scale, technological level and financial capacity as well as management capacity of private enterprises are still weak.

From the assessment of the advantages and disadvantages of the above works, the authors found that for Vietnam to build an independent and autonomous economy in the process of international economic integration, there are still many research issues, especially the works have been only considered from a theoretical perspective rather than the current situation, leading to a lack of actual data on the research content. This is a gap that the author think that this topic needs to continue to be studied more deeply.

3. METHODOLOGY

Data collection method: The paper collects secondary data from the results of previous works including scientific papers of well-known journals, reports of related agencies such as the Ministry of Finance, General Statistics Office, Ministry of Industry and Trade, etc.

Research method: The paper uses qualitative research methods, including methods of analysis, synthesis, and descriptive statistics.

Data analysis and processing method: Data is selected and screened to ensure accuracy and high reliability, then processed with Excel 2013.

3. RESULTS

3.1. Vietnam's viewpoints and orientations on building an independent and autonomous economy in the process of international economic integration

Our country's policy of international economic integration is clearly shown in the documents of the Party and the State over the years, always affirming active international economic integration while advocating building an independent and autonomous economy.

The 7th National Congress of the Party (1991) affirmed: "We advocate equal and mutually beneficial cooperation with all countries, regardless of different political and social regimes on the basis of the principles of peaceful coexistence", and "With an open foreign policy, we declare that: Vietnam wants to be friends with all countries in the world community, striving for peace, independence and development".

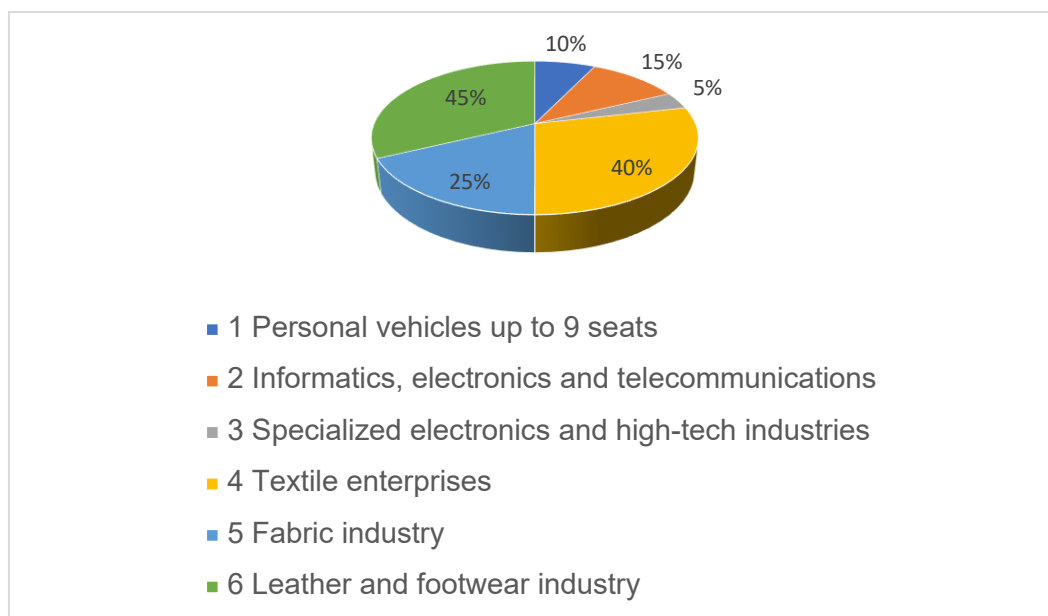
At the 9th Congress in 2001, our Party emphasized for the first time: "Industrialization and modernization of the country must ensure the building of an independent and autonomous economy, first of all, independence and autonomy in guidelines and policies... Building an independent and autonomous economy goes hand in hand with proactive international economic integration; combining internal and external resources into a comprehensive resource for national development".

At the 13th Congress (2021), our Party more clearly defined the content of building an independent and autonomous economy associated with international integration as: "Maintaining independence and autonomy in determining policies, guidelines, and strategies for national economic development... Multi-lateralizing and diversifying international economic relations, avoiding dependence on one market or one partner. Improving the resilience of the economy to negative impacts from external fluctuations; Proactively improve the defense system to protect the domestic economy, businesses, and market in accordance with international commitments".

3.2. Difficulties and challenges of Vietnam in building an independent and autonomous economy in the process of international economic integration

3.2.1. Underdeveloped supporting industry

Vietnam's supporting industry is still weakly competitive, leading to a low localization rate of products. Some experts even say that Vietnam's supporting industry can only make screws (An N. , 2023). The slow development of supporting industry has prevented Vietnam from participating deeply in the global supply chain. Specifically, in the automobile manufacturing and assembly industry, the localization rate for personal vehicles with up to 9 seats only reached an average of 7% - 10% in 2020. Some vehicle lines have met the set target, such as trucks with up to 7 tons, achieving an average localization rate of 55%; passenger cars with 10 seats or more, and specialized vehicles achieving a localization rate of up to 40%. The localization rate of the electronics, information technology and telecommunications industries is only 15%, specialized electronics and high-tech industries is only 5%. The localization rate of textile and garment enterprises is only about 40% - 45%. The Vietnamese textile and garment industry can only meet about 25% of the domestic market demand. The leather, footwear and raw materials industry has a localization rate of this product of Vietnamese enterprises of only 40% - 45% ... (Lam N. B., 2023).



Source: General Statistics Office

Figure 3.1. Localization rate of some industries in the period 2020 – 2023

3.2.2. The service industry and retail market are being dominated by FDI companies

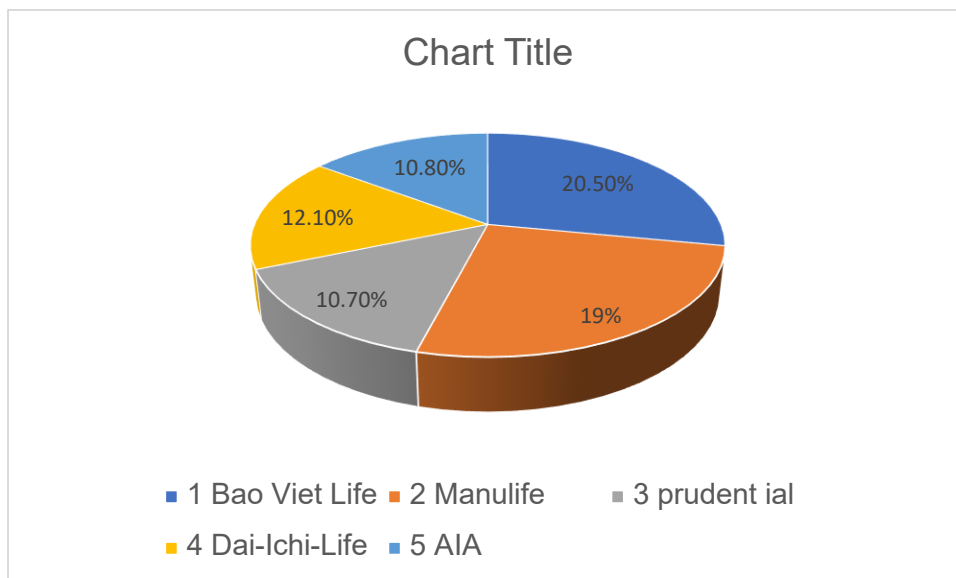
- With logistics services

In terms of quantity, statistics by General Statistics Office shown that in 2023, there were more than 3,000 Vietnamese enterprises operating in transportation and logistics, of which there were about 25 FDI corporations, but in terms of market share, although there were only 25 FDI corporations, they accounted for 75% of the market share of modern warehouse rental in Vietnam in 2023 by area, the remaining 25% of the market share was divided equally among domestic enterprises (Ky, 2024).

- With life insurance services

The Ministry of Finance said that in 2023, there were about 19 companies in the life insurance market, of which there were only 2 Vietnamese life insurance companies, including Bao Viet Life Corporation and Phu Hung Life Insurance Joint Stock Company, the rest were foreign-invested companies/corporations.

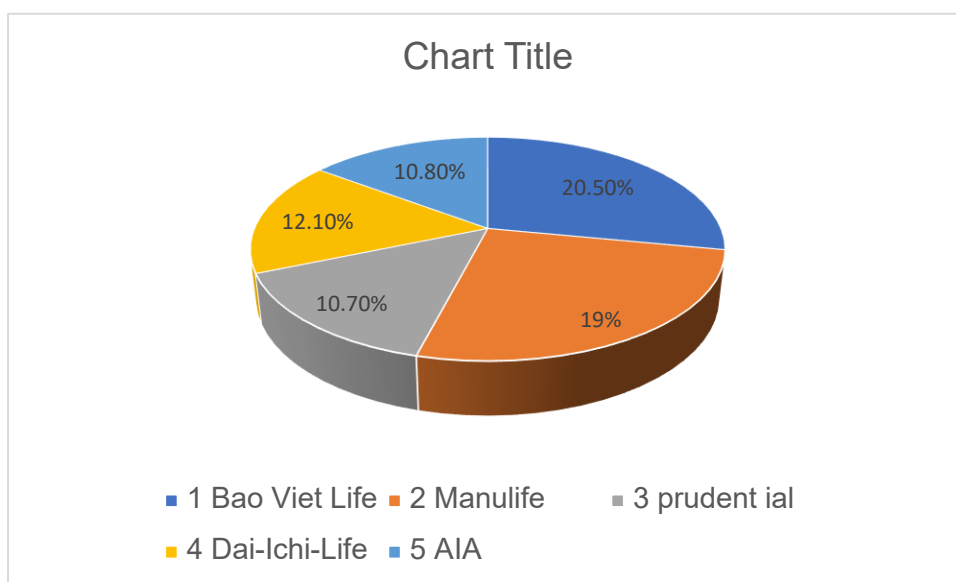
Although BaoViet Life still maintained the largest market share, accounting for 20.8% of the market, the following units were all foreign enterprises such as Manulife (19%), Prudential (16%), Dai-ichi Life (12.1%) and AIA (10.8%). The top 5 accounted for 78.7% of the life insurance market share. However, in the past 5 years, BaoViet Life's market share had decreased by 6%, while foreign insurance companies had tended to increase and dominate the market. Of which, Manulife's market share increased from 6.9% to 19%, AIA increased from 1.5% to 10.8% and Dai-ichi Life increased from 1.6% to 12.1%. Some small insurance companies also increased their market share in the past year such as FWD, MB Ageas, Sun Life, etc. Prudential's market share alone decreased by 10.7% to 16% (Ngoc, 2021).



Source: Ministry of Finance

Figure 3.2. Life insurance market share in Vietnam 2018

VDSC statistics also showed that Bao Viet Life's market share in the first 5 months of 2021 was 13%, down from 15% in 2020. Manulife's market share reached 23%, up 3% compared to 2020. Prudential decreased from 14% to 12%, Dai-ichi's market share remained at 13% while AIA decreased from 11% to 8%.. (Ngoc, 2021).



Source: Ministry of Finance

Figure 3.3. Life insurance market share in Vietnam 2021

- With the retail market

The scale of Vietnam's retail market has exceeded 180 USD billion in 2023 and is forecast to continue to grow in the following years. With this potential of Vietnam, large foreign retail corporations such as Lotte, Central Group, Aeon, Circle K, K Mart, Auchan, Family Mart... have continuously promoted their strategy of penetrating and expanding the retail market in Vietnam.

FDI enterprises participating in the Vietnamese retail market are mainly in the modern retail market segment, including about 15% market share of retail routines through shopping malls and supermarkets with an area of over 500m²; 50% market share of retail routines through convenience stores, 10% market share of sales routines through mini supermarkets and about 50% market share of non-store retail routines (Binh, 2019).

With e-commerce platforms, in terms of growth, there was rapid growth over the period 2018 - 2023, in which in 2018, revenue reached 8 USD billion, by 2023 it increased to 20.5 USD billion, an increase of 2.5 in 6 years (Dang, 2024).

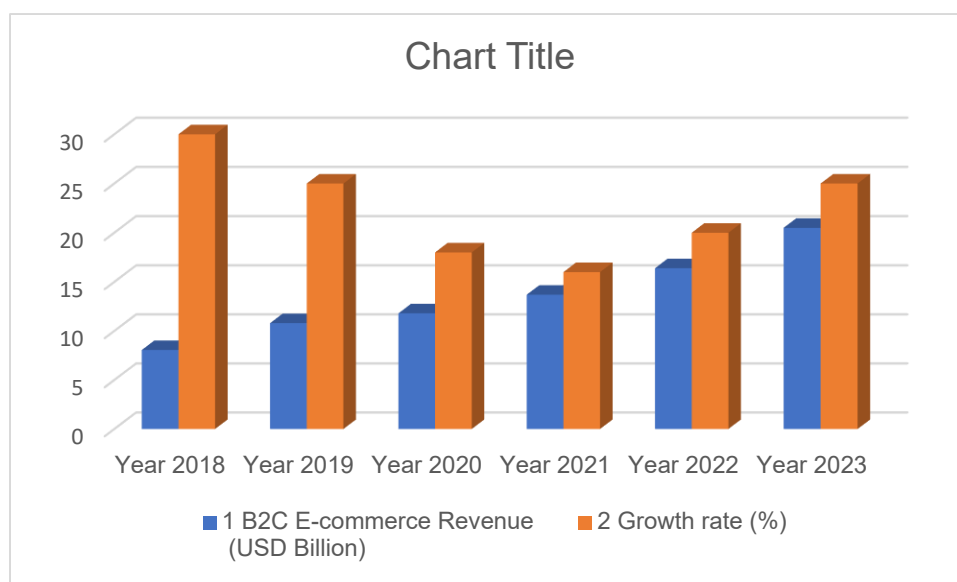


Figure 3.4. Vietnam B2C e-commerce revenue in the period 2018 – 2023

Source: Ministry of Industry and Commerce

E-commerce platforms in Vietnam have currently been dominated by the top 5 largest platforms including Shopee, Lazada, Tiki, Sendo and TikTok Shop, in which Shopee led with revenue of VND 53,740 billion, accounting for 67.9% of the market share; TikTok Shop ranked second with VND 18,360 billion, accounting for 23.2% of the market share; Lazada and Tiki respectively reached VND 6,030 billion (7.6% of the market share) and VND 997.06 billion (1.3% of the market share). Thus, the market share of domestic e-commerce platform Tiki only accounted for 1.3% of the market share, a very low rate (Binh, 2019).

In 2024 alone, according to statistics from the e-commerce data platform Metric, Vietnamese people spent about 156,000 VND billion shopping on the 5 largest e-commerce platforms in Vietnam in the first half of 2024. In particular, in the second quarter of 2024, the total revenue on

the 5 largest online retail e-commerce platforms in Vietnam, including Shopee, Lazada, Tiki, Sendo and TikTok Shop, reached about 85,000 VND billion, an increase of 78% over the same period last year. Previously, in the first quarter of 2024, retail revenue on these 5 platforms reached 71,200 VND billion, an increase of 78.6% over the first quarter of 2023 (Dang, 2024).

With goods on e-commerce platforms, mainly consumer goods are in great demand, but Vietnamese goods are very inferior to Chinese goods. Goods on this platform are mainly goods through unofficial channels because Chinese goods have a competitive advantage with low prices, diverse designs, low shipping costs, and fast delivery, making it easier for Vietnamese people to choose more Chinese ones than domestic goods, according to Mr. Nguyen Xuan Thanh, Director of 4Tech Company specializing in e-commerce platform operation solutions, admitted.

More importantly, foreign e-commerce platforms currently play a leading role in the domestic market, causing domestic e-commerce platforms such as Tiki and Sendo to be overwhelmed and overshadowed by foreign platforms such as Shopee, Lazada, and Titok (Dang, 2024).

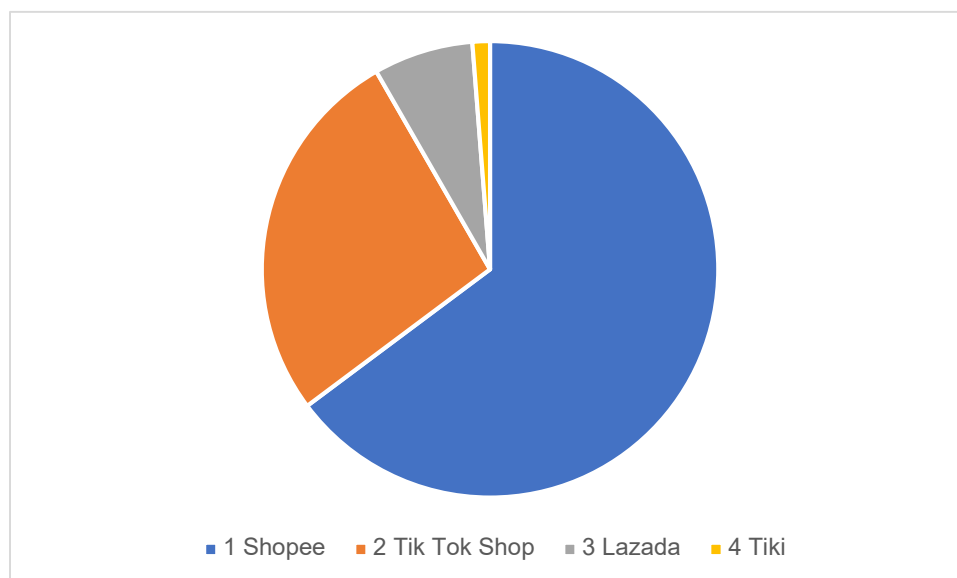


Figure 3.5. Market share of e-commerce platforms in 2023

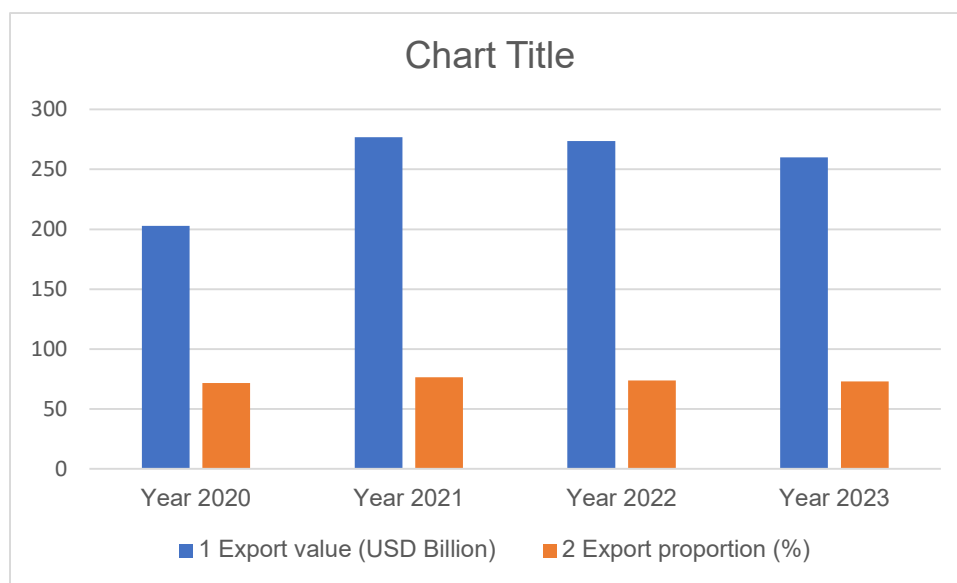
Source: Ministry of Industry and Commerce

3.2.3. Goods and export turnover of FDI enterprises dominate over domestic enterprises

With export turnover of goods

FDI enterprises always account for a proportion of over 70% throughout the period 2020 - 2023. Not only the general proportion, but statistics also showed that in key export items, the FDI sector always has the "superiority". For example, with phones and components, the FDI sector accounted for 99.1%; electronic products, computers and components accounted for 98%; machinery, equipment, tools and spare parts accounted for 93.1%. As for footwear and textiles, it is thought that the advantage belongs to Vietnamese enterprises, the FDI sector also accounts for

81.9% and 62.5% respectively (Ha, 2021). The export value of machinery and equipment of FDI enterprises reached 42.58 USD billion, accounting for nearly 93% (higher than the proportion of 92.75% in 2021). In addition, Vietnam has many agricultural products with large export turnover such as rice, coffee, pepper, rubber, cashew nuts, tea, fruits, vegetables... but 80% of these export items were mainly in raw products, with low processing percentage (trungtamwto.vn, 2023). Similarly, FDI enterprises accounted for 47.3% of total wood export turnover in the first half of 2024 (trungtamwto.vn, 2024).



Source: General Statistics Office

Figure 3.6. Export value and proportion of FDI enterprises

3.2.4. Vietnam's technology is backward, goods are mainly exported in raw form, with low added value and no brand

With technology

A technology life cycle is about 10 years, meaning that after about a decade, a new generation of technology will be born. With this speed of technology development, Vietnam was 2-3 generations behind the world in technology. Even the high technology ratio of FDI enterprises has been still low, only 5% of FDI enterprises has used high technology, 15% of enterprises has used medium technology and up to 80% of FDI enterprises has still used outdated technology (Mai An, 2023). In addition, about 75% of technology and equipment of Vietnamese enterprises were of foreign origin, in which technology and equipment from developed countries such as the US, Korea, the European Union, etc. have tended to increase slightly in recent years (Anh, 2022).

With goods

Vietnam is a major exporter of agricultural products in the world, but the sad reality is that most Vietnamese products, especially agricultural products, have to "borrow brands" to export. Statistics show that 70-80% are raw exports, low added value, and 80% are not branded. In the

processing and manufacturing industry, up to 95% of export value belongs to foreign direct investment (FDI) companies, with their own global brands (Hien T. T., 2024).

China is a major export market for agricultural products from Vietnam, but mainly through unofficial channels. Up to now, China has only officially allowed the import of 9 types of Vietnamese fruits, namely mango, jackfruit, dragon fruit, banana, rambutan, lychee, longan, watermelon, and mangosteen. In other words, only the above 9 types of fruits can be officially imported through the Huu Nghi international border gate. As for the types not listed above, including those that Vietnam has a lot of, such as durian, star apple... they are forced to go through unofficial routes, through secondary border gates. This is because there was a time when a convoy of Vietnamese fruit trucks was stuck at the border gate with China and could not be exported, leading to farmers losing money, and the domestic market could not rescue all of them if the border gate had problems (Hanh, 2024).

3.2.5. Some basic solutions for building an independent and self-reliant economy in the process of international economic integration

Solutions on strategic policies that guide and orient domestic enterprises to develop by attracting FDI enterprises

We need to grasp the industries and technologies that are pioneering, leading in the future, from which there are policies to attract FDI enterprises to help domestic enterprises have the opportunity to access and absorb technology from FDI enterprises in this field. This is what China calls the implementation of the catfish policy by offering many great incentives for Apple and Tesla to enter China; thanks to that, Huawei, Vivo, Xaomi, BYD in smart phones and electric vehicles have been born. Up to now, Huawei has become a powerful corporation in smart phones and 5G technology that makes the US and EU afraid; Similarly, BYD became a large electricity production corporation and helped China become the world's largest car manufacturer and exporter, forcing the US and EU to raise taxes to limit China's electric vehicle expansion. Thus, China, from a dependent country where FDI enterprises dominated, after a period of time, China has become a country that is not only self-sufficient in technology but also a formidable competitor that makes the US, Japan, and EU wary (Ly, 2023).

Financial support solutions for domestic enterprises to enhance the independence of the Vietnamese economy

The Government's financial support for the production and transportation of goods, especially for new fields that require large initial research costs, the Government needs to have support packages for early-stage enterprises to reduce capital difficulties for enterprises through preferential policies on taxes, fees and other incentives. These subsidies have been implemented very generously by China to give businesses a cost advantage when competing with rivals. This is why Chinese goods have low prices, low shipping costs and extremely fast delivery times. For example, at the national macro level, in the period 2010-2018, the Chinese government supported nearly 132 USD billion for the maritime transport and shipbuilding industry, not to mention other forms of support such as low-interest loans, raising barriers to foreign businesses. At the domestic level, Ho Trung district (Heilongjiang) announced the following subsidy policy in June 2022: if a

seller achieved at least 3,000 e-commerce orders in a year, then from the 3,001st order, the district would subsidize 1 yuan (about VND 3,500) in shipping costs for each order. Remembering that in mainland China, there were Taobao orders with shipping costs of only NDT 2 - NDT 5 (about 7,000 – VND 18,000) which was normal (An T. , 2022). Thanks to financial support, Chinese goods overwhelm Vietnamese goods on e-commerce platforms as mentioned above.

Solutions to improve the quality of human resources

This is a fundamental and long-term solution to proactively grasp not only foreign technology but also proactively master future technologies. In the immediate future, strengthen the training and development of cadres directly involved in international economic integration, with a deep understanding of law, trade, investment, culture, foreign languages, etc. to meet the requirements of working in an international environment, resolving disputes, and protecting national interests.

In addition, to improve the quality of human resources, the Government needs to focus on training and scientific research, including both basic and applied sciences. In particular, education and training need to link training with practice, increase the proportion of trained workers to meet the requirements of businesses, avoid widespread training, leading to a waste of social resources. For example, there were more than 300,000 unemployed graduates in the economic sector in 2015 (Huong, 2015) while there is a shortage of skilled workers, leading to a surplus of teachers and a shortage of workers. Scientific research needs to orient the fields that play a leading role and are the foundation for other industries. In particular, avoid

Solutions for developing the supporting industry

The supporting industry is considered the legs and arms of other industries. The development of this industry will lead to the development of many other industries, especially not only increasing the ability to attract FDI enterprises but also the ability to retain FDI enterprises in Vietnam for a long time due to the advantages of the supply chain, reducing production and transportation costs. For example, it is difficult for Apple to move its Iphone production base out of China overnight because in the ecosystem of the product supply chain for Iphone, China accounts for $\frac{1}{4}$ of the Iphone assembly supply chain. Some components are even very difficult to purchase and are produced elsewhere outside of China (Lam B. , 2023). Therefore, the development of the supporting industry will help Vietnam not only be proactive in localizing its products but also enhance its position with partners who are FDI enterprises when investing in Vietnam. Recognizing the important role of this supporting industry, the Government issued Resolution No. 115/ND-CP dated August 6, 2020 on solutions to promote the development of supporting industries. However, from policy issuance to implementation to the final result is a long way and is influenced by many other factors.

4. CONCLUSIONS

Thus, in the context of deep international economic integration, Vietnam, in addition to proactively integrating, still advocates integration without dissolving; thereby, Vietnam needs to have both the medium and long term strategies and policies to outline its own development path

to ensure sovereignty, territorial integrity as well as build a new independent and autonomous economy that can ensure long-term sustainable development without being controlled or manipulated by external factors, while avoiding bad situations that may happen to the economy such as being surrounded, embargoed or having conflicts, the country's economy will still operate normally, without interruption, passiveness and dependence on the outside. If so, in the process of international economic integration, Vietnam needs to maximize its internal strengths, take advantage of external forces, especially maximize its internal resources, most importantly human resources to build an independent and autonomous economy. This will help realize the aspiration of a strong, prosperous and happy Vietnam in the context of a world that is changing profoundly and comprehensively with many uncertainties (Lam N. B., 2023)/.

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VIETNAM'S POLICY VIEWPOINTS ON SOCIO-ECONOMIC DEVELOPMENT IN THE OCOP FOOD PROGRAM

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ABSTRACT

OCOP (One Commune One Product) is a program for developing the rural economy in the direction of developing internal strength and increasing value. This is considered a solution and task in implementing the National Target Program on New Rural Development in Vietnam. The authors have studied the viewpoints on developing OCOP product production; Standards, economic and technical characteristics in OCOP food production; and policy orientations for developing OCOP food production in Vietnam. From there, recommendations are proposed to improve the policy for developing OCOP product production in the food industry in Vietnam. The contents of policy improvement mentioned in the study include: **Production organization**: select suitable products to exploit available raw materials and local labor resources; **Product development**: Strengthening community strength in the process of developing OCOP food production; **Product marketing**: Production must be linked to consumption, restoring and describing product stories need to demonstrate uniqueness, cultural identity, local intelligence, and need to have a special message about each product that will impress consumers; **Product quality**: OCOP foods need to ensure quality standards in terms of sensory, nutritional, safety and bring value to consumers.

Keywords: OCOP program, food production, development, socio-economic policies, Vietnam.

1. INTRODUCTION

OCOP (One Commune One Product) is a rural economic development program towards internal strength development and value addition in Vietnam. This is considered a solution and task in implementing the National Target Program on New Rural Development. According to the Central Office for New Rural Development Coordination, after more than 4 years of implementing Decision No. 490/QD/TTg dated May 7, 2018 of the Prime Minister approving the Program "One Commune One Product for the period 2018-2025", the OCOP Program has been proactively and effectively implemented by all localities, becoming a priority solution in rural economic development associated with new rural development. As of October 31, 2022, all 63/63 provinces and cities under the Central Government have organized the assessment and classification of OCOP products. At that time, there were 8,565 OCOP products nationwide with 3 stars or more, of which 65.4% were 3-star products, 33.4% were 4-star products, 0.7% were potential 5-star products and 0.2% were 5-star products. At the same time, the whole country had more than 4,392 OCOP producers, of which 38.3% were cooperatives, 25.8% were enterprises, 33% were households, and the rest were cooperative groups with OCOP products with 3 stars or more (Central Office for New Rural Area Coordination, 2022).

The OCOP program has had positive and significant impacts on rural economic development. Through the implementation of the program, it has contributed to the transformation from small-scale agricultural production to production in the direction of value chain linkage,

according to standards, regulations, traceability and market demand. Arousing the potential of land, products, comparative advantages, especially regional cultural values to form integrated "multi-value" OCOP products, linking agricultural development with services and tourism. From the implementation of the OCOP program, many localities have planned specialty raw material areas, developed rural industries, especially preserved and developed many traditional craft villages. Forming many OCOP products associated with the role of an "ambassador" conveying stories about humanistic products of the region. OCOP products have met quality and food safety standards and regulations; have diverse designs and packaging that are environmentally friendly, suitable for market requirements. Thereby, contributing to increasing value, helping entities increase production scale and revenue. Of which, more than 60.7% of OCOP entities achieving 3 stars or more have an average revenue increase of 17.6%/year, the selling price of products after being officially recognized as OCOP increased by an average of 12.2%. (Ministry of Agriculture and Rural Development, 2022). The authors have studied the theoretical and practical basis of the development of production and consumption of OCOP products in the food industry, thereby generalizing the viewpoints of Vietnam's socio-economic development policies in the OCOP program on aspects of economic, social development and environmental protection.

2. LITERATURE REVIEW

In the world and in Vietnam, there have been many authors who have researched related to the development of production and consumption of OCOP products. The studies mentioned different aspects of content, according to some typical approaches: Natsuda, K., Igusa, et al. (2011) studied the development of the One Tambon, One Product (OTOP) program in Thailand, based on the previous experience of the One Village, One Product (OVOP) movement in Japan. Thu, N.T.A. (2013) argued that One Tambon One Product (OTOP) is designed to exploit grassroots potential by generating income through the development of local products at national, regional and global scales. Issa, F. O. and Lawal, A. O (2014) applied the basic principles of OVOP and used them successfully to support rural transformation. In the study of Mukai, K. & Fujikura, R. (2015) stated: Oita prefecture in Japan built its movement based on three principles: local but global, self-reliance and creativity, and human resource development. Huynh Quang Thanh (2020) in the study "Current situation and solutions to implement the OCOP Program in Khanh Hoa province" affirmed: OCOP is a major program to develop the rural economy. Vu Phuong Nhi (2022) said: The OCOP Program is a key program to develop the rural economy in the direction of promoting strengths, exploiting internal resources and increasing value. Thanh Hoa Thi Phan (2022) affirmed: Vietnam has implemented the OCOP Program through the "One Commune One Product" initiative since 2006, however, the program "blossomed" until 2018 thanks to the participation of localities across the country. The OCOP Program aims to develop the rural economy, focusing on promoting internal resources and increasing the value of local products. There have been many studies on the development of OCOP product production, but no study has approached the research direction: Vietnam's policy perspective in the OCOP program.

3. RESEARCH METHODS

To achieve the objectives and research results, the authors used qualitative research methods. Regarding the method of data collection, the research data was collected by the authors from works

published in specialized journals, proceedings of national and international scientific conferences; publications on the websites of professional organizations, ... In addition, to supplement data for evaluation purposes, the authors interviewed experts in the field of agricultural and rural economic development, experts in OCOP product production. Regarding the method of data processing, to process the collected data, the authors used methods of synthesis, systematization, information analysis, comparison between theory and practice to draw research results.

3.1. Result and discussion Viewpoints on developing production of OCOP products

Production development

Production is a typical activity of human society, including material production, spiritual production and human production. These three processes are closely linked together, interacting with each other, in which material production is the basis for the existence and development of human society. According to F. Engels: "The fundamental difference between human society and animal society is that: animals are at best only gatherers, while humans produce" (C. Marx and F. Engels, 1995).

Material production is a type of practical activity to transform objects of the natural world according to the needs of existence and development of human society. In that sense, material production is a type of activity with objective, social, historical and creative characteristics. Material production plays a decisive role in the existence and development of human society, is the fundamental activity that gives rise to and develops human social relations; it is the basis for the formation, transformation and development of human society.

Starting from the factor of "real man", C. Marx believes that the first premise of all human existence is: "man must have the ability to live before he can make history". To do so, man needs food, drink, housing, clothing... those things can only be created through material production. Thus, the first historical act of man is the production of materials to satisfy those needs, that is the basic activity of man, the thing that distinguishes human activities from animals. To carry out material production, humans must not only have relationships with nature but also with each other, and on the basis of these production relationships, other relationships arise such as politics, ethics, law... Therefore, in the process of material production, humans not only transform nature, transform society, but also transform themselves. Therefore, the continuous development of material production inevitably makes society continuously develop. (C.Marx and F.Engels, 1995).

From this, it can be understood that production is the process of transforming input factors into output products. The purpose of this transformation process is to create products and services to meet social needs. Inputs of the production process include resources: land, labor, capital, technology, raw materials, energy, information, etc. The output of the production process is products, services and impacts on the environment. The production of material wealth is the main activity in human economic activities. The development of material production determines the transformation and development of the entire social life. The movement and development of society are ultimately caused by the development of social production. Therefore, to explain and solve the problems of social life, we must start from the reality of material production of human society.

Vietnam is gradually developing a market economy under the management of the State, following the socialist orientation. Therefore, the development of material production must follow

a production method that meets market demand. The producer must answer three basic questions: What to produce? How to produce? For whom to produce?

OCOP products

The OCOP program, also known as One Commune One Product, was approved by the Government of Vietnam for implementation through Decision 919/QĐ-TTg dated August 1, 2022. OCOP is a program to develop the rural economy in the direction of promoting internal resources such as labor resources, local culture, intelligence, creativity... Thereby, improving people's lives, building new rural areas through products with typical brands of each locality and region.

OCOP products are products and services participating in the National OCOP Program. Specifically, according to Decision 919/QĐ-TTg, OCOP products are goods and services of local origin, branded, with cultural characteristics and local advantages. OCOP products will be evaluated and classified at 3 levels: district level, provincial level and central level. After evaluation, the product will be classified from 01 star to 05 stars and granted an OCOP product certificate valid for 36 months (Government of Vietnam, 2022).

Pursuant to Decision 148/QĐ-TTg dated February 24, 2023 of the Prime Minister, OCOP products are divided into 6 main groups, including Food group; Beverage group; Medicinal herbs and medicinal products group; Handicraft group; Ornamental plants group; Community/ecotourism/tourist destination tourism service group (Government of Vietnam, 2023). In which, the food group includes:

- ✓ Fresh agricultural and aquatic products: fresh vegetables, tubers, fruits, seeds; animal/poultry meat, seafood, eggs, fresh milk;...
- ✓ Pre-processed agricultural and aquatic products: rice, cereals, pre-processed seeds, fresh tea...
- ✓ Processed agricultural and aquatic products: tea, coffee, cocoa...
- ✓ Other foods: spices, fast food.

Purpose and requirements for developing OCOP food production

Developing OCOP food production is the process of effectively using input factors to create high-quality, high-volume food to meet market demand. At the same time, it aims to eliminate hunger, reduce poverty, increase income, improve working conditions, and increase living standards for people in rural areas. OCOP food production is to exploit the potential and advantages of regions so that products are mainly produced to meet the needs of food consumers. In addition to the purpose of increasing income for producers, it also aims to bring benefits, protect the health of consumers, protect the environment and preserve the ecosystem.

Developing OCOP food production must create a sustainable system in terms of economy, society and environment:

- Economically, OCOP food production must be highly efficient, creating a big volume of products with good quality, to meet domestic consumption and export needs, and provide raw materials for the food industry.
- Socially, developing OCOP food production must ensure that people in production areas have enough jobs, stable income, increasingly improved material and spiritual life, achieving the goal of hunger eradication, poverty reduction and building new rural.

- Regarding the environment, developing OCOP food production is to effectively exploit resources (land, water, ecosystems, labor, capital, science and technology...) without polluting the environment, destroying natural resources, keeping underground water clean, and not destroying ecosystems and biodiversity. At the same time, ensuring sustainability means meeting the needs of the current generation without harming the ability to meet the needs of future generations.

- Regarding human values, developing OCOP food production must ensure the supply of clean, fresh food, meeting the needs of consumers. The products supplied must ensure good quality, beautiful appearance and design, ensuring food safety, for the benefit and health of consumers.

Developing OCOP food production will be the premise, the prerequisite to feed the community, and also to develop production areas. When developing OCOP food production, we will exploit natural, economic, and social conditions, effectively use local resources to create a source of wealth, which directly is food to sustain human life. At the same time, it will contribute to promoting the industrialization and modernization of agriculture and rural areas and building new rural areas.

3.2. Standards, economic and technical characteristics in OCOP food production

OCOP products belong to the food industry group

According to the list of product classification participating in the OCOP program of the Government of Vietnam issued under Decision No. 148/QĐ-TTg dated February 24, 2023 of the Prime Minister, OCOP products belonging to the food industry group are presented in Table 2.1

Table 2.1. List of OCOP products in the food industry group

| No. | Food Classification | Governing Ministry |
|-----|--|---|
| 1 | Group: Fresh food | |
| a | Subgroup: Fresh vegetables, tubers, fruits, nuts | Ministry of Agriculture and Rural Development |
| b | Subgroup: Meat, seafood, eggs, fresh milk | Ministry of Agriculture and Rural Development |
| 2 | Group: Raw and processed foods | |
| a | Subgroup: Rice, cereals, other processed grains | Ministry of Agriculture and Rural Development |
| b | Subgroup: Honey and other agricultural and food products | Ministry of Agriculture and Rural Development |
| 3 | Group: Processed food | |
| a | Subgroup: Fast food | Ministry of Industry and Trade |
| b | Subgroup: Processed from rice, cereals | Ministry of Agriculture and Rural Development |
| c | Subgroup: Processed from vegetables, tubers, fruits, seeds | Ministry of Agriculture and Rural Development |
| d | Subgroup: Processed from meat, eggs, milk, seafood, processed from honey and other agricultural products | Ministry of Agriculture and Rural Development |
| 4 | Group: Spices | |
| a | Subgroup: Soy sauce, fish sauce, other liquid spices | Ministry of Agriculture and Rural Development |
| b | Subgroup: Other spices | Ministry of Agriculture and Rural Development |
| 5 | Group: Tea | Ministry of Agriculture and Rural Development |
| a | Subgroup: Fresh tea, processed tea | Ministry of Agriculture and Rural Development |
| b | Subgroup: Tea products processed from other plants | Ministry of Agriculture and Rural Development |
| 6 | Group: Coffee, Cocoa | Ministry of Agriculture and Rural Development |

Source: Government of Vietnam, 2022

Standards of OCOP foods

The criteria for a product to be recognized as an OCOP product are clearly stipulated by the Government of Vietnam in Decision 148/QĐ-TTg as follows:

Part A: Group of criteria for evaluating products and community strength (40 points):

- Production organization: must use local materials and labor; increase product value in the direction of processed and deeply processed products; expand production scale and link along a product value chain; ensure environmental protection during the production process.
- Product development: products are developed based on local traditions.
- Community strength: encourage production according to common models such as cooperatives; encourage the use of local labor; organize business effectively and transparently.

Part B: Group of criteria for evaluating marketing capabilities (25 points)

- Marketing: encourage product distribution channels from local to international; have advanced quality management certification; promotional activities are organized professionally and regularly to increase product promotion effectiveness.
- Product story: encourage complete product stories, presented methodically, impressively, uniquely, with local nuances.

Part C: Group of criteria for evaluating product quality (35 points)

- Sensory, nutritional, uniqueness: meet quality standards according to the requirements of each product type.
- Product standards: products are manufactured according to standards and declared according to the provisions of law.
- Export ability: encourage products that meet international quality standards.

Ranking of OCOP products

Products after being evaluated according to the OCOP criteria will be divided into 5 categories:

Table 2.2. Standards for ranking OCOP foods

| No. | Score | Ranking | Standards |
|-----|----------------|----------------|---|
| 1 | From 90 to 100 | 5-star product | These are unique products with high quality standards and meet export conditions. |
| 2 | From 70 to 90 | 4-star product | These are unique products, ensuring quality requirements, having good market access, and potential to upgrade to 5-star products. |
| 3 | From 50 to 70 | 3-star product | These are special products with stable consumption volume and potential to upgrade to 4-star products. |
| 4 | From 30 to 50 | 2-star product | These are products that are starting to form specific quality, with the potential to upgrade to 3-star products. |
| 5 | From 1 to 30 | 1-star product | These are primitive products that have not been widely consumed and have the potential to be upgraded to 2-star products. |

Source : Government of Vietnam, 2023

OCOP products are evaluated and classified into 3 levels:

- District level: The District Council organizes the evaluation and classification of products participating in the OCOP Program. The District People's Committee issues a Decision approving the evaluation results and granting Certificates to products achieving 3 stars and organizes the announcement of the results. The District People's Committee transfers the dossiers of products with scores from 70 to 100 points (from 4 stars or more) to the Provincial People's Committee to request evaluation, classification, and recognition of OCOP products.

- Provincial level: The Provincial OCOP Product Evaluation Council organizes the evaluation and ranking of products proposed by the district level. The Provincial People's Committee issues a Decision approving the evaluation results and granting Certificates to 4-star OCOP products, and organizes the announcement of the results.

- Central level: The Central Council organizes the evaluation and classification of products proposed by the Provincial People's Committee. The Ministry of Agriculture and Rural Development issues a Decision approving the evaluation results and granting Certificates to 5-star products (national OCOP products) and organizes the announcement of the results.

Economic and technical characteristics of OCOP food

- *Regarding products:* OCOP foods are products of local origin, or domesticated, especially regional specialties, based on exploiting comparative advantages in terms of ecological conditions, genetic resources, knowledge and local technology.

OCOP foods are prioritized according to 03 basic criteria, including Local specialties (Original technology and local materials); Added value; No negative impact on the environment. Specifically as follows:

+ Quality: Ensure food safety, have origin and traceability.

+ Characteristics: Have unique characteristics, express local identity, closely linked to the land and people of the production area.

+ Novelty: Can be a new product or a traditional product that is improved and innovated in design, quality, packaging, meeting market demand.

+ Typical: Suitable for the economic development orientation of the locality, has potential for market development.

+ Tradition: Products are manufactured based on local traditional know-how and techniques.

- *Regarding production organization:*

+ Cooperation and association: Organizations and individuals producing OCOP food must cooperate and associate in production and business to improve product quality, reduce costs, and increase competitiveness.

+ Quality management: Apply quality management systems such as HACCP, ISO, VietGAP, etc.

+ Environmental protection: Production in the direction of environmental protection, efficient use of natural resources.

- *Regarding marketing capabilities:*

- + Brand building: Have a brand, logo, packaging, product labels according to regulations.
- + Business plan: Have a product business plan, identify consumer markets, build distribution channels.
- + Participate in trade promotion: Participate in fairs, exhibitions, trade promotion conferences to promote products.

3.3. Policy orientation for developing OCOP food production

Developing OCOP food production must ensure economic, social and environmental efficiency.

****Economic***

Vietnam has many advantages in terms of land resources, soil, climate, water resources, labor force, farming practices and agricultural production experience. The development of OCOP food production will exploit local resources to develop the production of products with unique characteristics and traditional identities. This is also a condition for production to exploit the comparative advantages of regions and improve economic efficiency in the use of resources for production. Producers need to effectively use input factors, apply scientific and technological advances to improve product quality and output. Products must meet the needs and tastes of consumers to help promote product consumption and expand the market. Advertising, trade promotion, and market development will promote sales, solve difficulties in output backlog, help producers sell products, generate revenue, offset production and business costs and make profits. These are the conditions to improve economic efficiency in agricultural production in general and develop OCOP food production in particular.

**** Social***

Developing OCOP food production must ensure that the lives of people in production areas are improved, have high and stable incomes, create jobs, contribute to poverty reduction, and improve the intellectual level of rural areas. At the same time, producers and traders also have the opportunity to improve their education and awareness of socio-economic development and understanding of the market economy. Developing OCOP food production also needs to pay attention to implementing gender equality and equality among ethnic groups in the production area. The lives of people in the production area are not negatively affected by risks and instabilities such as crop failure, price fluctuations, competition, market risks, financial risks, natural disaster risks, etc. Ensuring stable and sustainable social development.

**** Environmental***

The process of developing OCOP food production requires attention to protecting the ecological environment of upstream and downstream production areas. The development perspective meets current needs without compromising the needs of future generations. The sustainability and biodiversity of the ecological environment must be maintained. Use agricultural chemicals such as pesticides, plant protection drugs, veterinary drugs, inorganic fertilizers... properly, reasonably and effectively at a minimum level to avoid air pollution, water pollution, and land resource degradation. Do not allow deforestation and unreasonable land use to lead to

erosion, landslides, and floods in the downstream areas. An issue that needs special attention is to ensure the supply of safe food; Food supplied to the market must be clean, safe, and not harmful to the health of consumers. Therefore, OCOP food producers must be transferred scientific and technical advances into production activities to ensure environmental friendliness, while also complying with the production process, respecting the natural growth and development laws of the production system and ecosystem.

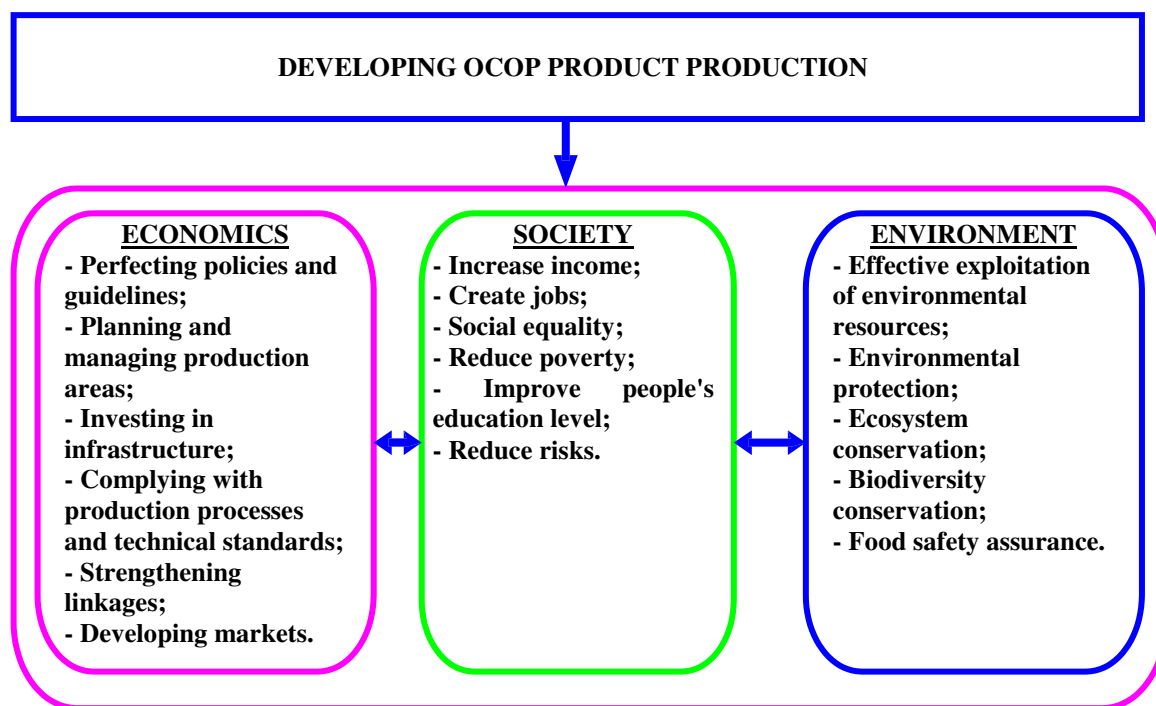


Diagram 4.1. Economic, social and environmental efficiency in developing OCOP food production

In addition, policies for developing OCOP food production must also be associated with the implementation of solutions to improve the competitiveness of domestic products. In the context of international economic integration, food production must take into account the ability to compete with imported products in the domestic market and aim to export products to foreign markets. To improve competitiveness, it is necessary to improve the qualifications of producers; Build brands for products; Strengthen promotion and market development; To improve the quality and output of food supplied to the market, it is necessary to solve difficulties in varieties, techniques, equipment, machinery, and investment capital for production. Strengthen links between actors participating in product value chains. Improve the efficiency of public sector operations in land policy, planning, transportation, irrigation, electricity system, telecommunications, and public service quality. Development of the production system must closely combine the following stages: input supply - production - harvesting, preservation, processing - distribution - consumption (Tran Huu Cuong, 2022). Production development must be linked to planning and policy systems, ensuring consistency, efficiency and mutual support. The development of policies must ensure optimal mobilization of local resources such as land,

labor, forests and seas. Combined with external resources, attracting investment enterprises, promoting the strength of international integration and State support (Government of Vietnam, 2012). Product development must be consistent with natural, economic, political, cultural, social, historical and environmental conditions. Promoting the strengths and comparative advantages of localities. Depending on the specific conditions of each locality, specific and appropriate policies should be developed. Production development must ensure economic efficiency, but also have political, social and environmental significance. Help economic growth, reduce poverty, create jobs, increase income and protect the sustainable ecological environment (Nguyen Van Song et al., 2021). Therefore, the development of OCOP food production must be associated with natural, economic, social and environmental conditions in each region.

4. CONCLUSION

Based on the research results and discussions, the authors propose some recommendations on some policies for developing OCOP food production in Vietnam as follows:

* **Production organization:** Based on the production conditions of each locality, select suitable products to exploit available raw materials and local labor resources. At the same time, develop supporting industries and services to increase product value in the direction of processing. Mobilize concentrated resources to expand production scale to increase output to supply to large markets. Strengthen linkages in production and distribution, strengthen linkages between actors participating in product value chains. Production organizations pay attention to the application of scientific and technical advances to improve productivity and product quality. Use technology for sustainable development and environmental protection.

* **Product development:** Manufactured products must have a source of origin and geographical indications printed on the packaging and labels. Depending on the characteristics of each type of product, research and design convenient, beautiful, easy-to-carry and easy-to-transport packaging. Strengthening community strength in the process of developing OCOP food production: developing production forms according to the cooperative or joint stock company model to mobilize the participation of the majority of local people. Production entities organize accounting work to calculate results and economic efficiency in production and business. Organizing production and business to bring profit is a condition for existence and sustainable development. At the same time, register intellectual property rights for goods and services to be recognized and protected by law.

* **Product Marketing:** Production must be linked to consumption. It is necessary to have the participation of enterprises to organize market development activities. Organize well the stages of circulation and distribution, strengthen the implementation of trade promotion activities. For OCOP products, which are typical products of regions, the majority of producers are farmers, so in the product marketing strategy, there must be a representative organization (cooperatives, enterprises, state agencies ...) to act as a bridge to connect production with markets. Product stories are also a necessary feature for OCOP products. Restoring and describing product stories need to demonstrate uniqueness, cultural identity, local intelligence, and need to have a special message

about each product that will impress consumers. Interesting product stories will be a catalyst to increase product marketing ability.

* **Product quality:** OCOP foods need to ensure quality standards in terms of sensory, nutritional, safety and bring value to consumers. Nutritional content indicators need to be measured and announced on product packaging. Food production needs to focus on appearance, taste, color, cleanliness, safety, health, instructions for use... Producers need to register with the State authorities for testing, certification and announcement of food safety indicators. Product quality control activities must be well implemented in all stages of the production and processing process. Focus on the conditions for upgrading the star rating of OCOP foods: uniqueness and local brand, food safety testing certificates, quality standard certificates, detailed instructions for use, and opportunities to export to many countries.

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LIVELIHOOD DIVERSIFICATION AND HOUSEHOLD INCOME: CASE STUDY IN DAK LAK PROVINCE, VIETNAM

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ABSTRACT

This study investigated the impact of livelihood diversification strategies of agricultural households on household income levels. We assessed 362 households through 6 waves of surveys in Dak Lak Province, Vietnam, from the Thailand Vietnam Socio-Economic Panel Dataset (TVSEP). We calculated three income diversification indices (HIDs) based on three levels of the Vietnam Standard Industrial Classification (SIC), namely HID4 as a proxy for within-sector diversification, HID3 as a proxy for cross-sector diversification, and HID2 as a proxy for non-farming livelihood diversification. We used these indices as proxies for different livelihood diversification strategies of the sampled households. To estimate the impact on the household income level of hypothesized contributing factors, multiple regression was applied to a set of independent variables. We found that HID2 and HID4 significantly increased household income, but HID3 reduced farmers' income. Thus, to enhance their income, farmers principally diversified their livelihood strategies within a sector rather than cross-sectorally. In addition, we found that non-farming activities were also an option for farmers to improve their income. We make recommendations for policymakers based on our findings.

Keywords: household income, livelihood strategy, Dak Lak province.

JEL: P44, Q12, R10.

1. INTRODUCTION

Livelihood diversification can be seen as "the process by which rural households construct a diverse portfolio of activities and social support capabilities to survive and improve their living standards" Ellis (1998). Previous research has focused on livelihood diversification in rural regions. Shrestha & Eiumnoh (2000) researched the determinants of household income in Thailand's Sakae Krang River Basin using multivariate regression models to assess determinant factors. They found that livelihood strategies of households were concentrated around crop cultivation and livestock since the proportion of a family's total income was principally from these sectors. In mountainous areas, education, land ownership, and the number of working-age members have been found to play essential roles in income generation. However, influencing factors such as access to infrastructure, fertilizer intake, non-agricultural income, and livestock costs have been considered significant in delta areas. Shrestha & Eiumnoh (2000). Readon (1997) investigated non-agricultural employment (NAE) as a livelihood strategy in sub-Saharan Africa and showed that NAE activities were crucial to rural areas, accounting for 30-50% of the income of rural households. In addition, he found that NAE income was more critical in areas near cities with good infrastructure and high population density. One study found that NAE activities accounted for about 50% of rural income in Peru, but this varied greatly between regions and households (Escobal, 2001).

Most previous research assessing the livelihood diversification index considered it a single variable. However, this index can be changed when computed using different level specifications vis-a-vis industry classification. For example, adding coffee or black pepper into the portfolio of household production would not change its livelihood diversification index when computed using the industry specification level of the Standard Industry Classification of Vietnam (SIC) (2-digit level). However, the index will change when estimated from SIC's sector (4-digit level). It is possible to construct formulas to calculate diversification indices that are based on specific digit level specifications of SIC that reflect different livelihood diversification strategies. Pursuant to this, in this paper, we introduce three indexes of income diversification and use them as proxies for livelihood diversification strategies based on the SIC of Vietnam. We denote these indexes at the 2-digit, 3-digit, and 4-digit levels as HID2, HID3, and HID4, respectively. HID4 contains specificity, which reflects the livelihood diversification strategy within a sector; HID3 specifies the livelihood diversification strategy cross-sectors, and HID2 embodies the livelihood diversification strategy based on non-agriculture activities.

2. LITERATURE REVIEW

There are several previous works investigating the impact of livelihood diversification and income. Schwarze (2004) investigated the determinants of income generation activities of rural households in the vicinity of Lore-Lindu-Indonesia National Park and showed that income from agricultural activities was the most important, accounting for 70% of total household income, with the rest being from NAE activities. Yang (2004) showed that the expansion of NAE activities contributed to household income growth in rural areas. In addition, labor, capital, and previous experience with NAE were shown to increase household income.

There are several ways to measure the livelihood diversification index. Gebreyesus (2016) used the Composite Entropy Index (CEI), a measure that is based on household income sources. Other authors have considered income diversification directly resulting from household livelihood diversification (Illukpitiya & Yanagida, 2008; Babatunde & Qaim, 2009; Sultana et al., 2015; Kasperski & Holland, 2013). According to Ellis (1998) and Démurger et al. (2010), the income diversification index is commonly employed as a proxy for livelihood diversification. Illukpitiya & Yanagida (2008) showed that diversifying incomes among households living in buffer zones of forests helps maintain sustainable livelihoods by reducing the dependence on forest resources. They also showed that an increase in total household income is an outcome of an increase in diversification of income sources. Other studies also concluded that income diversification has an impact on household income (Babatunde & Qaim, 2009; Sultana et al., 2015; Kasperski & Holland, 2013). Démurger et al. (2010) noted that diversifying income by agricultural and NAE activities played an important role in increasing the incomes of rural households. Wan et al. (2016) pointed out that farm income diversification is essential to increase revenue.

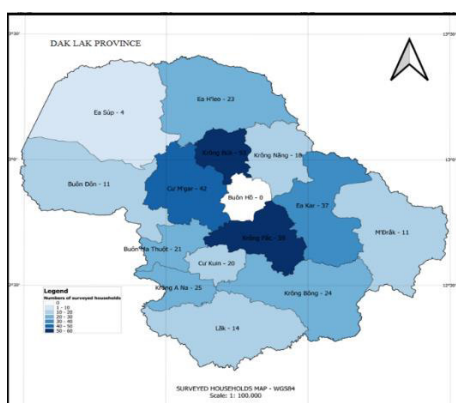
The determinants of household income have also been the focus of previous research. Schwarze (2004) showed that access to physical and human capital significantly raises the total income of households. In rural areas, land area, property value, livestock number, and the number of family laborers positively affect household income. The existence of an official credit market

significantly enhances yearly crop production and NAE activities (Schwarze, 2004). Klasen et al. (2013) found that property value and participation in NAE increased household incomes, but household head age reduced household income. Khai & Danh (2014) used data from the 2010 Vietnam Household Living Standards Survey (VHLSS) with 6,581 rural households to examine factors affecting household income. They showed that income diversification, education level, and ethnicity are influential and increase household income. Ha & Trung (2019) showed that the gender of the householder, the age of the householder, their level of education, the number of family members, the rate of dependency, the application of new technology, and the arable area all affect the income of farmers.

3. METHODS AND DATA

3.1. Data for analysis

The data used in this study was from the panel data of the Thailand Vietnam Socio-Economic Panel (TVSEP), an international research project funded by the German Science Foundation (Deutsche Forschungsgemeinschaft or DFG).¹¹ The TVSEP contains cross-national data and information on the socio-economic status of nearly 4,400 rural households in 6 provinces of Vietnam and Thailand from 2007 to 2017 (first phase data). TVSEP data are comprehensive and carefully collected using a consistent questionnaire designed for further future socio-economic studies. In Vietnam, the first phase of TVSEP data includes rural household data from Ha Tinh, Thua Thien Hue, and Dak Lak provinces. We utilized the first phase of Dak Lak data for this research.



Source: 'Authors' drawing

Map 1. Surveyed households' sites

The locations and numbers of households of Dak Lak TVSEP data we used are detailed in Table 1 and Map 1. Six waves of surveys in six different years from 2007-2017 collected detailed information on agricultural and non-agricultural activities, demographic status, property, land, and other socio-economic characteristics of households and individuals. The data in each survey is

¹¹ <https://www.tvsep.de/en/project/>

comparable as the TVSEP used the matching questionnaires in each year of sampling. After removing non-agricultural families and balancing the data, the total number of households surveyed was 362.

Table 1. Surveyed households in Dak Lak province, 2007 - 2017

| City/District | Year | | | | | | Sub total | % |
|---------------------|------|------|------|------|------|------|-----------|--------|
| | 2007 | 2008 | 2010 | 2013 | 2016 | 2017 | | |
| Buon Ma Thuot City | 21 | 21 | 21 | 21 | 21 | 21 | 126 | 5.80 |
| Buon Don District | 11 | 11 | 11 | 11 | 11 | 11 | 66 | 3.04 |
| Cu M'gar District | 42 | 42 | 42 | 42 | 42 | 42 | 252 | 11.60 |
| Ea H'leo District | 23 | 23 | 23 | 23 | 23 | 23 | 138 | 6.35 |
| Ea Kar District | 37 | 37 | 37 | 37 | 37 | 37 | 222 | 10.22 |
| Ea Sup District | 4 | 4 | 4 | 4 | 4 | 4 | 24 | 1.10 |
| Krong Ana District | 25 | 25 | 25 | 25 | 25 | 25 | 150 | 6.91 |
| Cu Kuin District | 20 | 20 | 20 | 20 | 20 | 20 | 120 | 5.52 |
| Krong Bong District | 24 | 24 | 24 | 24 | 24 | 24 | 144 | 6.63 |
| Krong Buk District | 53 | 53 | 53 | 53 | 53 | 53 | 318 | 14.64 |
| Krong Năng District | 18 | 18 | 18 | 18 | 18 | 18 | 108 | 4.97 |
| Krong Pac District | 59 | 59 | 59 | 59 | 59 | 59 | 354 | 16.30 |
| Lak District | 14 | 14 | 14 | 14 | 14 | 14 | 84 | 3.87 |
| M'Drak District | 11 | 11 | 11 | 11 | 11 | 11 | 66 | 3.04 |
| Total | 362 | 362 | 362 | 362 | 362 | 362 | 2,172 | 100.00 |

Source: TVSEP

3.2. Income Diversification Index

We follow the method from Illukpitiya & Yanagida (2008) to compute the household income diversification index and use it as a proxy for one livelihood diversification strategy. The index is the inverse of the Simpson Diversity Index of Minot et al. (2006) and Joshi et al. (2007). It is computed according to the following formula:

$$HID = \frac{1}{\sum_{i=1}^n P_i^2}$$

where

$$\sum_{i=1}^n P_i^2 = \left(\frac{HI_1}{HI_T}\right)^2 + \left(\frac{HI_2}{HI_T}\right)^2 + \dots + \left(\frac{HI_n}{HI_T}\right)^2$$

Here, n is the number of household income (HI) sources, P_i is the income share of source i expressed as a function of a household's total income (HI_T). As we noted in the Introduction, the index can change depending on the SIC digit level. The number of household income sources increases with the SIC's digit level that we select to compute HID. Thus, HID depends on the level of industry classification that we consider. For example, at the 2-digit level of SIC, a household

has only one income source but will have more when we consider it at the 4-digit level. Since the proportion of sources of income is often not equal, HID can assist in expressing the livelihood diversification strategies of a household. In this study, three HID indexes were used to analyze the effect on the income of households in Dak Lak province, and these are described explicitly in Table 2:

Table 2. HIDs, SIC Digit Level specification, interpretation

| Indexes | Digit Levels of SIC | Proxies for Livelihood strategies |
|---------|---|--|
| HID4 | We classified households into a crop-based group and a livestock-based one (Both 4 - digit levels). <i>HID4 for the crop-based farmer:</i> Income from 6 sub-sectors, including coffee, pepper, other perennial crops, rice, corn, and other annual crops. <i>HID4 of the livestock-based farmer:</i> Income from 4 sub-sectors, including cattle (water buffalo, cows), small livestock (pigs, goats), poultry (chickens, ducks), and other animals. | A proxy for within-sector livelihood diversification (such as from monoculture to polyculture systems) |
| HID3 | Income from 3 sectors (3-digit level): crop cultivation, animal husbandry, and other activities (fishing, hunting, collecting, cutting wood, and wood products). | A proxy for cross-sector livelihood diversification (such as diversifying livelihood from crop cultivation to animal husbandry and vice-versa) |
| HID2 | Income from five major groups (2-digit level): agriculture, remittances, non-agricultural employment, non-agricultural self-employment, capital assets, and transferred assets. | A proxy for non-agriculture livelihood diversification. |

Source: Authors' definitions

3.3. Measuring the benchmark-ability of households

A Farmer to Farmer (F2F) extension model was selected by the Vietnamese Farmers' Association, Women Union, and the Youth Union. Thus, many extension services exist that have farmers working with them to spread agricultural expertise to other farmers. For this reason, we measure *the ability to benchmark from the most efficient households* as an independent variable in our models and call it the *benchmark-ability* of farmers.

We followed Hoi et al. (2022), Färe et al. (1990; 1993; 1994), Worthington (2000), and Coelli et al. (1998) to measure the ability of a particular decision-making unit (DMU) to benchmark the best decision-making units (DMUs). To do this, we computed the Malmquist index of technical efficiency (EFCH) based on the Data Envelopment Analysis (DEA) method. We used this index as a proxy for the ability to benchmark the best households at the production possibility frontier (PPF). The DEA model in this paper, including one output (household's income) and three inputs (land area, labor, and household assets), was conducted using the DEAP program (Version 2.1).¹²

The EFCH obtained from the DEA model measures the extent of the *catching-up capability* of the household under consideration with the best ones on the frontier when the frontier is

¹² <https://economics.uq.edu.au/cepa/software>.

unchanged, as denoted by Coelli et al. (1998). EFCH assesses potential individual improvement in technical efficiency compared to the best DMUs. The greater the EFCH of a household, the higher the potential to acquire knowledge from the best DMUs. Thus, we used EFCH as a proxy for this potential among households in our analysis.

3.4. Econometric models

To investigate the impact of livelihood diversification on a household's income, we used multiple regression models, including ordinary least squares (OLS) with pooled data (POOLED), the fixed-effect model (FEM), and the random-effect model (REM) as in Chuong et al. (2015). We then used the Hausman test to identify an optimal model. We further examined the heteroscedasticity associated with each model. We used weighted least squares using generalized least squares (GLS) as in Arellano & Bond (1991) to obtain fully efficient estimators.

Table 3. Summary of variables (HH = household)

| No. | Variables | Sources | Expected signs | Descriptions |
|-----------------------|-----------|---|----------------|--|
| DEPENDENT VARIABLE | | | | |
| 1 | | LN_INC | | Total income (million VND) |
| INDEPENDENT VARIABLES | | | | |
| 1 | GENDER | Démurger et al. (2010), Ha & Trung (2019) | +/- | 1, if the corresponding HH's head is male; 0, otherwise |
| 2 | ETHNICITY | Schwarze (2004), Khai & Danh (2014) | +/- | 1, if the corresponding HH's head belongs to Kinh; 0, otherwise |
| 3 | RELIGION | Bettendorf & Dijkgraaf (2011) | +/- | 1, if following a religion; 0, otherwise |
| 4 | LN_EDU | Shrestha & Eiumnoh (2000), Yang (2004), Klasen et al. (2013), Khai & Danh (2014), Ha & Trung (2019) | + | HH 'head's education: 1, primary school, 2, elementary school 3: high school; and 4, higher |
| 5 | LN_HHSIZE | Klasen et al. (2013), Ha & Trung (2019) | +/- | HH's size (persons) |
| 6 | LABOUR1 | Schwarze (2004), Khai & Danh (2014) | + | Number of self-employed agricultural laborers (persons) |
| 7 | LABOUR2 | Schwarze (2004), Yang (2004), Khai & Danh (2014) | + | Number of employed laborers (persons) |
| 8 | LABOUR3 | Schwarze (2004), Yang (2004), Khai & Danh (2014) | + | Number of non-agricultural self-employed laborers (persons) |
| 9 | LN_EXP | Yang (2004), Démurger et al. (2010), Ha & Trung (2019) | + | HH head's agri-production experience (years) |
| 10 | LAND | Schwarze (2004), Yang (2004), Babatunde & Qaim (2009), Ha & Trung (2019) | + | Area of agricultural land (hectares) |
| 11 | LN_LOANS | Schwarze (2004) | +/- | A total loan from banks (VND million) |
| 12 | LN_ASSETS | Schwarze (2004), Klasen et al. (2013), Ha & Trung (2019), Khai & Danh (2014) | +/- | Total assets (VND million) |

| No. | Variables | Sources | Expected signs | Descriptions |
|-----|-----------|--|----------------|--|
| 13 | INTERNET | Khai & Danh (2014) | + | 1, having internet access; 0, otherwise |
| 14 | ORG | Yang (2004), Démurger et al. (2010) | + | 1, being a member of a union or organization; 0, otherwise |
| 15 | EFCH | Coelli et al. (1998), Hoi et al. (2022) | + | Measuring the benchmark-ability of a household obtained from DEA model |
| 16 | HID4 | Minot et al. (2006), Joshi & Associates (2007), Illukpitiya & Yanagida (2008), Babatunde & Qaim (2009), Khai & Danh (2014) | +/- | As explained in Table 2 |
| 17 | HID3 | Minot et al. (2006), Joshi & Associates (2007), Illukpitiya & Yanagida (2008), Babatunde & Qaim (2009), Khai & Danh (2014) | +/- | As explained in Table 2 |
| 18 | HID2 | Minot et al. (2006), Joshi & Associates (2007), Illukpitiya & Yanagida (2008), Babatunde & Qaim (2009), Khai & Danh (2014) | +/- | As explained in Table 2 |

We used HID2, HID3, and HID4 as independent variables as the proxies for households' livelihood strategies, which are presented in Table 2. In addition, we selected other variables from household characteristics, and economic as well as institutional factors, as done in previous studies. These explanatory variables are given in Table 3. The regression function used to analyze the factors affecting the income of farmers in Dak Lak province is as follows:

$$Y = a_0 + \sum_{i=1}^n a_i X_i + \sum_{j=1}^m a_j D_j + u \quad (1)$$

Y is the dependent variable (total household income), X_i is a vector of quantitative independent variables, and D_j is a vector of dummy variables.

4. RESULTS AND DISCUSSION

Table 4 shows household characteristics, economic features, and social aspects with surveyed households derived from the TVSEP database. A household's average annual income is 147.62 million VND, ranging from 11.80 million VND to 2,665.37 million VND. Most household heads complete elementary school as the average level of education is 1.9 (indicating about nine years of schooling), similar to the schooling levels in Hoi et al. (2022) and Khai & Danh (2014). A household has an average of 5.2 people, of whom 2.3 on average work as self-employed laborers in agricultural sectors. However, only a mean of 0.2 laborers works self-employed in NAE. Farmers have an average of 34.7 years of experience in agricultural production, signifying a high level of experience. The arable land area for agricultural production averages 1.85 hectares per household. Most farmers have access to bank loans with an average amount of 28.6 million VND. The benchmark-ability (EFCH) of households is 1.034, implying that farmers have the potential to improve their technical efficiency. The larger the diversification indicators show that farmers

diversify their livelihood activities to generate their income as follows: HID4 - 2.044, HID3 - 1.446, and HID2 - 1.515.

Table 4. Descriptive statistics of variables

| Variable | Type/unit | Mean | SD | Min | Max |
|-----------|--------------------------|--------|--------|-------|----------|
| LN_INC | continuous / million VND | 147.62 | 152.20 | 11.18 | 2,665.40 |
| GENDER | dummy | 0.87 | 0.34 | 0 | 1 |
| ETHNIC | dummy | 0.64 | 0.48 | 0 | 1 |
| RELIGION | dummy | 0.25 | 0.43 | 0 | 1 |
| LN_EDU | discrete / from 1-4 | 1.95 | 0.83 | 1 | 4 |
| LN_HHSIZE | discrete / persons | 5.24 | 1.77 | 1 | 15 |
| LABOR1 | discrete / persons | 2.39 | 1.36 | 0 | 9 |
| LABOUR2 | discrete / persons | 1.05 | 1.14 | 0 | 7 |
| LABOR3 | discrete / persons | 0.24 | 0.51 | 0 | 4 |
| LN_EXP | discrete / years | 34.71 | 10.99 | 3 | 73 |
| LAND | hectares | 1.85 | 1.54 | 0.04 | 30.60 |
| LN_LOANS | VND million | 28.68 | 96.49 | 0 | 2,600.00 |
| LN_ASSETS | VND million | 86.08 | 135.92 | 0.51 | 1,415.80 |
| INTERNET | dummy | 0.81 | 0.40 | 0 | 1 |
| ORG | dummy | 0.58 | 0.49 | 0 | 1 |
| EFCH | continuous | 1.03 | 0.380 | 0.30 | 5.59 |
| HID4 | continuous | 2.04 | 0.92 | 1 | 5.59 |
| HID3 | continuous | 1.45 | 0.40 | 1 | 2.91 |
| HID2 | continuous | 1.52 | 0.54 | 1 | 3.99 |

Source: Authors' calculation from the TVSEP data

Table 5 summarizes the regression outputs of POOLED, FEM, and REM. These showed similar results. The Hausman Test indicated that FEM is the best model. However, we found heteroscedasticity in the FEM, so the GLS model was selected to cope with this situation.

In general, livelihood diversification was found to affect household incomes significantly. We discovered that HID4 significantly increases household incomes. Since this index measures the livelihood diversification within-sector (6 or 4 sub-sectors), there is an implication that shifting from a monoculture (crops or animals) to a polyculture is a good strategy for farmers. Inherent in a polyculture system is beneficial as farmers increase their crop or animal productivity, thereby raising household income. The precise selection of which two or more crops or animals for practicing polyculture depends, however, on the intrinsic mutual benefit of those selected crops or animals.

We noted that HID2 was calculated based on five major groups: agriculture, remittances, non-agricultural employment, non-agricultural self-employment, capital, and transfer. This variable represents the NAE diversification strategy. As shown in Table 5, HID2 was also found to significantly and positively affect household income. In other words, the diversification of income-generating agricultural activities to include non-agricultural ones significantly increases

household incomes. Prudent government policy should therefore focus on supporting or facilitating laborers in rural areas to find additional non-agricultural work to increase their income. This finding is consistent with Joshi et al. (2007), Illukpitiya & Yanagida (2008), Babatunde & Qaim (2009), and Khai & Danh (2014).

The HID3 is a livelihood diversification index based on sectors that include crop cultivation, livestock, and others. Unlike HID4 and HID2, we found that HID3 has a detrimental effect on farmers' income. Thus, specialization in crop production or animal husbandry is a better strategy than diversifying livelihoods into an integrated agricultural model of mixed crops and animals. This finding differs from previous studies that supported circular farming models, such as the integrated farming of fish, crops, and livestock; for example, Trang (2008) and Son (2010) supported the integrated farming model. Perhaps a reason for this may be related to the fact that farmers in Dak Lak mainly grow perennial industrial crops such as coffee, pepper, cashew, avocado, and rubber, rather than annual crops like rice, peas, or corn as in other regions of Vietnam, so, crop by-products may not be available to be used in animal husbandry.

We found positive impacts of GENDER, ETHNIC, LN_EDU, and LN_HHSIZE on income. These findings align with those of Démurger et al. (2010), Ha & Trung (2019), Schwarze (2004), Bettendorf & Dijkgraaf (2011), and Khai & Danh (2014). Specifically, male-headed households are more likely to have higher incomes than female-headed ones. Families belonging to the majority Kinh group have higher incomes than minority groups. This finding may be because minority groups often live in mountainous or remote areas with underdeveloped infrastructure. They also lack the skills and knowledge to apply technology to production (Que et al., 2020). Ethnic minorities account for 32.79% of the province's population (Linh, 2016; Dak Lak Provincial Statistics Department, 2020). Therefore, local authorities should devise and have in place specific support for ethnic minorities, especially those who are disadvantaged, to enhance their livelihood. In addition, we found that the head of the household's education level significantly increases a household's income. As a lot of previous research concluded, appropriate education is an excellent means for people to effectively access the knowledge necessary to apply new technologies for income improvement. The level of householder education (LN_EDU) positively impacts household income with a statistical significance of 1%. This result is consistent with the research results of Shrestha & Eiumnoh (2000), Yang (2004), Klasen et al. (2013), Khai & Danh (2014), and Ha & Trung (2019). The size of a household (LN_HHSIZE) positively affects a farmer's income, with regression confidence of 99%. A contributing factor to this finding is that we used the total income of households as the dependent variable, differing from previous research, which used per-capita income as the dependent variable. Our finding is, however, in line with the research results of Klasen et al. (2013) and Ha & Trung (2019).

We found a significant correlation that indicated the number of non-agricultural self-employed laborers (LABOR3) increased household income. This finding is consistent with the results of Schwarze (2004), Yang (2004), and Khai & Danh (2014). A household head's experience level (LN_EXP) positively impacted farmers' income. As the average experience of the head of households in this study was 34.7 years, there was a significant contribution of experience to income generation. In our sample set, the experience varied, ranging from 3 to 73 years. It could

be argued that young people often have better health but less experience, so a trade-off between experience and health exists in communities. Despite this, we found a significant, positive correlation between experience and household income, as Yang (2004), Démurger et al. (2010), and Ha & Trung (2019).

Land area was found to significantly increases farmers' income. This finding further confirms that land is an indispensable means of production for farmers, especially for the group of purely agricultural households involved with exclusively crop cultivation and livestock. This result is consistent with Schwarze (2004), Yang (2004), Babatunde & Qaim (2009), Ha & Trung (2019). Loan size (LN_LOANS) positively impacted farmers' income with a confidence level of 99%. Like Schwarze (2004), we found that households who are able to borrow from banks have higher incomes than those who do not have access to borrowing. Therefore, it is suggested to include adequate support for agricultural lending in policy-making, such as raising the ceiling of non-mortgage lending, improving lending methods, and applying appropriate land value when mortgaging. At the same time, the creation of suitable conditions for a diversified mix of credit sources should be encouraged, as well as support for farmers' organizations to participate in credit services. The value of property held by farmers (LN_ASSETS), excluding houses and residential land areas, was found to positively and significantly impact household income. Access to the internet (INTERNET) was also found to impact household income positively. These findings are in line with the results of Schwarze (2004), Klasen et al. (2013), Ha & Trung (2019), and Khai & Danh (2014).

Table 5. Regression outputs

| | POOLED | FEM | REM | GLS |
|-----------|-------------|-------------|-------------|-------------|
| | Coefficient | Coefficient | Coefficient | Coefficient |
| GENDER | 0.00013*** | -0.00006 | 0.00012** | 0.00012*** |
| ETHNIC | 0.00006* | -0.00032 | 0.00005 | 0.00008*** |
| RELIGION | -0.00010*** | -0.00006 | -0.00009** | -0.00009*** |
| LN_EDU | 0.00012*** | 0.00031*** | 0.00015*** | 0.00014*** |
| LN_HHSIZE | 0.00015*** | 0.00004 | 0.00009* | 0.00013*** |
| LABOR1 | -0.00001 | 0.00003* | 0.00001 | -0.00001 |
| LABOR2 | -0.00000 | 0.00001 | -0.00000 | -0.00000 |
| LABOR3 | 0.00010*** | 0.00012*** | 0.00010*** | 0.00004* |
| LN_EXP | 0.00019*** | 0.00094*** | 0.00029*** | 0.00019*** |
| LAND | 0.00010*** | 0.00010*** | 0.00010*** | 0.00011*** |
| LN_LOANS | 0.00595** | 0.00522 | 0.00554* | 0.00644*** |
| LN_ASSETS | 0.27747*** | 0.18686*** | 0.25416*** | 0.27181*** |
| INTERNET | 0.00032*** | 0.00024*** | 0.00032*** | 0.00030*** |
| ORG | 0.00003 | 0.00002 | 0.00002 | 0.00003 |
| EFCH | 0.00002*** | 0.00002*** | 0.00002*** | 0.00002*** |
| HID4 | 0.00005** | 0.00003 | 0.00004* | 0.00006*** |
| HID3 | -0.00023*** | -0.00024*** | -0.00025*** | -0.00024*** |
| HID2 | 0.00007** | 0.00024*** | 0.00015*** | 0.00013*** |

| | POOLED | FEM | REM | GLS |
|-------------------------|------------|------------|--|------------|
| CONSTANT | 0.00712*** | 0.00567*** | 0.00699*** | 0.00708*** |
| Observations | 1,810 | 1,810 | 1,810 | 1,810 |
| R ² | 0.43702 | 0.36198 | 0.3245 | |
| Adjusted R ² | 0.43136 | 0.19288 | 0.5408 | |
| Mean VIF | 1.34 | | | |
| White's test (POOLED) | | | Chi2(184) = 267.04; Prob > chi2 = 0.0001 | |
| Hausman Test | | | chi2(18) = 617.42; Prob>chi2 = 0.0000 | |
| Wald test (FEM) | | | Chi2 (362) = 1.1e+05; Prob>chi2 = 0.0000 | |

p-values in parentheses; * *p* < 0.1. ** *p* < 0.05. *** *p* < 0.01

Source: Regression Outputs

Finally, the benchmark-ability (EFCH) from each other with respect to agricultural production among farmers positively impacts income. Farmers who tend to learn or imitate each other in production find increases in their income. Policymakers should implement farming extension programs to facilitate farmer-to-farmer experience sharing.

5. CONCLUSION

This study measured the impacts of livelihood diversification strategies on farmers' income in Dak Lak province. We found that these impacts are positive or negative, depending on the household strategies. We found a positive effect of HID4, but a negative influence of HID3 on household income. In other words, our findings support the notion that farmers tend to be more successful when involved in within-sector income-generating activities rather than in between-sector activities. Transitioning from a monoculture system to a polyculture one can increase farmers' income. In addition, our finding that there was a positive influence of HID2 on household income implies that non-farming activities are also an option for farmers who seek to improve their revenue.

We additionally found that a number of factors - gender, ethnicity, education level, household size, number of non-agricultural self-employed laborers, production experience, loan size, asset value, internet access, and benchmark-ability - all significantly correlated with positive increases in farmers' income. Lastly, we found that religion has a negative effect on household income. Future research should be carried out to provide insights into this finding.

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THE EFFECT OF IMPORTS AND EXPORTS ON VIETNAM'S ECONOMIC GROWTH

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ABSTRACT

Imports and exports play an important role in the economy of each country in general and economic growth in particular. This study examines the impact of import and export on growth in Vietnam in the period 2009-2022, in which GDP is the dependent variable, while export, import, inflation, money supply are independent variables. The study used descriptive statistics methods, testing steps to implement the VECM error correction model such as stationarity test, heteroscedasticity test, autocorrelation test. Granger causality tests and Johansen cointegration tests were also used to analyze the long-run relationship. The research results show that economic growth is significantly affected by exports while imports are insignificant. The study also provides some explanations and briefly discusses some related policy implications.

Keywords: effect, imports, exports, economic growth.

1. INTRODUCTION

International economic integration is an inevitable trend of the present era. Only international economic integration can expand the market and create favorable conditions for investment and product consumption. Opening up for integration is not only for domestic enterprises to reach out to the world market, but also for foreign enterprises to invest in production in the domestic economy.

Over the past 20 years, imports of goods have tended to increase year after year. However, statistics from the General Department of Customs recently recorded the value of imported goods in the first five months of 2023 at 125.57 billion USD, down 18.4% over the same period in 2022. The decrease in import figures will bring many concerns about weak domestic demand and ineffective exports. Because the optimal import level shows strong domestic demand and a growing economy. If these imports are mainly raw materials for production, machinery and equipment, it will be even more favorable for economic growth. Meanwhile, Vietnam is experiencing strong economic growth thanks to the growth of exports. Most of Vietnam's imported raw materials are mainly used for production for export. Reduced imports mean reduced exports.

2. LITERATURE REVIEW

Khaled R.M.E. et al. (2010) from 1980-2007 export impact on GDP in Libya; Dilawar K. et al. (2012) from 1972-2009 period found two-way impact between GDP on export and import in Pakistan; Qazi M. A. H. (2012) from 1978-2009 period two-way impact between GDP on export and import in China.

Zang and Baimbridge (2012) focused on analyzing the relationship between exports, imports and economic growth of Korea and Japan by constructing a VAR model. The results indicate that the three variables are co-integrated for both countries, implying that an equilibrium long-run relationship does not exist. The results also provide evidence of bidirectional causality between imports and economic growth for both countries. Furthermore, Japan appears to experience export-led output growth, while GDP growth in Korea has a negative effect on export growth.

Hye (2012), examined the relationship between exports, imports and economic growth in the case of China from 1987-2009 using the Distributed Lag Technique (ARDL) and modified Granger causality test. Their results support the existence of a bidirectional long-run relationship between economic growth and exports, economic growth and imports, and exports and imports.

Table 1.: Studies on Exports, Imports and Economic Growth

| Authors | Countries | Period | Research Method | Impact |
|----------------------------------|----------------------|-----------|---|---------------------------------|
| Khaled R.M.E. and all (2010) | Libya | 1980-2007 | Cointegration analysis VECM Granger Causality tests. | EX=> GDP |
| Dilawwar K. and all (2012) | Pakistan | 1971-2009 | Cointegration analysis VECM Granger Causality tests. | GDP ⇔ EX GDP ⇔ IM |
| Qazi M.A.H. (2012) | China | 1979-2009 | Cointegration analysis Granger causality tests | GDP ⇔ EX GDP ⇔ IM |
| Velnampy.T & Achchuthan.S (2013) | Sri Lanka | 1970-2010 | Cointegration analysis Regression analysis | EX ⇔ IM GDP ⇔ EX GDP ⇔ IM |
| Kojo M. and all (2014) | 21 African Countries | 1965-2008 | Granger causality tests. | Trade => GDP |
| Mounir B. (2014) | Tunisia | 1970-2008 | Cointegration analysis VECM Granger Causality tests | Trade ≠ GDP |
| Gungor Turan and all (2014) | Albania | 1984-2012 | OLS | EX => GDP IM ≠ GDP |
| Auro K. S. and all (2014) | India | 1981-2010 | Cointegration analysis VECM Granger Causality tests | GDP => EX |
| Hussain M. and Afaf A. (2014) | Tunisia | 1977-2012 | Cointegration analysis VECM Granger Causality tests | IM => GDP |
| Ajmi and all (2015) | South Africa | 1911-2011 | Granger Causality tests | GDP ≠ EX GDP ≠ IM |
| Geanina and all (2019) | Romania | 1999-2016 | Cointegration analysis VECM Granger Causality tests | IM => GDP EX => GDP |
| Isaac O. and Liu J. (2020) | Ghana | 1998-2018 | Cointegration analysis VAR Granger Causality tests | IM ≠ GDP EX => GDP |

Source: Author's compilation

Velnampy and Achchuthan (2013) investigated the impact of exports and imports on economic growth in Sri Lanka from 1970-2010, the results showed a strong positive relationship between exports and imports and both exports and imports have a significant impact on the growth of the economy; Kojo M. et al. (2014) analyzed the relationship between exports and GDP growth

of Africa countries using annual data for the period from 1965 to 2008. For this purpose, VAR model, Granger causality test as well as Intermediate Response Function (IRF) were used. Their results led to rejection of the null hypothesis and ELG in favor of the alternative, GLE. IRF proved that shocks to output growth affect exports and imports while the reverse is not true.

Geanina and all (2019) analyzed imports and exports of wood products which are the sum of the following types of wood products: wood fuel, industrial coniferous round wood, industrial hardwood, charcoal, wood waste, coniferous timber and hardwood timber, veneer sheets, plywood, chipboard, OSB, paper. The statistical calculation was made using the R language in the RStudio program. The interval analyzed is between 1999 and 2016 in Romania.

Isaac O. and Liu J. (2020) identify and quantify the impacts of exports and imports on Ghana's economic growth from 1998 to 2018. Through the unit root and cointegration test, through the first-order difference cointegration variable stability and long-term equilibrium relationship. There is no significant causal relationship between imports in international trade and Ghana's GDP growth. Exports have a significant causal relationship with Ghana's GDP growth.

3. RESEARCH METHODS AND MODELS

This study uses both qualitative and quantitative methods. In which, the VECM error correction model is used to estimate data on exports, imports, GDP, inflation, and money supply for the period 2009-2022. Based on the research of Khaled R.M. et al. (2010) and Isaac O. and Liu J. (2020) is used to assess the impact of exports and imports on GDP.

Sample regression model:

$$GDP = \beta_0 + \beta_1 * EX + \beta_2 * IM + \beta_3 * CPI + \beta_4 * M2 + \varepsilon_t$$

Data is collected from the General Statistics Office and IMF including variables: gross domestic product (GDP), inflation rate (CPI), money supply (M2), export turnover (EX), import turnover (IM). The research period is from the first quarter of 2009 to the fourth quarter of 2022.

4. RESEARCH RESULTS

4.1. Descriptive statistics

The statistical results show that there are a total of 56 observations, describing the maximum, minimum, and average values of the variables and the variation of the variables in the observations.

The kurtosis and skewness values indicate the distribution shape of the research data. If the kurtosis is 3, it is concentrated at a higher level than the average, if it is less than 3, it is concentrated at a lower level than the average. The kurtosis of the research variables of EX, GDP, IM, and M2 are all less than 3, indicating that the variables are concentrated at a lower level than normal, except for CPI, which is 6 and greater than 3, indicating that the CPI variable is concentrated at a higher level than normal. However, EX, GDP, and IM, although lower than 3, are still approximately 3, close to the normal level.

Table 2. Descriptive statistics of research variables

| | CPI | EX | GDP | IM | M2 |
|------------------------|-----------|----------|----------|----------|-----------|
| Mean | 1.442143 | 43009.45 | 2212073 | 41628.02 | 5887650 |
| Median | 1.200000 | 40144.00 | 1915368 | 38616.00 | 5300817 |
| Maximum | 6.750000 | 120898.0 | 6037348. | 76200.00 | 12349750 |
| Minimum | -0.390000 | 13431.00 | 311136.0 | 12490.00 | 1597546. |
| Standard deviation | 1.507448 | 21317.80 | 1423672. | 17189.65 | 3208499. |
| Skew | 1.799318 | 1.040172 | 0.803668 | 0.286012 | 0.399489 |
| Kurtness | 6.439525 | 4.918836 | 2.929783 | 2.022222 | 1.933489 |
| Normal distribution | 50.59357 | 16.35327 | 5.284766 | 2.619992 | 3.5625565 |
| Number of observations | 56 | 56 | 56 | 56 | 56 |

Source: Author's calculation

4.2. Stationarity test

When considering the characteristics of the time series data, use the ADF unit root test. The results from Table 4.2 show that only the CPI variable is stationary, GDP, M2, EX are stationary at the first difference, IM is stationary at the second difference.

Table 3. Unit root test results

| Variable | ADF test at level | | ADF test at first difference | | ADF test at second difference | |
|----------|-------------------|--------|------------------------------|--------|-------------------------------|--------|
| | t-statistic | Prob* | t-statistic | Prob* | t-statistic | Prob* |
| GDP | -1.570379 | 0.4892 | -25.47799 | 0.0001 | | |
| CPI | -2.164105 | 0.2217 | -7.176001 | 0.0000 | | |
| EX | -4.700694 | 0.0004 | -4.700694 | 0.0004 | | |
| IM | -1,319034 | 0.6108 | -1.929159 | 0.3159 | -2.917493 | 0.0527 |
| M2 | 4.912264 | 1.0000 | 6.3546883 | 0.0000 | | |

(Source: Author's calculation)

4.3. Cointegration Test

To perform the Johansen-Juselius test, it is necessary to first determine the optimal lag size in the model. There are different criteria designed to select the order of the model.

Table 4. Lag-order selection criterion

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|
| 0 | -2196.057 | NA | 3.17e+38 | 100.0026 | 100.1648 | 100.0627 |
| 1 | -2174.406 | 38.38032 | 2.46e+38 | 99.74574 | 100.5567 | 100.0465 |
| 2 | -2149.194 | 40.11048 | 1.65e+38 | 99.32700 | 100.7868 | 99.86836 |
| 3 | -2065.131 | 118.4518 | 7.86e+36 | 96.23325 | 98.34183 | 97.01521 |
| 4 | -1989.437 | 92.89732* | 5.74e+35* | 93.51988* | 96.27726* | 94.54245* |

Source: Author's calculation

The choice of lag size is 4 based on the LR (Likelihood-ratio test), FPE (Final prediction error), AIC (Akaike's information criterion), SC (Schwarz Information Criterion) and HQ (Hannan-Quinn information criterion) criteria because the criteria show that the optimal lag size is 4.

4.4. Vector Error Correction Model (VECM)

- Impulse Response Function

After conducting VECM model tests, variance decomposition functions and impulse response functions will be performed to examine the effects of IM, EX, CPI, M2 factors on GDP.

Figure 1. Impulse response function results



Source: Author's calculation

The above results show that exports, imports, inflation and money supply all have a positive impact on GDP, while CPI has a positive impact but is currently having a negative impact on GDP.

- Vector Error Correction Model

$$\text{GDP} = 230211.6 + 1.84\text{E-}0.5 * \beta_2 + 7.25\text{E-}06 * \beta_3 - 31369.91 * \beta_4 - 0.077112 * \beta_5 + \varepsilon$$

The VECM model estimation results show that R-squared = 0.975, the fluctuation of the dependent variable GDP has 97.5% of the fluctuation due to the independent variables EX, IM, CPI, M2, the rest is due to errors. F-statistics 153.0007 shows that the reliability of the equation is relatively high. Prob (F-statistics) = 0.0000 < α = 0.05 (significance level α = 5%) we have this model exists. Standard error S.E of regression = 568621.2. The model fits quite well.

5. CONCLUSIONS AND POLICY IMPLICATIONS

The research results on the impact of import and export on economic growth in Vietnam show that both import and export have an impact on economic growth, which is similar to the research of Khaled R.M. et al. (2010), Hussain M. and Afaf A. (2014), Isaac O. and Liu J. (2020).

To stimulate import and export growth in Vietnam in line with the economic growth target in the next period, it is necessary to understand the advantages and disadvantages when Vietnam participates in free trade associations to minimize negative impacts on Vietnam's import and export activities, thereby overcoming the loopholes of Vietnamese enterprises when they do not fully understand the regulations of the associations. Moreover, it is necessary to maximize opportunities to further develop Vietnam's import and export activities.

Strengthening control of input factors, avoiding over-dependence on one or several markets, along with negotiating, signing and implementing FTAs with partners, the Government and Vietnamese enterprises must truly consider good implementation of FTAs as the best way to diversify markets and import-export partners.

Encourage banks to support enterprises so that enterprises can be more confident in importing and exporting goods.

Open more training courses on knowledge and skills in import-export, documents, and update the latest trade laws for enterprises to avoid unnecessary incidents.

Simplify documents and procedures for import and export to still comply with the law but not too cumbersome. The Government should include in economic policies materials that increase production and improve the production capacity of the economy with the aim of positively impacting Vietnam's export scale.

Developing production to increase exports and imports, while meeting domestic demand, exploiting the comparative advantages of the economy, improving efficiency, competitiveness of imports and exports, and shifting the economic structure towards industrialization and modernization, solving employment issues to balance the trade balance.

Building and consolidating strategic cooperation partners to develop a sustainable market, harmoniously combining the immediate and long-term interests of the country, and being proactive in international economic integration.

Diversifying import and export markets, actively and proactively participating in production networks in the global value chain, focusing on building and developing high-value-added goods with brands in domestic and foreign markets.

On the business side, it is necessary to have a suitable production and business development strategy to effectively exploit export and import opportunities thanks to joining free trade associations. In addition, it is necessary to fully study the commitments to join and international practices related to production and business activities, develop production and business strategies for each stage and prepare necessary conditions to deal with risks. Focus on building product quality standards and technical barriers in accordance with the regulations of free trade associations for goods that need to limit imports. Continue to deploy a number of new import management tools in accordance with the regulations of free trade associations, reorganize production and business, and improve competitiveness in the context of increasingly deep international economic integration.

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IMPACT OF THE EVFTA FREE TRADE AGREEMENT ON VIETNAM'S AGRICULTURAL EXPORT TURNOVER AND PROPOSAL SOLUTIONS FOR DEVELOPING HIGH-TECH AGRICULTURE UNDER THE IMPACT OF THE EVFTA AGREEMENT

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ABSTRACT

The research focuses on the impact of the European-Vietnam Free Trade Agreements on agricultural exports and the development of high-tech agriculture in Vietnam during the period from 2013 to 2022. By using the Revealed Comparative Advantages index, regression analysis with panel data, and the feasible generalized least squares model, the study addresses three main questions: (1) How does European-Vietnam Free Trade Agreements affect agricultural exports? What are the opportunities and challenges for high-tech agriculture? (3) What do the government and businesses need to do to promote agricultural development under the impact of the European-Vietnam Free Trade Agreements? The results show that the golden population is an important factor in enhancing productivity and developing the agricultural economy. Additionally, there are five other factors that also have a significant impact, which is Vietnam's GDP, The importing country's GDP, Geographic distance, Real exchange rate and Vietnam and the partner country are both EVFTA members. From there, it serves as a basis for proposing policies for the modernization of agriculture by applying advanced technology to enhance productivity in the production of agricultural products.

Keywords: Export turnover, EVFTA, FGLS model, High-tech agriculture, RCA index.

1. INTRODUCTION

Since the implementation of the comprehensive economic reform strategy in 1986, Vietnamese agriculture has attained significant accomplishments, underscoring its crucial role in the nation's growth, particularly during periods of economic hardship (Bui Thi Minh Nguyet, 2016). The agricultural sector of Vietnam meets local food requirements and security, while the European Union represents one of Vietnam's main export markets (Le Vu Tuong Vy, 2020). In 2021, bilateral commerce between Vietnam and the EU amounted to 63.6 billion USD, reflecting a 14.8% growth from 2020 (Ministry of Industry and Trade, 2022). Climate change and salinity provide difficulties to agriculture and the livelihoods of farmers amid global competitiveness (Le Anh Tuan, 2014). Advancing sustainable, high-yield agricultural growth via technology is an essential trend in Vietnam amidst integration, facilitating breakthroughs and progressively diminishing reliance on natural resources. The partnership facilitates technology transfer, enabling Vietnamese farmers to implement advanced agricultural techniques, including Integrated Pest Management (IPM) and Good Agricultural Practices (GAP) (Onicetic, 2015). In 2021, bilateral

commerce between Vietnam and the EU amounted to 63.6 billion USD, reflecting a 14.8% rise from 2020. The entire value of Vietnamese exports to the European Union (EU) amounted to 45.8 billion USD, reflecting a 14.2% increase, while EU exports to Vietnam were 17.9 billion USD, marking a 16.5% increase compared to 2020, (Ministry of Industry and Trade, 2022). The EVFTA has facilitated substantial tax reductions for certain Vietnamese agricultural products, including coffee, rice, and various fruits, in the EU market according to the established roadmap. To fully leverage this potential, management agencies and businesses must implement coordinated strategies, particularly as the EU enforces stringent regulations regarding quality, food hygiene and safety, and rules of origin.

In the realm of global economic integration, engagement in bilateral and multilateral trade agreements promotes economic progress, alleviates barriers, and diminishes income disparities, exemplified by Vietnam. Prior research has only concentrated on evaluating the effects of the EVFTA on Vietnam's agricultural exports to the EU. The trade score indicates a scarcity of comprehensive studies on high technology in agricultural products. This study elucidates the opportunities and challenges associated with the advancement of the high-tech industry in Vietnam, while also providing recommendations to leverage the EVFTA agreement to boost productivity and elevate the status of Vietnamese agriculture, particularly in high-tech agriculture.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.2. Theories of international trade

“Some theories and research topics on agricultural and rural development through the lens of sociology.” by MSc. Bui Nhut Phong pointed out the theories that are often mentioned when discussing the perspective of agricultural and rural development.

David Ricardo's theory of comparative advantage is that each country should specialize in producing and exporting products in which it has a comparative advantage and importing products in which it does not have a comparative advantage. In addition, the theory of gravity model in trade was first applied by Tinbergen in studies evaluating the impact of FTA free trade agreements on international trade flows in 1962. The gravity model uses special variables. These include the size of the economy and the distance between trading partner countries. This approach requires a broad and complex database of variables that affect trade, including the implementation of FTAs. Further, the theory advocates harmonious combination between agriculture and industry, rural and urban areas in the development process appeared in the 70s of the twentieth century by E. Schumacher. He believes that economic development does not simply focus on developing goods and maximizing natural resources to serve industrial development, but also needs to pay attention to people and economic development.

2.2. Previous studies on the impact of Vietnam - Europe Free Trade Agreement (EVFTA) to Vietnam economy

Vu Thanh Huong and Nguyen Thi Minh Phuong (2016) used trade indicators to assess the sectoral impact of EVFTA including: value, import-export proportion, revealed comparative advantage index (RCA) and export specialization index (ES). Research shows that Vietnam's export

and import turnover with the EU are both increasing steadily; trade between Vietnam and the EU is mainly inter-industry because the import-export structure, comparative advantages and export specialization of the two sides are clearly different, especially in the machinery and equipment industry. The study also stated that the impacts of EVFTA by industry are quite complex and intertwined, whereby EVFTA will bring opportunities and challenges for Vietnamese businesses.

Vu Thanh Huong (2017) analyzed changes in trade in goods between Vietnam and the EU in terms of turnover, proportion, growth rate and structure, thereby grouping goods and markets to help Vietnam. The thesis has combined qualitative and quantitative methods (SMART model and gravity model), different research tools to diagnose and evaluate the static impact as well as the potential dynamic impact of EVFTA on total trade between Vietnam and the EU. From there, the author points out the benefits, opportunities, difficulties and challenges of EVFTA to Vietnam, emphasizing opportunities and challenges by market, industry and providing useful implications.

Grumiller et al (2018) pointed out that Vietnam has actively integrated into the world economy since the early 1990s and achieved a clear surplus in the goods trade balance of nearly 24 billion EURO. While Vietnam enjoys preferential access to the EU market, the main export industries of textiles, garments and footwear benefit significantly from tariff reductions. In addition, EVFTA also increases market access in Vietnam's aquaculture value chain, the improved market brought by EVFTA can increase exports to the European market.

Doan Duc Manh and Nguyen Dac Hieu (2021) have researched and analyzed the impact of the Vietnam - European Union Free Trade Agreement (EVFTA) on Vietnam's agricultural exports. The research uses secondary data from the World Bank and applies the SMART model. Simulations show that removing tariffs would lead to a significant increase in Vietnam's agricultural exports. The study shows that the highest increase in export value is seafood, especially Vietnamese pangasius products. Therefore, it can be predicted that the EU will continue to grow as a huge market for the export of fish and seafood products. With strong tax reduction under EVFTA, Vietnam can enjoy great economic benefits in exporting to this industry.

According to Nguyen Thi Bich Ngoc et al. (2021), EVFTA has shown that it promotes sustainable production, protects environmental and social values, and is a supportive framework and suitable for Vietnam's sustainable agricultural development orientation. On the other hand, data from the case studies in this study imply that small businesses passionate about sustainable development have not received clear incentives under the EVFTA.

There have also been many previous studies assessing the impact of the EVFTA on trade or the market of various sectors in Vietnam (Jean Marc Philip et al., 2011; Brauer et al., 2014; Quyen Thi Mai Dao, 2016;...)

Building on previous literature, we propose hypotheses as follows:

H1: The more Vietnam's GDP increases, the more agricultural export turnover increases

H2: The more the importing country's GDP increases, the more agricultural export turnover increases

H3: The more Vietnam's population increases, the more agricultural export turnover increases

H4: The more the population of the exporting country increases, the more agricultural export turnover increases

H5: The farther the geographical distance between Vietnam and the importing country, the lower the agricultural export turnover

H6: The more the real exchange rate increases, the more agricultural export turnover increases

H7: Being a member of EVFTA will increase Vietnam's agricultural export capacity

3. METHODOLOGY

3.1. Data and data collection methods

The data used in the research is secondary data in the period from 2013 - 2022. The team collects data including Vietnam's agricultural exports to importing countries, gross domestic product (GDP), population, geographical distance and real exchange rates of Vietnam and 20 partner countries including 10 member countries of EVFTA from reputable organizations in Vietnam and around the world to ensure accuracy and specificity through the official websites (the World Bank, the General Department of Vietnam Customs, the World Trade Center, the International Monetary Fund,...)

3.2. Data analysis methods

Regarding data processing, the research team used two main tools: Excel to synthesize and calculate and Stata software to run regression models to analyze data. After being synthesized, the data is presented mainly in the form of statistical tables.

To analyze the impact of factors on Vietnam's export of agricultural goods, the research team used gravity models and regression analysis with panel data. First, to compare the effectiveness and choose a regression analysis model, the author chooses between Pooled OLS, FEM, and REM models. Specifically, the authors use the testing Breuschpagan Lagrangian Multiplier to choose between Pooled OLS and REM, then use the Hausman-Taylor test to choose between REM and FEM. The results received show REM is selected. However, after testing defects using the Lagrange and Wooldridge methods, the model suffered from autocorrelation and variable variance, so to overcome the defects of the model, the author applied the normal model. FGLS feasible generalized least squares method to analyze the impact of factors on Vietnam's agricultural exports.

4. RESULTS

Through a review of research, the authors inherited the model to analyze the effects of factors on Vietnam's agricultural exports to the markets of EVFTA member countries as a logarithmic function to reduce fluctuation amplitude:

$$\ln(\text{EXP}_{it}) = A + \beta_1 \ln(\text{GDP}_{it}) + \beta_2 \ln(\text{GDP}_{jt}) + \beta_3 \ln(\text{POP}_{it}) + \beta_4 \ln(\text{Pop}) + \beta_5 \ln(\text{Dis}_{ij}) + \beta_6 \text{FTA} + \beta_7 (\text{EXR}_{ijt}) + e_{ijt}$$

Where:

A: Constant

$i = 1$ (Vietnam)

$j = 2,3,4,5,6,7... 21$ (partner country)

$t = 2013,2012, ...2022$

e_{ijt} : Error term

$\beta_1\beta_2... \beta_7$: The coefficients β represent the impact of factors on Vietnam's export turnover with country j .

4.1. Model selection results

To choose between the Pooled OLS and REM models, the author performs the Breusch - Pagan Lagrangian Multiplier test. With p value = $0.00 < 0.1$, the results show that the REM model is more suitable than the Pooled OLS model.

To choose between FEM and REM models, the author uses the Hausman determination. The results show p -value = $0.1444 > 0.1$, so at the 10% significance level, there is no basis to reject the hypothesis that there is no systematic difference between FEM and REM. Therefore, model REM is appropriate for the study, that is, the error components and the independent variables are not correlated.

After selecting the REM model, the author performed some tests to identify defects in the model. First, the Lagrange multiplier test method is used to test heteroskedasticity in the REM model. The test results show that p -value = 0 , so at the 5% significance level, the hypothesis that there is no heteroscedasticity is rejected. Thus, the model has the phenomenon of heteroskedasticity. Next, the author uses the Wooldridge method to test the serial autocorrelation phenomenon when using REM. The test results show that p -value = $0.0001 < 5\%$, therefore, with a significance level of 5%, the hypothesis that there is no serial correlation phenomenon is rejected. Thus, the model has the phenomenon of serial correlation. Thus, it can be seen that REM estimation is still not the most effective due to the phenomenon of serial correlation and heteroskedasticity.

**Table 1. Estimated results according to the REM model
 (Before dealing with serial correlation and heteroskedasticity)**

| | Coefficient | Standard error | With | P > z | About tree information | |
|-----------------|-------------|----------------|-------|--------|------------------------|------------|
| $\ln GDP_{it}$ | -1.946087 | 0.9580775 | -2.03 | 0.042 | -3.823884 | -0.068282 |
| $\ln GDP_{jt}$ | 0.5695207 | 0,1930899 | 2.95 | 0.003 | 0.1910715 | 0.9479699 |
| $\ln POP_{it}$ | 17.50808 | 7.168913 | 2.44 | 0.015 | 3.457272 | 31.55889 |
| $\ln POP_{jt}$ | 0.2789874 | 0.2072813 | 1.35 | 0.178 | -0.1272765 | 0.6852514 |
| $\ln DIS_{it}$ | -1,309414 | 0.3729115 | -3.51 | 0.000 | -2.040307 | -0,5785212 |
| $\ln EXR_{ijt}$ | 0,2030476 | 0,0767834 | 1.76 | 0.079 | -0.0234903 | 0,4295854 |
| FTA | -0.1490429 | 0.0767834 | -1.94 | 0.052 | -02995357 | 0.00114498 |
| Constant | -262.2325 | 107.406 | -2.44 | 0.015 | -472.744 | -51.72063 |

Source: Author's calculations from research data

The results in Table 1 show the variable $\ln\text{POP}_{jt}$. There seems to be an unclear impact because the calculated p-value of the two variables far exceeds the 5% significance level ($\ln\text{POP}_{jt}$ 0.178). Therefore, the author applies the FGLS generalized least squares model in estimating the final model to overcome the model's defects, and at the same time eliminates the explanatory variable $\ln\text{POP}_{jt}$ which is not statistically significant in the final model. The final estimation results are presented in Table 2.

4.2. Main results, discussions and implications

The results in Table 2 show that the factors affecting Vietnam's export turnover of agricultural products to importing countries are: GDP of the importing country (GDP_{jt}), Vietnam's population (POP_{it}), distance geography (DIS_{ij}), real exchange rate (EXR_{ijt}) and FTA membership. The test values are p-value = 0 (variables GDP_{jt} , POP_{it} , Dis_{ij} , EXR_{ijt}), variable GDP_{it} with p-value = 0.001 and p-value = 0.025 (FTA). Therefore, at the 5% significance level, these test values are all statistically significant.

Table 2: Estimated results of factors affecting Vietnam's agricultural exports to importing countries' markets

| $\ln\text{EXP}_{ijt}$ | Coefficient | Standard error | With | P > z | Confidence interval | |
|-----------------------|-------------|----------------|-------|--------|---------------------|------------|
| $\ln\text{GDP}_{it}$ | 1.65225 | 0.4850288 | 3.41 | 0.001 | 0.0682892 | 1.602889 |
| $\ln\text{GDP}_{jt}$ | 0,9657255 | 0,0529649 | 19.41 | 0.000 | 0,8682292 | 1,063222 |
| $\ln\text{POP}_{it}$ | 14,1817 | 3,920972 | 3,62 | 0.000 | 6,496736 | 21,86666 |
| $\ln\text{DIS}_{it}$ | -1,106101 | 0.1184876 | -9,34 | 0.000 | -1,338333 | -0,8738698 |
| $\ln\text{EXR}_{ijt}$ | 0,2326377 | 0,045241 | 5,14 | 0.000 | 0,1439531 | 0,3213223 |
| FTA | -0.176777 | 0.0786086 | -2.25 | 0.025 | -0.3308476 | -0.0227077 |
| Constant | -216,897 | 60,04452 | -3,61 | 0.000 | -334,5821 | -99,21193 |

Source: Author's calculations from research data

Vietnam's GDP (GDP_{it}) tends to impact in the same direction as Vietnam's agricultural exports in the period 2013-2022. When other factors remain unchanged, Vietnam's GDP increases by 1%, the export turnover of Vietnam's agricultural products to importing countries increases by 1.65%. Vietnam's GDP increases, causing the country's production and net exports to increase while people's consumption needs increase, leading to increased production of agricultural products to serve domestic consumption and export to other countries. foreign markets increased. Research by Nguyen Tien Hoang (2022) argues that Vietnam's GDP does not affect Vietnam's agricultural export turnover to foreign markets.

The importing country's GDP (GDP_{jt}) tends to have a positive impact on Vietnam's export turnover of agricultural products. When keeping other factors constant, if the GDP of importing countries increases by 1%, Vietnam's agricultural export turnover to that country increases by 0.97%. When the GDP of importing countries increases, it creates more opportunities to consume goods, and market demand increases. This result is consistent with previous studies Dao Ngoc Tien (2018) and Ngo Thi My (2016).

Vietnam's population (POP_{it}) tends to impact in the same direction as Vietnam's agricultural export turnover. This means that Vietnam will export more agriculture as its population increases because as its economic scale increases, its production capacity also increases. This result is consistent with expectations and is consistent with previous experimental studies such as Dao Ngoc Tien (2013) and Ngo Thi My (2016). When other factors remain unchanged, if Vietnam's population increases by 1%, agricultural export turnover to 20 importing countries increases by 14.18%. This is the factor that has the strongest impact on Vietnam's agricultural exports to the markets of importing countries. A country's population represents the working class and is a consumer market for goods, so when Vietnam's population increases, production output increases, leading to increased exports.

Geographic distance (DIS_{ij}) has a negative impact on Vietnam's agricultural products export turnover. The results show that, with other variables remaining the same, if the geographical distance between Vietnam and the partner country increases by 1%, agricultural export turnover will decrease by 1.1%. This result is consistent with the expectations of many previous studies (Nguyen Tien Hoang, 2022). Accordingly, geographical distance becomes a factor hindering trade. When the distance between markets is too far, tax and trade barriers increase, leading to a negative impact on our country's export of goods.

Real exchange rate (EXR_{ijt}) has a positive impact on agricultural export turnover. This result is similar to previous studies such as Nguyen Hai Tho (2013). An increase in the real exchange rate will increase Vietnam's agricultural exports to partner countries, but the level of increase is not significant with a regression coefficient of only 0.23%. This shows that the fluctuation of Vietnam's exchange rate does not support the export of agricultural products well during this period.

The fact that Vietnam and the partner country are both EVFTA members (FTA) tends to have a negative impact on Vietnam's agricultural products export turnover. This is considered an important variable to evaluate the impact of the EVFTA Agreement on export turnover of agricultural products, especially high-tech agriculture. The EVFTA Agreement taking effect from August 1, 2020 has a positive impact on Vietnam's agricultural export turnover to the European market. Compared to the FTAs that Vietnam is implementing, regulations on rules of origin for agricultural products in the EVFTA Agreement are considered stricter when the criteria of origin of goods applied are mainly country of origin. pure. And the issue of intellectual property has not received enough attention from many businesses, while this is a top priority for the EU. Similarly, issues related to environmental protection, technical barriers, and clean products are urgent issues currently facing our country's agricultural products (An Hung, 2023). The second subjective reason is Europe's needs for high-tech agriculture. Although Vietnam has favorable climatic conditions for agricultural development, high-tech agriculture is a relatively new industry compared to our country, so encountering difficulties is inevitable. Some difficulties that businesses encounter include: High investment capital when investing in high technology, this new model has many shortcomings in management, experts and human resources do not have enough skills, experience,... (MSc. Tran Thi Thanh Thuy, 2020). If there is no timely development policy, it will affect our country's agriculture and cause Vietnam's economy to fall backwards behind.

4.3. According to the research findings, we recommend policies to leverage the EVFTA for the development of high-tech agriculture in Vietnam

From the government's perspective, there is an urgent need to enhance the legal framework. The establishment of import-export policies and their updating from time to time will help maintain a good investment environment. Major agricultural products export encouragement through providing financial and technological support for those with strong competitive advantages is another priority. Besides, there should be concern for the amelioration of the production environment in terms of infrastructure construction, tax preference for the import of high-tech machinery, and support in undertaking international trade risks. Human resource development could be realized through investments in education and vocational training. In such a way, the accumulation of high-quality manpower will be possible. Along with this, financial subsidies and credit support by the government must be rendered to the new enterprises and high-technology agricultural ones.

For businesses, they need to know the advantages brought about by the EVFTA then studying to apply in cases of tax incentives and export quotas. Besides, businesses need to master economic institutions and EU regulations on trade protection to take advantage of the EVFTA Agreement effectively. By clearly understanding the EU's requirements, agricultural export businesses can find effective methods and minimize costs in the process while still meeting the regulations. On the contrary, if businesses do not know or do not comply with regulations, export shipments may be rejected, causing heavy losses to exporters. Further, brand building is a must; businesses carry out procedures for registering trademarks and geographical indications to add more value and build credibility for their products in foreign markets. Finally, businesses ought to be steadfast in the goal of participating in the supply chain with a solid position, being a priority partner of major manufacturers and distributors in the world, building brands for Vietnamese agricultural products.

5. CONCLUSIONS

The present study has fully satisfied the set goals and answered questions regarding the influence of the EVFTA Agreement on agricultural exports of Vietnam, opportunities, and challenges for high-tech agriculture; and government and business roles in agricultural development. In research through the application of the comparative advantage index and regression models, it has been established that even though EVFTA has brought many challenges in the field of agricultural exports, export turnover to the European Union is increasing and would hence be optimistic in providing an outlook for an expedition into European markets. The current study highlighted development opportunities for high-tech and sustainable agriculture due to state and business initiatives but insisted that these challenges should be overcome through policy innovation. These recommendations include export promotion among industries, taking advantage of the EU incentives, and addressing non-tariff barriers. It is recommended that enterprises export products with comparative advantages and improve product quality to diversify the markets.

However, this study has some limitations: firstly, the focus is on trade without comprehensive investment and production market factors; data has been gathered from only 10 EU countries, which cannot represent the whole. Also, future research should cover all kinds of data and examine the impacts of EVFTA from many economic, political, and diplomatic angles to provide deeper insights into its influences on Vietnam's agricultural sector.

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FINANCIAL AUTONOMY MECHANISM AT PUBLIC HOSPITALS: A REVIEW

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ABSTRACT

This study aims to review academic publications on the financial autonomy of public hospitals by examining the official autonomy regulations and the real autonomy practices of a few chosen hospitals in the world. Comprehensive reviews were conducted to summarize the findings of 34 studies which covered the period from 2011 to September 2024. The study found that the topic of financial autonomy in public hospitals has not received much attention in many countries. Vietnam is the country that contributed the most studies during the review period with 8 studies. At the same time, the number of annual publications is limited, even for countries interested in this issue.

Keywords: autonomy, financial autonomy, hospitals, public hospitals.

1. INTRODUCTION

Different from other industries, the healthcare and hospital care sectors should be governed by law to guarantee universality, equity, and accessibility for all parties, as well as cost-effectiveness without squandering resources (Mordelet, 2009). Therefore, organizational changes to public hospitals are being pursued by numerous nations. These changes, which go by the names corporatization or autonomization, usually entail keeping hospitals under public ownership while giving them more autonomy and accountability for their operations (Jakab et al., 2002). According to (Harding & Preker, 2003), in many nations, hospital autonomy has been a crucial component of a larger health system reform. It is the reform strategy that entails giving public hospitals more exposure to the market and incentives akin to the market while decreasing direct government control over them. In Vietnam, one of our Party's and the State's main policies is to innovate management techniques, particularly financial management for public non-business entities. Specifically, the financial system in general and public hospitals' financial autonomy in particular are of great significance in the healthcare industry (Trang; et al., 2023). With the issuance of Government Decree 10, which gives public service delivery units varied degrees of autonomy in finance, personnel, and the organization and management of service supply, Vietnam's healthcare management system began the process of hospital autonomization in 2002 (Võ & Löfgren, 2019).

There have been many studies related to the autonomy mechanism of public hospitals in the world. While the experiences and lessons learned from hospital autonomy have been presented in (Doshmangir et al., 2015), (Rusmardiana et al.) presented the autonomy policy, (HANDAYANI et al.; Rezaee et al., 2023; Sharma & Hotchkiss, 2001) mentions financial autonomy in public hospitals. In addition, obstacles connected with accountability, autonomy, and governance in

public university hospitals were presented in (Badr, 2017). Vietnam has also some studies that mention financial autonomy (Huyen & Thuy; Vö & Löfgren, 2019) or analyze the factors affecting financial autonomy (Huyen et al., 2024). In addition to studies focusing on a specific topic such as financial autonomy, autonomy policy, etc., some studies have conducted systematic reviews on the above content. By identifying knowledge gaps, (Sohrabi et al., 2021) synthesize and compare the findings of studies on organizational reform of hospitals in Iran to provide a clearer picture of the current situation. Besides, a systematic review of the implementation of hospital autonomy reforms in developing countries was conducted in the study (Ravaghi et al., 2018). (Abdullah & Shaw, 2007) examined various points of view, justifications, and arguments for hospital autonomy generated over the previous 20 years and surveys literature produced on the subject across a range of developing countries. On the other hand, (Braithwaite et al., 2011) performed a review to investigate the arguments for and against the privatization and corporatization of publicly financed hospitals in an international setting through a thorough analysis of the literature. In Vietnam, there are two publications related to the financial autonomy mechanism. While (Thao et al., 2023) reviewed financial autonomy in public hospitals, (Trang; et al., 2023) provided an overview of the financial autonomy mechanism used by Vietnam's Ministry of Health's public hospitals. However, most of the reviews are insufficient and have not analyzed studies related to autonomy in public hospitals. However, most of the reviews are sketchy and do not analyze studies related to autonomy in public hospitals. Therefore, to fill this gap, this study conducted a comprehensive review to assess the trend of autonomy in public hospitals in countries around the world.

2. METHODOLOGY

A systemic review starts with identifying relevant main works and particular concepts, which are then operationalized into search terms and syntax. The search syntax for study retrieval in this study is as follows: “autonomy” OR “autonomy mechanism” OR “financial autonomy” AND “hospitals” OR “public hospitals”. The databases for Google Scholar, ScienceDirect, Scopus, and Web of Science are searched methodically using the search syntax. English is the primary search language. Firstly, publications are screened for alignment with article content by looking at their titles and abstracts. The articles must have been published in peer-reviewed journals or conference proceedings during the past 14 years in order to be considered for inclusion in this review (from 2010 to 2024) and concentrating on autonomy mechanism at public hospitals. After reviewing the full texts of the papers, 34 publications were chosen as the foundation of our systematic literature review.

3. RESULTS AND DISCUSSION

Every nation must choose its own special route that fits its own national features when it comes to the process of autonomy and innovation in the management mechanisms of public hospitals (Trang; et al., 2023). Therefore, the studies were grouped according to the public hospital autonomy status of different countries. The review content includes the purpose, year, and name

of the country where the study was conducted. Vietnamese public hospitals are currently in charge of their own finances and are free to make judgments. To evaluate the financial autonomy mechanism in public hospitals, (Trang; et al., 2023) carried out a survey to collect insights from groups directly or indirectly involved in this process. The financial autonomy mechanism has been shown to be the most effective course of action for public hospitals in particular as well as for public institutions in general. Besides, (Võ & Löfgren, 2019) analyzed the financial autonomy of public hospitals in Vietnam through investigating the official autonomy regulations and the real autonomy practices at a few chosen hospitals. The study investigated important players' viewpoints and perspectives on hospital autonomy and how it affects hospital outcomes. According to (Huyen et al., 2024) the mandate for financial autonomy in public hospitals has brought up a number of concerns, from the development and efficient use of financial resources to management techniques and policy frameworks. In order to evaluate the degree of influence of various factors on the current state of financial autonomy in public hospitals under the Ministry of Health, the authors gathered survey data from 42 public hospitals in Vietnam. The findings suggest that the degree of financial autonomy is positively influenced by the state's financial policy mechanism, medical personnel qualifications, employee qualifications, and facility qualifications. In addition, Vietnam has witnessed a notable decline in the maternal mortality ratio over the past ten years, along with a growing degree of autonomy for public hospitals. Thus, (Lê et al., 2015) investigated how regulatory compliance is maintained in decentralized healthcare facilities by focusing on public hospitals. According to their analysis, the emergence of regional regulatory regimes has been made possible by autonomization, and regulatory compliance now has to compete with other goals. In another study (London, 2013), the authors explored the effects of hospital autonomy in Vietnam using a "decision-space" approach, which looks at the ways and purposes of the enhanced discretion that hospitals have. Analysis suggests autonomization is linked to more revenue, higher employee compensation, and higher infrastructure and equipment investment. Besides, autonomization is also related to more expensive and involved forms of treatment. Notwithstanding numerous drawbacks, the evaluation provides important new information about the early phases of hospital autonomy in Vietnam. One important consideration in determining public hospitals' need for autonomy is the cost of healthcare services. (Huyen & Thuy) focused on the current medical care pricing structures at public hospitals in Hanoi. The author recommends the best course of action for determining fair rates for medical services based on the research's findings. Moreover, it is common to advocate for increasing public accountability, efficiency, and quality of care in public hospitals by giving them more autonomy and establishing competitive, private-sector-like organizational structures. In order to evaluate the impact of hospital autonomy on the long-term viability of Vietnam's social health insurance program, (Sepehri, 2014) offers a critical analysis of hospital autonomy, drawing on Vietnam's. The results indicated that the two most important health policy initiatives implemented by the Vietnamese government in the last thirty years to raise the effectiveness, caliber, and accessibility of its insurance coverage are social health insurance and hospital autonomy. Another study, based on analyzing the official autonomy regulations and the real autonomy practices among a few chosen hospitals, (Hải & Löfgren, 2018) investigated the fiscal autonomy of Vietnam's public hospitals. They contended that the increasing

shift in healthcare expenses from the state to society, combined with the shift from universal and free healthcare services to a combination of state subsidies and fees-for-services, are supported by Vietnam's public hospitals becoming more autonomous.

Recently, Iran's health system has shifted toward a decentralized form. Each province's medical science universities have some degree of decision-making authority over the planning, distribution, and provision of healthcare services. (Doshmangir et al., 2015) examined Iran's policy on hospital autonomy, which aimed to lessen the financial load that hospitals bore on the government and boost their effectiveness. However, the results showed that Hospital autonomy seems to be a misguided attempt to address the issues of inefficiencies in the nation's lower socioeconomic regions. Since the effectiveness of hospital autonomy reforms depends on a variety of contextual, structural, and policy implementation elements, it may be mistaken to assume that these changes will inevitably lead to an improved health system. Iran has been implementing the hospital autonomy plan, the largest decentralization initiative to change the public hospital administration system, for over thirty years. An analysis of the plan's impact on independent public hospitals' financial metrics was conducted in (Rezaee et al., 2023). Findings revealed that the hospital autonomy plan had varying effects on the financial indices of public hospitals that were the subject of this study, indicating that the hospital is unable to pay for all of its specific costs out of earned revenue. Government funding for independent hospitals is therefore required. According to (Sohrabi et al., 2021) Iran's hospital organizational reforms are primarily focused on increasing service quality, decreasing government healthcare costs, and increasing efficiency. Hospital autonomization marked the start of these changes, which have now expanded to include independent and corporatized hospitals, boards of trustees, and other measures. To obtain information on hospital organizational reform in Iran to inform policymakers and guide future research and policies, an overview of the autonomy of Iranian public hospitals was conducted. The findings showed that in terms of important aspects of effectiveness, the autonomy given to the hospitals was contradictory and out of balance. In the study (Markazi-Moghaddam et al., 2014), several issues, including inadequate policy drafting that failed to take into account the interests of potential stakeholders, hampered the reform of the Iranian autonomous. Thus, this study investigated the challenges faced by autonomous hospital establishments in Iran's public health system and determined how these challenges impeded transformation. Furthermore, one of the top goals for health systems is to improve the structure and quality of the healthcare delivery system, particularly in hospitals. Therefore, (Manavi et al., 2012) conducted a study to decide the system's expenses and credits by giving public hospitals autonomy. The conclusion of study showed that in the condition of granting autonomy to public hospitals, these hospitals must receive additional financing from insurance companies and the Ministry of Health and Medical Education.

There is currently a question mark about healthcare services in Indonesia. In this nation, self-funding policies have facilitated the evolution of the idea of hospital autonomy. Actually, this regulation only makes up a small portion of the many facets of hospital autonomy. The policy of Autonomy in Hospital Administration in Indonesia was presented in (Rusmardiana et al.). The

study provided evaluation criteria for the influence of autonomy. Evaluation criteria make it clear that issues pertaining to economic principles—such as accountability, efficiency, equity, and resource mobilization—have a significant role in hospital reform. Therefore, converting a hospital from a social to a business institution necessitates having the knowledge and expertise to apply economics, not just for personal benefit but also for equity and morality in hospital business organizations. Also in this country, after obtaining more autonomy in financial management, (HANDAYANI et al.) carried out the study to make comparisons the non-financial and financial performance of public hospitals in Indonesia. The profitability ratio, trend analysis, cost recovery rate, and independence level are used to assess the financial performance analysis. The obtained results showed that revenue and profit are up, but profitability, the rate at which costs are recovered, and the degree of independence have all declined.

In Pakistan, hospital autonomy became necessary when the government decided that the health care delivery system needed to be restructured immediately. Pakistan's autonomy reform was first implemented at two federal public hospitals. Later, on the strength of its ostensibly successful experience in federal hospitals, this reform was also extended at provincial hospitals. (Ahmad & Saeed, 2013) believed that the goal of medical autonomy was to enable independent hospitals to offer their patients effective care. Therefore, they conducted a study to determine the level and type of autonomy in medical care and hospital administration at Jinnah Hospital, Lahore. The results indicated that the study demonstrates that while the health and finance departments play a larger role in decision-making, autonomous hospitals are not independent. The health department has the last say over most decisions pertaining to hospital administration and the creation of medical equipment. Hospital autonomy is one of the crucial areas of healthcare that has been impacted by COVID-19. With the goal of increasing the quality and quantity of health care services without significantly increasing financial, (Nazir, 2022) gathered a thorough collection of policy papers in order to carry out document analysis. The obtained findings revealed that the market-type mechanism eventually took the role of the hierarchy-type mechanism in the hospital autonomy policy revisions. The situation led to a reduction in the true meaning of autonomy. According to (Suhail & Steen, 2023), giving public hospitals more autonomy is a global trend that is becoming more popular as a way to boost their efficiency. Public hospitals in Pakistan are also following this approach. The study carefully examines the perceived departmental and organizational performance with several aspects of autonomy in the three public hospitals, including legal, structural, HR, and financial autonomy. All three hospitals, however, report good performance, indicating that there is a complex relationship between organizational success and autonomy.

Reducing regulations and restrictions on financial, management, and organizational matters has allowed English NHS hospitals to become more autonomous since 2004. This has created incentives for these hospitals to provide higher-quality services in the most efficient manner. In study (Verzulli et al., 2018), utilizing difference-in-difference models, they investigated whether obtaining higher autonomy (FT status), as measured by financial management, care quality, and staff satisfaction, enhances hospital performance. The findings don't offer any proof that the FT

strategy in and of itself has improved hospital performance in the majority of these areas. According to (Anand et al., 2012), policymakers presently view autonomy as a potential means of improving public sector performance. Therefore, utilizing information obtained from conversations with key National Health Service management, they assessed a health-service reform (in England) that grants higher-performing hospitals additional autonomy. The findings suggested that Autonomy is seen favorably even when it is entwined with a politicized culture of rules and regulations. It seems to depend on how much an organization can respond to greater autonomy and has the will to do so.

The majority of Poland's public hospitals struggle mightily to cover their operating expenses. Due to their massive debt, several of them run the risk of becoming insolvent and ceasing to operate. (Babczuk & Kachniarz, 2012) addressed the causes of the soft budget restrictions that are a part of autonomous public healthcare centers' legal structure in Poland. The authors discussed the effects of independent healthcare centers' financial instability, which is carried by the organizations who founded them. The study's findings might as well apply to every independent public healthcare facility. In another study, (Chluski, 2022) provided and validate the model that assesses the influence of financial autonomy and the strategic orientation of hospital managers towards ICT on the quality of medical services and the growth of intellectual capital among medical staffs. Empirical research done in Polish hospitals served as the foundation for the development of the research paradigm. Theoretical constructs of the model have been created to solve the aforementioned problems. The results showed that the growth of intellectual capital and the quality of services offered are positively impacted by a careful utilization of ICT and the financial autonomy of Polish hospitals.

In Kenya, health facility autonomy is influenced by the interaction of all three decentralization dimensions: political, fiscal, and administrative. (Barasa et al., 2022) discovered that in addition to being structural, the determinants influencing public health facility autonomy are also procedural, political, and have intricate interactions. In order to resolve the financial autonomy of public health facilities, they advise the following measures: developing PFM capacity for subnational levels of government in decentralized settings; using a political lens that takes interests into account and aims to align incentives in engagement and solution finding for financial autonomy of health facilities; auditing PFM processes to identify and remove implementation bottlenecks that impede public health facility autonomy; and resolving operational autonomy as a means of facilitating financial autonomy. (Barasa et al., 2017) investigated the extent of autonomy in key management tasks and its impact on hospital operations in three county hospitals along Kenya's coast, using a qualitative case study method. Throughout the five major functions that were assessed, devolution had led to a significant decrease in the autonomy of county hospitals. As a result, the hospital's leadership and management were undermined, community involvement in hospital issues was decreased, and service quality was jeopardized. The study's conclusion indicated that Kenyan county hospitals will perform better if they have more autonomy.

China is not the only country changing the way its public hospitals are run. China's public hospital governance throughout the last thirty years can be described as a distorted semi-autonomous model. China has lately begun implementing experimental reforms to the governance of its public hospitals, mainly by giving public hospitals more autonomy and clarifying the roles of the health authorities, in response to decades of change in healthcare systems and funding methods. (Allen et al., 2014) investigated the historical development and contemporary state of public hospital governance in China, concentrating on the variety of governance models being tested in China's pilot towns. They concluded that while the pilot governance improvements are a positive start, they won't be enough to address every issue these hospitals are experiencing. (Tsuei & Yip, 2024) determined whether hospitals with greater autonomy react to provider payment reforms (PPRs) more successfully. The results showed that higher autonomy hospitals might not always react better to PPRs which promote efficiency when they were previously encouraged for the greatest profitability. Before providing autonomy, policymakers should evaluate the degree of perverse incentives and modify the incentives as necessary.

In Egypt, state university hospitals are essential for research and education as well as for healthcare delivery. Even though institutional governance is crucial for Egyptian university hospitals, there is still a dearth of research on this subject in the literature. (Badr, 2017) performed a qualitative study examines the institutional governance structure that public university hospitals in Egypt now have in place, identifies the main problems they encounter and how to solve them, and details the reforms that are currently being implemented at these facilities. The research's conclusions show that public university hospitals adhere to the unified governance structure. The report suggests keeping university hospitals under the same unified governance structure, but giving the dean, general manager of hospitals, and hospital managers more authority.

Laos's public hospitals have considerable unofficial autonomy with minimal oversight, and the country is currently dealing with serious issues related to hospital governance. Thus, Laos may face disputes, advantages, and hazards from implementing hospital autonomy. (Geng et al., 2016) evaluate the current state of hospital governance in Laos and make recommendations for new policies pertaining to hospital autonomy there. The results of the study might also offer some recommendations to low- and middle-income nations that are thinking about implementing hospital autonomy in the public sector

According to (Álvarez & Durán, 2013), amidst a deep economic downturn and significant reductions in public investment, the development of different autonomous hospital models in Spain has been uneven. The Alzira-type Administrative Concession model is the one that has garnered the most attention. The most striking discovery, however, is the almost complete lack of systematic hospital performance comparisons; this problem is instead hidden by ideological debates; the data is there, but it is kept secret.

In French and Italian hospitals, the National Health Service is structured at three levels: state or federal; regional; and local, which has the authority to enact laws about health insurance as long as the state's guidelines are followed. (Mossé, 2020) analyzed the types of reforms that French and Italian hospitals have implemented in the previous ten or so years. From an institutional

perspective, regionalizing systems, giving health institutions more autonomy and accountability, and creating new organizations tasked with evaluation are the key components of change.

Developing nations have implemented changes in public hospital governance, such as autonomy, as a result of the overuse of resources, inefficiencies, and subpar service provided by public hospitals. (Ravaghi et al., 2018) aims to review various aspects of hospital autonomy reforms in developing nations, including incentives, planning, barriers, and enablers to change before implementation, effects on attaining the goals of Universal Health Coverage (UHC), difficulties, results, and implementation implications. The findings demonstrated that these nations had implemented autonomy reforms to raise the effectiveness, caliber, and responsibility of their healthcare systems. According to (De Geyndt, 2017), for the past few decades, the governments of middle-class and low-income nations have looked for ways to improve the efficiency of their public hospitals. Thus, they combine the lessons learned from eleven nations' experiences offering autonomy to their public hospitals with the challenges they faced. Next, they determine the efficiency of autonomy policies and provide suggestions to policymakers based on evidence.

For public hospitals in some countries of Europe such as Czech Republic, England, Estonia, Israel, Netherlands, Norway, Portugal, and Spain, national health policy and objectives and operational hospital administration are two strong and well-developed lines of health sector logic that hospital governance must contain for it to be effective. (Saltman et al., 2011) examined significant advancements in European public hospital governance. By doing thus, this study draws attention to the crucial role that decision-making at the hospital level plays and the ways in which different stakeholders and players influence it.

Giving public hospitals more financial and administrative autonomy was one of the goals of Turkey's Health Transformation Program. the deployment was started in 2012. (Metin & Üner, 2015) evaluated the implementation for a brief period of time in a particular Turkish area. There were eleven hospitals in the province that was chosen, and the research data covered the year prior to and following the changeover. The effectiveness of the hospital was examined using the Data Envelopment Analysis approach. The obtained results indicated that after the transfer, the hospitals' overall expenses and revenue rose.

The results obtained from the literature are summarized in Table 1. The findings showed that the number of countries that have addressed autonomy in public hospitals is limited (Figure 1). Vietnam is the country with the most publications related to the content of the article with 8 articles. Next is Iran with 5 articles and Pakistan with 3 papers. Indonesia, England, Poland, Kenya, China each published 2 studies. In addition, there are 2 articles mentioning public hospital autonomy in developing countries such as Tunisia, Lebanon, Dominican Republic, Ecuador, etc. The remaining nations have only one study including Egypt, Lao, Spain, Turkish, France and Italy. In addition, there is only one study but it analyzes the autonomy of public hospitals in many European countries. Besides, the number of studies listed by year is displayed in Figure 2. The results show that the number of studies per year is not much, only from 1 to 3 studies, including recent years (from 2020 to present). It is worth noting that recently only a few countries have paid attention to the issue of autonomy in public hospitals such as Vietnam, China, Pakistan, Iran, Kenya, and Poland.

Almost all research revealed that the financial autonomy mechanism has been shown to be the most effective course of action for public hospitals in particular as well as for public institutions in general (Trang; et al., 2023). More operational autonomy, tighter cost control, and greater compensation for medical professionals are all benefits of this approach. In addition, studies have shown that the level of autonomy of hospitals mainly belongs to 5 areas including strategic management, financial management, procurement, human resource management, and hospital management. Additionally, some studies have indicated that inadequate communication with stakeholders, disregard for the healthcare system's context, and a deficiency of evidence-based policymaking are significant impediments to the effectiveness of organizational hospital reforms (Sohrabi et al., 2021). Furthermore, countries can only attain desired outcomes from hospital autonomy reforms when they adopt a comprehensive perspective on the design and implementation of these reforms, when all aspects of hospital autonomy are implemented fully and correctly, and when the infrastructure and conditions required for these reforms are in place (Ravaghi et al., 2018).

Table 1. The studies and their purpose related to autonomy mechanisms at public hospitals

| References | Year | Country | Purpose |
|----------------------------------|------|---------|--|
| (Trang; et al., 2023) | 2023 | | Investigate the current financial autonomy of public hospitals under the Ministry of Health |
| (Võ & Löfgren, 2019) | 2019 | | How does financial independence affect public hospital performance? |
| (Huyen et al., 2024) | 2024 | | Determine criteria impacting financial autonomy in Public hospitals. |
| (Lê et al., 2015) | 2015 | Vietnam | Negotiate compliance in autonomous hospitals in Vietnam |
| (London, 2013) | 2013 | | Present the benefits and risks of hospital autonomy in Vietnam |
| (Huyen & Thuy) | 2024 | | Estimate the Cost of Medical Services at Hanoi Public Hospitals in the Event of Autonomy Implementation |
| (Sepehri, 2014) | 2014 | | Drawing on Vietnam's experience to evaluate how hospital autonomy affects the long-term viability of the country's social health insurance system. |
| (Hài & Löfgren, 2018) | 2019 | | Conduct a thorough examination of the financial independence of Vietnam's public hospitals |
| (Doshmangir et al., 2015) | 2015 | | Present the knowledge and insights gained from Iran's strategy of autonomy for public hospitals. |
| (Rezaee et al., 2023) | 2021 | Iran | Examine the impact of the proposal on independent public hospitals' financial metrics. |
| (Sohrabi et al., 2021) | 2021 | | An overview of the autonomy of Iran's state hospitals, ranging from corporate to budgetary facilities |
| (Markazi-Moghaddam et al., 2014) | 2014 | | Explore the obstacles and barriers causing failure in establishing autonomous hospitals and their mechanisms in Iran |

| | | | |
|-----------------------------|------|----------------------------|--|
| (Manavi et al., 2012) | 2012 | | Estimate the expenses and credits imposed on the system by giving public hospitals autonomy. |
| (Rusmardiana et al.) | 2020 | Indonesia | Present autonomy Policy In Hospital Management |
| (HANDAYANI et al.) | 2019 | | Assess the financial and non-financial outcomes of public hospitals after obtaining enhanced financial management autonomy. |
| (Ahmad & Saeed, 2013) | 2013 | | Analyze the type and degree of autonomy in medical care and hospital administration. |
| (Nazir, 2022) | 2022 | Pakistan | Discussion a policy perspective of public hospital autonomy in Pakistan in the Time during Covid-19 |
| (Suhail & Steen, 2023) | 2023 | | Analyse performance and autonomy in public hospitals in Pakistan |
| (Verzulli et al., 2018) | 2018 | England | Analyze whether gaining more autonomy enhances hospital performance via difference-in-difference approaches. |
| (Anand et al., 2012) | 2012 | | We investigate an English health sector reform that gives higher-performing institutions more autonomy. |
| (Babczuk & Kachniarz, 2012) | 2012 | Poland | Examines the origins of flexible spending limits in the legislative structure of independent public health facilities |
| (Chluski, 2022) | 2022 | | Mentioned ICT strategy's effect on financial autonomy, service quality, and intellectual capital in polish hospitals |
| (Barasa et al., 2022) | 2022 | Kenya | Discuss on the independence of public health institutions in decentralized environments in Kenya |
| (Barasa et al., 2017) | 2017 | | Investigate how devolution has changed hospital autonomy and how that has impacted hospital operations. |
| (Allen et al., 2014) | 2014 | China | Take into consideration the characteristics of the Chinese pilots by drawing on the experiences of public hospital governance |
| (Tsuei & Yip, 2024) | 2024 | | Analyze the impact of hospital autonomy on the efficacy of provider payment reform |
| (Badr, 2017) | 2017 | Egypt | Analyze the current institutional governance structure of Egypt's public university hospitals. |
| (Geng et al., 2016) | 2016 | Lao | Evaluate the current state of hospital governance in Laos and make recommendations for a national policy on hospital autonomy. |
| (Álvarez & Durán, 2013) | 2013 | Spain | Discussion of the autonomy of hospitals in Spain navigating the economic crisis |
| (Mossé, 2020) | 2020 | France and Italy | Present the process towards autonomy of French and Italian hospitals |
| (Ravaghi et al., 2018) | 2018 | Developing countries | A systematic review on performing hospital autonomy reforms in developing countries |
| (De Geyndt, 2017) | 2017 | | Identify which public hospital autonomy policies are effective or not and propose recommendations for policymakers. |
| (Saltman et al., 2011) | 2011 | Public hospitals in Europe | Analyzes major developments in European public hospital governance. |
| (Metin & Üner, 2015) | 2015 | Turkish | Conducte an assessment of public hospitals' short-term autonomy in a Turkish province |

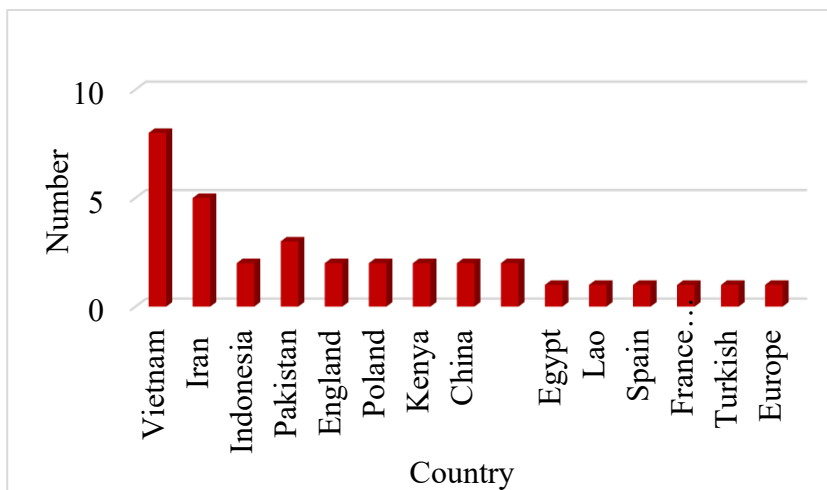


Figure 1. The number of studies related to autonomy mechanisms at public hospitals

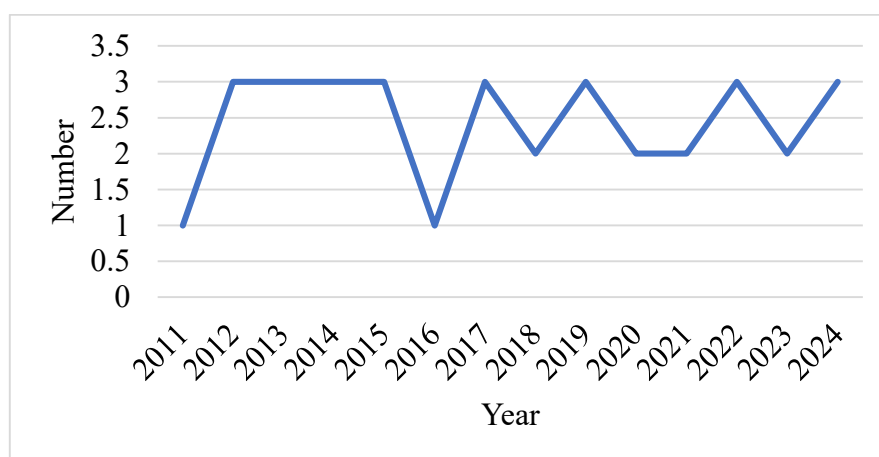


Figure 2. The number of studies per year

4. CONCLUSION

This review offered a summary of studies carried out by scholars during the previous 14 years on the mechanism of autonomy in public hospitals. The detailed contents of 34 research papers on the autonomy of public hospitals that were published in academic journals and MSC/PHD theses were discovered and examined for systematic reviews. These publications indicated that the autonomy of public health facilities was conducted in many nations. Among those countries, Vietnam has the most research, followed by Iran and Pakistan. The remaining countries have only 1 or 2 studies. Furthermore, if statistics are calculated by year, the number of studies is very limited, at most only 3 studies per year. Moreover, if estimated by year, the number of studies is very limited, at most only 3 studies per year. Especially in recent years, the number of countries interested in this issue is only focused on a few countries such as Vietnam, Iran,

Pakistan, Kenya, China, and Poland. Therefore, in the future it is necessary to have more studies on financial autonomy in public hospitals, especially in developing countries.

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ASSESSING THE IMPACT OF THE COMPREHENSIVE AND PROGRESSIVE AGREEMENT FOR TRANS-PACIFIC PARTNERSHIP ON SEAFOOD EXPORTS OF VIETNAM

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ABSTRACT

The period 2015-2023 is the period for signing and implementing Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), providing an opportunity to observe and analyze the agreement's impact on seafood exports. This study aims to evaluate the impact of Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) on Vietnam's seafood export activities, identifying opportunities and challenges that businesses face by culminating in a SWOT analysis to assess the possibilities and challenges of Vietnam's seafood industry within the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) market. Therefore, the research provided policy implications to solve outstanding problems and enhance Vietnam's competitive position in the global seafood value chain.

Keywords: CPTP, seafood exports, new generation FTA, SWOT

1. INTRODUCTION

Over the past nearly three decades, economic integration has opened a new chapter for Vietnam's development, with a significant increase in output and export value. Opening the market and participating in international trade agreements such as the WTO, CPTPP, and EVFTA have created great opportunities for Vietnam to access the global market and improve economic cooperation.

The fisheries industry is identified as a key economic sector, contributing 10-12% of GDP and 17-18% of export turnover. In 2023, Vietnam has become one of the world's leading seafood exporters, with export turnover reaching 9.2 billion USD, expected to reach about 20 billion USD by 2030, with rapid growth of an average of 6-7% per year. This industry not only contributes to the economy but also creates a large income for workers, especially in coastal areas.

The CPTPP Agreement, effective from 2019, opens up opportunities and challenges for Vietnam's seafood industry, with enormous export potential from 11 member countries and more than 500 million people. However, the seafood industry also faces high competitive pressure and strict requirements in terms of quality, food safety, and sustainability, necessitating improved production standards.

Regarding studies on the impact of the CPTPP Agreement on Vietnam's seafood industry, although there have been studies on specific, objective and subjective factors and some impacts have been clarified, the studies often only focus on certain factors such as GDP, exchange rate, population ratio, etc.. without considering other factors such as breeds, production capacity, competitiveness, human resources, etc..and how these factors interact with each other.

Therefore, this study aims to evaluate the impact of CPTPP on Vietnam's seafood export activities, identifying opportunities and challenges that businesses face through period 2015-2023, which is the period for signing and implementing CPTPP, providing an opportunity to observe and analyze the agreement's impact on seafood exports. The research will then provide policy implications to solve outstanding problems and enhance Vietnam's competitive position in the global seafood value chain.

2. LITERATURE REVIEW

Research on the Trans-Pacific Partnership (TPP), later renamed the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), has become an important area of assessment. the impact of this agreement on Vietnam's economic development. One typical study of Thịnh (2019) which claims Vietnam benefits most from CPTPP. This agreement not only creates opportunities but also poses many challenges, requiring Vietnam to change and adapt to new trade standards. Despite the author's belief that Vietnam's participation in negotiations has yielded valuable experience, a more detailed observation and evaluation of the specific impact of CPTPP on the economy remains necessary.

Additionally, research by Văn & Thu (2021) examined the impact of CPTPP on foreign direct investment (FDI) flows into Vietnam. This article shows that CPTPP has the potential to create a strong wave of integration, not only affecting import and export but also the ability to attract FDI. The author used an econometric model to forecast the impact of CPTPP and make policy recommendations to optimize the attraction and use of future FDI capital flows.

In addition, research about factors affecting Vietnam's seafood exports to CPTPP member countries which used a gravity model, the study shows that factors such as the importing country's GDP, Vietnam's population, real exchange rate, and participation in free trade agreements have a positive influence on exporting seafood, whereas geographical distance is a barrier. These results provide a basis for proposing measures to promote seafood exports (Hoàng, 2022).

Research by Hoàn (2020) also shows that CPTPP plays an important role in opening export opportunities for Vietnam, but trade concentration is still mainly in a few countries, such as the US, Japan, and Canada. To exploit export potential, Vietnam needs to comply with regulations on origin and product standards, as well as improve competitiveness.

Although studies have provided an overview of the impact of CPTPP on Vietnam's fisheries industry and proposed many support solutions, there are still notable gaps. Solutions often lack practicality and clarity for both businesses and governments. Furthermore, studies often focus only on a few factors, such as GDP, exchange rates, and population rates, without considering other factors such as production capacity, human resources, and how these factors interact with each other. Therefore, further research is needed to fully exploit the potential of CPTPP and, at the same time, propose more practical solutions for Vietnam's fisheries industry in the context of international economic integration.

3. METHODOLOGY

The writers employ data gathering techniques from official sources, including statistics reports, research materials, and reports from management organizations and industry

representatives such as The Vietnam Association of Seafood Exporters and Producer (VASEP), the Department of Fisheries, and the World Bank. Subsequent to Gather sufficient data, organize it systematically, create tables, charts, and graphs, and provide commentary. The information analysis approach is employed to examine factors influencing Vietnam's seafood exports from 2015 to 2023, culminating in a SWOT analysis to assess the possibilities and challenges of Vietnam's seafood industry within the CPTPP market.

4. RESULTS AND DISCUSSION

Real situation of Vietnam's seafood exports to the CPTPP market before the Agreement takes effect

Before the CPTPP Agreement took effect, international markets, especially CPTPP countries, played an important role in Vietnam's seafood exports, accounting for a large proportion of total export turnover. However, the seafood industry also faces many difficulties and barriers when exporting abroad.

During the 2015-2018 period, Vietnam's seafood industry faced many challenges such as adverse weather, IUU yellow card for exported seafood, and a decrease in pangasius consumption in the EU. Despite difficulties, seafood export output still increased from 6.6 billion USD to the highest level of 8.8 billion USD in 2018. This was also the period when Vietnam's seafood industry actively integrated deeply into the world. world market through free trade agreements such as CPTPP and EVFTA.

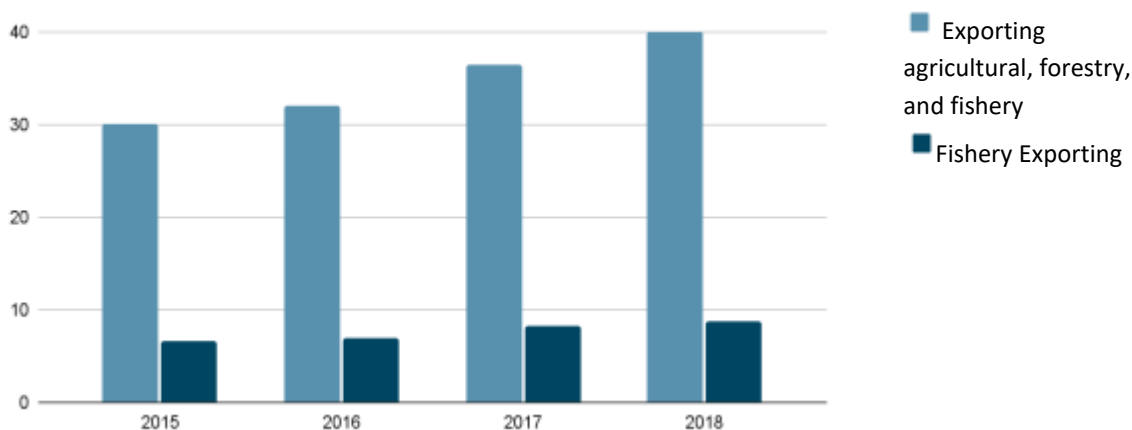


Figure 1 Seafood exports in the period 2015-2018 (million USD)

Source: VASEP (2020)

In recent times, Vietnam's seafood industry has expanded exports to more than 160 global markets, with six key markets: the US, Japan, the European Union (EU), China, Korea and ASEAN countries. These markets account for 78-83% of total export value and have a stable growth trend. In particular, China recorded an impressive growth rate of 142% within 5 years, with the proportion increasing from 9.4% to 16.5% in the total value of seafood exports. South Korea and ASEAN

countries also showed a slight increase, while exports to the US and EU tended to decrease. However, exports to Japan and the US still increased by 36% and 26% respectively compared to 2015, proving the diversification and stability in the industry's export structure.

Before the CPTPP Agreement took effect, Vietnamese seafood exports to CPTPP member countries faced many challenges. Although there is great potential for aquatic resources, this industry is not really effective and diverse in export activities. Vietnam's seafood market share in CPTPP is still low and depends on a number of large markets such as the US, EU, Japan and China. Furthermore, issues with quality standards and technical regulations between countries create barriers to export. Transportation costs and customs procedures are also factors that make it difficult for businesses to penetrate the CPTPP market.

Real situation of Vietnam's seafood exports to the CPTPP market when the Agreement takes effect

According to VASEP, after 5 years of implementing the CPTPP Association, Vietnam's seafood export industry has witnessed many notable changes, seafood export turnover increased from 2.2 billion USD to nearly 2.9 billion USD in 2022 and about 2.4 billion USD in 2023.

The CPTPP Agreement is considered a new generation free trade agreement, aiming to promote trade and investment between member countries, mainly through eliminating import tariffs. All members commit to eliminating almost all import taxes, with most tariff lines going to 0% within 3-7 years. As for Vietnam, CPTPP members commit to eliminating from 97% to 100% of import tax lines on goods originating from Vietnam. After 3 years of the agreement taking effect, Vietnam has eliminated up to 86.5% of tariff lines, with a roadmap for tax reduction for the remaining items in about 5 to 10 years.

Regarding the impact of CPTPP on the seafood industry, Ms. Le Hang from VASEP said that Vietnam's seafood exports have grown strongly to CPTPP member countries, especially Canada, Chile, Peru, Singapore, Malaysia and Australia. Specifically, Vietnam's seafood market share in Canada has increased from 7-8% to 10%, with shrimp and tuna accounting for 25% and 11% of the market share, respectively. In Australia, Vietnamese shrimp accounts for 70% of the market share, double the amount before signing the agreement.

In addition, the trend of increasing seafood imports into Vietnam for processing and export to other countries also shows the cooperation and integration between CPTPP countries. Investment and application of technology in seafood processing has improved quality and productivity, helping Vietnam not only expand export markets but also enhance reputation and competitiveness in the international market.

SWOT analysis of factors affecting Vietnam's seafood exports to the CPTPP market

Strengths

Vietnam possesses great fisheries potential thanks to more than 3,260 km of coastline, along with many bays, lagoons, estuaries and more than 4,000 large and small islands. Fishing and aquaculture are driven by its large exclusive economic zone and rich fishing grounds. The system of rivers, canals and ponds also creates favorable conditions for freshwater and brackish water aquaculture (Aquaculture Vietnam, 2023).

The fisheries industry currently has more than 5 million employees, accounting for 12% of the total workforce in the agricultural industry. About 70% of workers in this field are between the ages of 15 and 34, demonstrating youthfulness, dynamism, and a love of learning (Dinh Le Yen, 2020). They are highly adaptable to difficult working conditions and often have good practical skills, accumulated through many years of experience.

The Vietnamese government is actively developing policies and infrastructure to support the fisheries industry, considering it one of the key economic sectors. The fisheries industry development strategy to 2030 and vision to 2045 have been recorded in Decision No. 339/QD-TTg. The government also implements many support programs such as improving infrastructure, applying advanced technology and protecting the environment. Conferences and seminars on fisheries industry development are held regularly, creating conditions for businesses and the community to participate and contribute ideas. This support has created a favorable environment for the sustainable development of the fisheries industry.

Logistics infrastructure and production standards for seafood exports are increasingly developed and modernized, especially serving the CPTPP market. Seaports, road and air systems have been upgraded, helping to improve shipping capacity and reduce delivery times. According to Decision No. 804/QD-TTg dated July 8, 2022, Vietnam has 34 seaports, including 2 special ports, Hai Phong and Ba Ria - Vung Tau (Muon Nguyen, 2022). Aquaculture production infrastructure has also been improved with the application of modern technology, water quality management, ensuring products meet international standards and enhancing reputation in the international market.

Weaknesses

Vietnam's seafood industry mainly exports raw products with low added value, leading to sensitivity to fluctuations in the international market. The industry's competitiveness is still limited, especially in processing technology, quality management, branding and human resources, compared to developed countries in the CPTPP. Factories mainly produce frozen products, lacking diversification, making it difficult to meet market demand.

Regarding the quality of raw materials, the industry is facing many problems, especially the quality of breeds and animal feed. Unsatisfactory seed sources reduce fertilization and survival rates, while poor feed quality can lead to chemical and antibiotic residues. Environmental pollution from waste and agricultural chemicals also reduces the quality of aquaculture water, negatively affecting aquatic health.

The current logistics system faces many challenges, including difficult road traffic and an underdeveloped inland waterway system, which hinders transportation. Seaports also face low loading and unloading capacity and cumbersome procedures. The lack of connection between transport modes increases logistics costs and negatively affects the seafood industry.

Enterprises in the industry also lack experience in branding and marketing activities, making it difficult to attract international markets. High food hygiene and safety standards and product traceability requirements from CPTPP markets place great pressure on Vietnamese businesses. The lack of a complete traceability system and compliance with technical regulations such as packaging and labeling also increases export barriers. These challenges require Vietnam's seafood

industry to invest heavily in technology, improve quality management, enhance human resources and build a sustainable brand to take advantage of opportunities from the global market.

Opportunity

Strong commitment to tariff reduction from CPTPP member countries creates great opportunities for Vietnam's seafood industry, especially in markets such as Japan, Malaysia, Singapore, Canada and Mexico. Tax exemption for key seafood products such as frozen shrimp, tuna and surimi as soon as the Agreement takes effect, along with gradual tax reductions, brings a competitive advantage to exports.

Flexible rules of origin and origin certification procedures in CPTPP help Vietnamese seafood businesses optimize export activities. The market for seafood imports is still large. Eliminating import taxes reduces input costs, thereby improving competitiveness and export development.

CPTPP not only improves the business environment through rules and institutions but also helps reduce costs incurred for businesses. Institutional reform under CPTPP pressure creates conditions to attract investment and sustainable development for the fisheries industry, contributing to Vietnam's economic development.

The seafood industry plays an important role in economic and social development, especially in rural areas, where it provides stable income for millions of workers, including a significant proportion of female workers. . Expanding seafood exports not only creates job opportunities but also improves working conditions for women, thereby enhancing their role in society and promoting sustainable development.

Vietnam is committed to implementing many measures in the service and institutional sectors to optimize production costs and improve competitiveness. Commitments to open the production support service market and promote a competitive environment are essential conditions for businesses to improve their competitiveness and reach customers more effectively.

Although non-tariff barriers still exist, commitments in CPTPP help improve transparency and predictability in the control process, making it easier for exporting businesses. Strengthening cooperation to solve problems and improving customs procedures are also important factors, contributing to improving the performance and competitiveness of Vietnam's seafood industry in the international market.

Challenges

- For the domestic market

In the global seafood market structure, some CPTPP member countries, such as Chile and Canada, have established a solid position in seafood exports, with rankings of 5 and 7 in the world, respectively. These two countries contribute significantly to global supply, and the opening of Vietnam's seafood market to other CPTPP countries has created a new competitive environment, especially in the domestic market (Centre WTO and Integration, 2019).

Competition has begun to appear when seafood products imported from Japan and Canada attract the attention of Vietnamese consumers, thanks to their quality and clear origin. Consumer preference for these products has accelerated market penetration.

However, competitive pressure from CPTPP may not cause major challenges for Vietnam's seafood industry as previously predicted. The Vietnamese market still prioritizes fresh seafood products, due to quality and food safety requirements. Therefore, imported products may only account for a small portion of total consumption, not significantly threatening domestic products.

In addition, local cultural and culinary factors also affect the Vietnamese seafood market, reducing competitive pressure. Vietnamese people's consumption preferences still lean towards traditional seafood products, especially in daily meals and religious ceremonies.

Therefore, although competition from CPTPP countries may increase, Vietnam's seafood industry is likely to maintain its position in the domestic market. Consumers continue to prioritize fresh and local seafood products, while strengthening food safety and quality management is key to maintaining trust and strengthening the domestic market.

- For international markets

Vietnam's seafood industry is facing many opportunities and challenges in expanding export markets, especially in the context of the CPTPP Agreement. Enjoying tariff incentives depends on the ability to meet regulations on goods origin, creating pressure on businesses to improve product quality, strengthen supply chain management and implement control measures. effective quality.

The trend of increasing global trade protection measures, including anti-dumping and anti-subsidy, is also a major challenge, increasing production costs and reducing profits, especially for small businesses. and medium. In addition, requirements for protecting aquatic resources and biodiversity are becoming increasingly strict, requiring large investments in technology and sustainable management.

To meet these requirements, the seafood industry needs to invest in technology research and development, strengthen supply chain monitoring, and promote cooperation with governments, civil society organizations, and consumers. Only through these efforts can Vietnam's seafood industry overcome challenges and take full advantage of its potential in the international market.

Assessing the impact of the CPTPP agreement on Vietnam's seafood exports to CPTPP countries' markets

- Achievements

Since the CPTPP Agreement took effect, Vietnam's seafood export turnover has grown significantly. According to data from the Vietnam Association of Seafood Exporters and Processors (VASEP), export turnover increased from 2.2 billion USD in 2019 to 2.9 billion USD in 2022, despite fluctuations in 2023. , still remains at about 2.4 billion USD. CPTPP is becoming an important market for Vietnamese seafood exports, with the second highest growth rate after China.

This growth reflects efforts to improve product quality and export management. CPTPP opens up opportunities for seafood businesses, but to maintain development momentum, support measures, investment in production capacity, and improvement of quality and food safety standards are needed. Support from the government and relevant organizations is necessary to create a favorable and sustainable business environment.

Seafood exports to CPTPP countries such as Canada, Mexico, Peru, Chile, Malaysia, Singapore, and Australia have increased sharply from 2019 to 2022. Canada leads with 114% growth, followed by Mexico (80%) , and other markets such as Peru (73%), Chile (65%), Malaysia (48%), Singapore (43%), and Australia (33%).

Reducing or eliminating import taxes has helped increase the value of Vietnamese seafood exports. Tax reduction reduces the cost burden, increases the competitiveness of Vietnamese seafood, leading to new development opportunities for the industry.

For sustainable development, improving competitiveness is an important factor. Businesses need to invest in production and processing technology, apply modern preservation methods, and build traceability. This will increase consumer confidence and improve product transparency.

Branding is also a key factor in attracting consumer attention. In summary, improving competitiveness is a continuous process, necessary for the development and success of Vietnamese seafood enterprises in the context of an increasingly competitive global market.

- Limitations

The CPTPP Agreement has contributed to reducing or eliminating many import taxes for seafood products, however, non-tariff measures such as technical barriers, food hygiene and safety standards, and quarantine flora and fauna is still applied by some member countries. These barriers create great challenges for Vietnamese seafood businesses in expanding their markets in the CPTPP region, requiring them to invest resources to improve technology and management to comply with technical requirements.

Vietnam has made progress in exporting seafood to CPTPP countries, but many businesses still face difficulties in improving competitiveness, especially in meeting strict quality standards. Many businesses have not ensured high enough product quality, while product diversification and reducing production costs are essential factors to improve competitiveness.

Logistics systems, especially cold storage infrastructure, play an important role in ensuring product quality. However, the current logistics infrastructure has not developed synchronously, leading to difficulties in transporting and preserving products. Lack of cold storage infrastructure at ports and distribution centers can cause product loss and damage, while inconsistent management and operations problems also increase economic losses for businesses. .

In addition, businesses also encounter difficulties in accessing CPTPP market information and carrying out trade promotion activities. Lack of diverse information sources and limitations in exchange programs with potential partners reduce the ability to expand markets and make business connections. To enhance competitiveness, effective support from the government and related organizations is needed to help businesses overcome these challenges.

5. CONCLUSION

5.1. Policy implications

Solutions for the Government

The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) has

opened up great opportunities for Vietnam's seafood export industry, accessing potential markets with more than 500 million people and countries with high GDP. To effectively exploit this potential, Vietnam needs to implement a series of specific and synchronous solutions from the Government.

First, the Government needs to perfect the export support policy system, including tax reduction, providing preferential credit and investing in trade promotion programs. Focusing on organizing international exhibitions will help businesses promote their products and find cooperation opportunities. In addition, perfecting laws related to seafood production, business and export is necessary to comply with international standards and CPTPP regulations.

To improve competitiveness, the Government should support businesses in accessing market information and providing technical support services. Providing information about consumer demand and trade barriers will help businesses orient their business effectively. Strengthening the training of highly specialized human resources is also a key factor.

The government needs to invest in infrastructure and apply science and technology to improve production capacity. Improving transportation, building storage warehouses and upgrading processing zones are necessary to facilitate the transportation of aquatic products. Besides, improving product quality and complying with international standards is the most important requirement to achieve high efficiency in export.

Applying advanced technology in production and processing as well as perfecting the wastewater treatment system will ensure food hygiene and safety. The government should aim to develop the seafood export market first through strengthening trade promotion activities and product development in major markets such as the US, Japan and China. Finally, encouraging domestic seafood consumption through nutrition promotion and building smart distribution systems is necessary to boost domestic consumption.

Solutions for Vietnam Association of Seafood Exporters and Producers

VASEP needs to deploy cooperation programs to promote dialogue between stakeholders in the fisheries industry, not just stopping at regular support. To accomplish this, a comprehensive strategic plan needs to be developed, including assessing market needs, analyzing competitors, and recommending appropriate solutions. In particular, in the context that seafood businesses—especially small and medium-sized enterprises—are facing financial difficulties, VASEP needs to establish a flexible financial support mechanism, including grant packages and preferential loans, incentives, and direct investment to improve competitiveness.

To build an effective market strategy, VASEP needs to conduct comprehensive market research and coordinate with research agencies to ensure accurate information. This research should include analysis of the needs, preferences, and legal regulations of each country in the CPTPP region, thereby identifying opportunities and challenges for seafood businesses. Based on the information collected, VASEP needs to coordinate with businesses and experts to propose measures to increase exports, such as appropriate marketing strategies and improving product quality. The implementation of this strategy needs to be flexible and continuous, with a periodic monitoring and evaluation mechanism to adapt to market fluctuations.

Besides, VASEP needs to actively support businesses to improve product quality by providing financial support to invest in modern technology. Organizing training programs on quality management and standards compliance, along with building a quality management system, will help businesses maintain and improve product quality.

VASEP should also play a leading role in proposing policies and laws to support the seafood industry, including tax reduction measures to reduce production costs and improve competitiveness. Applying tax reduction policies for exported aquatic products can increase competitiveness in the international market. In addition, VASEP needs to propose credit support measures, such as preferential credit packages, to create favorable conditions for businesses to access capital and financing, thereby reducing financial pressure on businesses. small and medium-sized, encouraging them to participate in export activities.

Finally, VASEP can propose measures to support quality standards, brand promotion, and export risk management to enhance the competitiveness of Vietnam's seafood industry. These actions not only promote economic growth but also contribute to the country's sustainable development.

Solutions for Vietnamese seafood enterprises

In addition to the measures and impacts of the Government and the Vietnam Association of Seafood Processing and Exporters, along with the combination of relevant Ministries, Departments and branches, domestic seafood enterprises also need to have Make certain preparations, be more proactive in your production and export activities, and at the same time do research on the Agreement to be able to take advantage of all opportunities as well as have timely solutions to overcome difficulties.

Businesses need to strictly comply with food safety and environmental standards to protect consumer health and build a trustworthy image. Improving the freshness of products from fishing and farming to processing and preservation is necessary. At the same time, packaging and presenting products attractively is also important in attracting customers. Commitment and investment in production processes and quality management will help enhance product value.

Investing in modern technology is essential to optimize production processes. Applying automation processes helps increase accuracy and minimize errors. Businesses need to focus on research and development to improve products and technology, thereby creating value-added products and expanding markets.

Businesses should build a reputable image and brand by identifying core values and conveying messages. Participating in trade fairs and market research is necessary to identify the target market. At the same time, building a suitable promotion strategy helps the product reach consumers more effectively.

Cooperating with domestic and foreign partners will help businesses optimize business operations. Finding partners with the same goals and working methods will share risks and costs, while creating a sustainable business environment. Collaboration also opens up opportunities to access new markets and enhance competitiveness through combining resources and skills.

The CPTPP Agreement has created a strong transformation for Vietnam's seafood export industry from 2015 to 2023, expanding and diversifying export markets, with new destinations such as Canada, Mexico, Peru, Chile, Malaysia, Singapore and Australia. The increase in turnover and value of seafood exports is evidence of benefits from CPTPP. However, the industry also faces many challenges, including uneven logistics infrastructure, lack of accurate market information, and limited competitiveness in meeting quality and product diversity requirements.

To overcome these challenges, cooperation between governments, organizations and businesses is needed, along with specific measures to improve logistics infrastructure, provide adequate market information and enhance competitiveness. Building a connection network between businesses is also an important factor for sustainable development of the seafood export industry within the framework of CPTPP. Only continuous efforts and close cooperation will help Vietnam's seafood industry take advantage of its potential and affirm its position in the national economy.

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KEY FACTORS INFLUENCING CONSUMER BEHAVIOR IN HANOI'S NIGHT-TIME ECONOMY, VIETNAM

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ABSTRACT

The night-time economy is gaining significance globally, and Vietnam is recognizing its potential, particularly in tourist hotspots. To enhance the potential for developing the night-time economy, this study "Key Factors Influencing Consumer Behavior in Hanoi's Night-Time Economy, Vietnam" aims to understand and analyze the important factors that impact consumer behavior in the night-time economy in Hanoi. It has provided an overview of the factors influencing the night-time economic consumer behavior in Hanoi. A survey investigation using questionnaires through in-depth interviews was conducted. By analyzing the exploratory factor model (EFA), research shows that 04 factors have significant and positive impacts on consumer behavior: Price Suitability, Safety, Reputation and Media, and Infrastructure. Among them, Price Suitability factors have the strongest influence. The research results can serve as a foundation for other studies, help businesses have effective business strategies and the government have effective management policies.

Keywords: consumer behavior, EFA model, night-time economy, Hanoi

1. INTRODUCTION

The night-time economy is gaining significance globally, and Vietnam is recognizing its potential, particularly in tourist hotspots. It offers economic growth, diverse activities, and improved quality of life, especially for foreign tourists. In Hanoi, the night-time economy has evolved since the establishment of the Hang Dao - Dong Xuan night market in 2004, with attractions like pedestrian streets and culinary districts emerging. Subsequently, pedestrian spaces in Hanoi's Old Quarter, Tong Duy Tan - Cam Chi culinary street, Ta Hien Street, and the pedestrian area around Hoan Kiem Lake were established. They became attractive destinations for residents and tourists. Recently, a series of night-time economic activities have been organized, demonstrating the potential and allure of Hanoi's night-time economy.

Despite these developments, Vietnam's night-time economy faces challenges such as underdevelopment, lack of organization, and limited professional entertainment options. Recent initiatives in Hanoi include themed night tours at historical sites and interactive cultural experiences.

However, there are still many issues related to these new services, especially the impact on consumers and factors influencing consumer behavior in Hanoi's night-time economy. Removing policy barriers and legal frameworks for the existence and development of the night-time economy remains a challenge that relevant authorities are trying to solve. However, it is difficult to stimulate

consumer spending in the night-time economy while minimizing risks compared to other economic activities. Therefore, this study **“Key Factors Influencing Consumer Behavior in Hanoi’s Night-Time Economy, Vietnam”** was conducted to determine what influences consumer behavior.

2. LITERATURE REVIEW

The research "The Night-time Economy Development of China and its Implications for Vietnam" by Ha Thi Hong Van highlights parallels in the evolution of the night-time economy, characterized by its swift, varied, and significant expansion. The night-time economy in China has become essential to overall economic development. Urban and tourist locales across the nation have developed night-time business districts. The Chinese government vigorously advocates for the night-time economy, encompassing service and business operations from 6 p.m. to 6 a.m. Various levels of government have provided substantial support for a series of initiatives that have been implemented to promote the night-time economy. The Chinese government has recognized that night-time consumer demand in recent years, even surpasses daytime demand. The research paper utilizes quantitative research methods, evaluates numerical data, and concludes that "the night-time consumer expenditure and transaction volume in China account for a significant proportion of total consumer expenditure" based on data from the "Chinese Industry and Commerce Information Network, 2020". However, expenditure and transaction volumes experienced a slight decrease in 2020 due to the impact of the pandemic.

There are many similarities with Hanoi as both cities serve as major economic centers in Vietnam, the night-time economy in Ho Chi Minh city has become the subject of study in the research paper "Solutions for Developing the Night-time Economy in Ho Chi Minh City" (2022) by Nguyen Son Tung in the Journal of Industry and Trade. This research approaches the problem by analyzing the strengths and weaknesses of the night-time economy in Ho Chi Minh City, thereby proposing solutions. Rich tourism resources are increasingly becoming a favorite destination of tourists. International travelers. In addition, the city has a large and concentrated young population, with a high level of integration and globalization. In recent years, the number of international tourists visiting Ho Chi Minh City has been increasing, showing great potential for tourism exploitation and night-time economic development. Therefore, the author proposes solutions to improve the policy mechanism and legal framework as a basis for the development of the night-time economy, provide legal support, and apply lessons learned from successful countries.

In the study "Assessing the Development of Night Tourism Products in Hanoi City" by Bui Nhat Quynh and colleagues, published in the Scientific Journal of Ho Chi Minh University of Education, the authors highlight the trend of consuming night tourism products. Hanoi City has witnessed a growing diversity of night-time entertainment and recreational activities, attracting both residents and tourists. Previously, Hanoi was characterized by quiet nights, but nowadays, the trend of night-time tourism and entertainment from foreign countries has been introduced. Particularly, the younger generation tends to venture out in the evenings, frequently visiting restaurants, bars, shopping centers, and clubs to enjoy culinary delights and engage in recreational activities. According to survey results, 70% of tourists expressed satisfaction with the night-time

tourism products in Hanoi, with the culinary experiences leaving the strongest impression (including dishes like pho, bun thang, banh cuon, com suon, and hotpot). However, several limitations persist, such as cleanliness issues caused by street food stalls and a lack of night-time entertainment activities.

The study "Factors Influencing the Development of Night Tourism in Phu Quoc City, Kien Giang Province" by Truong Tri Thong and colleagues (2023) highlights that the night-time economy is a crucial component of the urban economy, significantly contributing to the GDP of contemporary cities. Night tourism, encompassing nocturnal activities, has garnered heightened interest from governments globally, especially those in developing nations. This essay examines the determinants affecting the growth of nocturnal tourism in Phu Quoc City, Kien Giang province. The report identifies six elements affecting the growth of night tourism in Phu Quoc City, ranked in descending order: Security, Human Resources, Infrastructure, Technical Facilities, Costs, and Entertainment Activities. The results of this research can provide valuable insights for tourist enterprises to improve the efficacy of future night tourism development.

In the research "Factors influencing the decision-making of young adults in night-time economy services: A case study in Hanoi," the research focuses on young adults aged 18 to 28. The study examines various determining factors in their decision-making process, including time, location, reputation and media, service quality, facilities, and price. The objective of the investigation is to determine the most significant factor in the decision-making process of young adults in Hanoi with respect to night-time economy services. This study seeks to analyze the determinants affecting purchasing behavior inside the night-time economy among Vietnamese teenagers. The research focuses on the following factors: time, location, reputation and media, quality and services, infrastructure, and pricing. The research team employs a sample size of 150 participants and utilizes descriptive statistical methods, charting, reliability coefficient analysis, linear regression analysis and EFA (Exploratory Factor Analysis) to derive compelling findings. The study examines the influence of the specified elements on consumer behavior in the night-time economy, focusing on the preferences and decisions of Vietnamese teenagers. The study offers significant insights into the decision-making processes and preferences of this particular demographic group, which can affect policy-making, marketing initiatives, and urban planning for the night-time economy.

The research article "Explicating Purchase Intention in the Night-time Economy: Nightclubs and Bars" (2021) by Thanawadi Theerakulvanich and associates emphasizes the importance of nightclubs and bars in its growth of the night-time economy in urban Bangkok, Thailand. The aim of this research is to understand and analyze the factors that influence customers' purchasing intentions in nightclubs and bars. The study investigates the significance and impact of independent variables, including atmosphere, drink variety and quality, accessibility, pricing, and service personnel, on customers' purchasing intentions using exploratory research. The project seeks to provide a strategic repository of knowledge that business operators can employ to adapt and improve their performance. The findings indicate a substantial correlation between purchase intention and the atmosphere, the diversity and quality of beverages, and the service staff. The

correlation between purchase intention accessibility and price is negligible. The study will suggest solutions for managerial implementation.

In "Study on Symbolic Consumption in Guangzhou's Nighttime Economy," Rui Ouyang (2023) asserts that the nighttime economy has developed in several major Chinese cities. The extent of China's nighttime economy has grown significantly since 2016. This essay analyzes the symbolic consumption process in four prominent nighttime economy venues in Guangzhou, examining it through the lenses of leisure economy, cultural economy, symbolic economy, and cultural capital. It highlights issues of cultural transformation and degradation within these nighttime economic districts and offers constructive solutions and recommendations for enhancement. We identified certain consumer symbolization processes by analyzing these four nocturnal economic clusters. Local history links the abundance of Western restaurants to their role as a storage facility for international shipping enterprises, and the relatively high prices of Western cuisine serve to stimulate consumption.

N. Ramya and Dr. S.A. Mohamed Ali (2016) define consumer buying behavior as the purchasing conduct of the final consumer. Numerous elements, particularities, and attributes affect consumers' decision-making processes, buying patterns, purchase behavior, brand inclinations, and retailer selections. Each of these elements influences a purchasing choice. Culture, subculture, socioeconomic class, group affiliations, family, personality, and psychological aspects influence an individual and consumer. They are also shaped by cultural trends and their social and socioeconomic contexts. By recognizing and comprehending the aspects that affect their clientele, companies can build tactics that foster economic development.

Proposed research model

Grounded in the theoretical frameworks of prior research, the factors influencing consumer behavior in Hanoi's night-time economy are selected to include six factors: price suitability, infrastructure, location, service quality, safety, reputation, and media. From there, the subsequent figure illustrates the proposed research model.

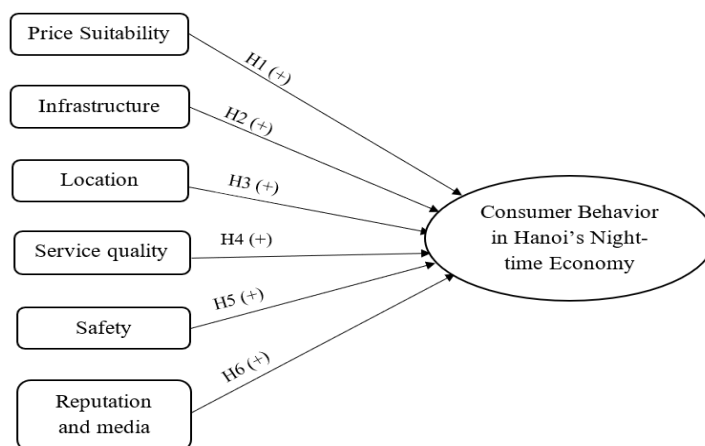


Figure 3.1: Proposed Research Model

3. METHODOLOGY

Sampling Method

The authors employed a basic random sampling technique, ensuring that participants who completed the online questionnaire had an equal likelihood of being selected for the sample. The sampling process is carried out as follows:

In the quantitative research, survey questionnaires are distributed through a Google Form link to night-time consumers of all ages in Hanoi. Additionally, printed survey sheets are used for direct surveys conducted with night-time consumers and business owners in Hanoi. The study determined the sample size according to the EFA model, which comprised 20 observed variables. Hair et al. state that the minimal sample size necessary for model reliability is $x.5$, where x is the number of observations. Consequently, the quantity of observed samples must be no less than 100. The research gathered 230 genuine observed samples, so verifying the model's trustworthiness.

In the case of qualitative research, a purposive sampling method based on the research objectives is employed.

Data Collection Method

Primary Data: Collect primary data for the research.

A Google Form is utilized to design the survey questionnaire, including mandatory survey questions consisting of general questions, the assessment of influencing factors, and personal information.

Secondary Data: Gathered from articles, theses, and scientific studies related to the relevant topics published in scientific forums.

Qualitative research method

After conducting interviews with 4 participants engaged in night-time economic consumption and 2 individuals involved in night-time economic business, the process was carried out as follows:

- Before classification, all responses from the interviewees were fully documented.
- Next, the content was grouped based on similarities between the answers, and attributes were assigned to the categorized groups.
- Coding: Identifying, sorting, and further analyzing to narrow down the groups.
- Concluding the hypotheses have been validated.

Quantitative research method

The quantitative research will utilize statistical methods and data analysis to evaluate the information collected from consumers regarding the influencing factors of their behavior, including price suitability, infrastructure, location, service quality, safety, reputation, and media.

After conducting the survey, we obtained 230 valid questionnaires for data entry. The data were processed after collection through online surveys using Google Forms, and paper surveys, and exported to an Excel file using Google Drive. I used the Vlookup function to encode the data and perform calculations in the SPSS software. Subsequently, we entered the encoded data and conducted the analysis using the SPSS application.

4. RESULTS

Cronbach's Alpha Reliability Test

The magnitude and dependability of the observed variables were evaluated utilizing Cronbach's Alpha coefficient and exploratory factor analysis (EFA). The criteria for an appropriate scale need the elimination of variables exhibiting corrected item-total correlations below 0.3 and a Cronbach's Alpha coefficient for the factor group under 0.6. Furthermore, in the EFA, variables exhibiting factor loadings below 0.5 are omitted from the scale due to inadequate association with the latent component. The concluding stage involves evaluating the model by multiple regression analysis at a significance threshold of 5%.

Table 1. Independent variables' Cronbach's Alpha Coefficients

| | Variable group | Number of variables | Cronbach Alpha |
|---|---------------------------|---------------------|----------------|
| 1 | Price Suitability (PR) | 3 | 0.851 |
| 2 | Infrastructure (IN) | 4 | 0.899 |
| 3 | Service quality (SQ) | 4 | 0.918 |
| 4 | Location (LO) | 3 | 0.879 |
| 5 | Safety (SA) | 3 | 0.858 |
| 6 | Reputation and Media (RM) | 3 | 0.698 |

Source: Calculated by Authors

Results of Exploratory Factor Analysis (EFA)

From Table 2, KMO (Kaiser-Meyer-Olkin) measure = 0.721, which satisfies the condition of $0.5 < \text{KMO} < 1$.

Table 2. KMO and Bartlett's Test

| | | |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | 0.721 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 3425.440 |
| | df | 190 |
| | Sig. | 0.000 |

Source: Calculated by Authors

The significant value of Bartlett's test is 0.000 (Table 2), signifying that the observed variables are interrelated within the whole dataset. Consequently, the EFA analysis is suitable for the actual data.

Table 3. Total Variance Explained

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.176 | 20.878 | 20.878 | 4.176 | 20.878 | 20.878 | 3.276 | 16.382 | 16.382 |
| 2 | 3.332 | 16.660 | 37.537 | 3.332 | 16.660 | 37.537 | 3.100 | 15.502 | 31.885 |
| 3 | 2.674 | 13.368 | 50.905 | 2.674 | 13.368 | 50.905 | 2.417 | 12.085 | 43.969 |
| 4 | 2.280 | 11.400 | 62.305 | 2.280 | 11.400 | 62.305 | 2.402 | 12.011 | 55.981 |
| 5 | 1.610 | 8.052 | 70.358 | 1.610 | 8.052 | 70.358 | 2.384 | 11.922 | 67.903 |
| 6 | 1.466 | 7.330 | 77.688 | 1.466 | 7.330 | 77.688 | 1.957 | 9.785 | 77.688 |
| 7 | .662 | 3.309 | 80.997 | | | | | | |
| 8 | .575 | 2.875 | 83.872 | | | | | | |
| 9 | .541 | 2.707 | 86.579 | | | | | | |
| 10 | .456 | 2.282 | 88.860 | | | | | | |
| 11 | .436 | 2.180 | 91.041 | | | | | | |
| 12 | .379 | 1.893 | 92.934 | | | | | | |
| 13 | .357 | 1.786 | 94.720 | | | | | | |
| 14 | .297 | 1.487 | 96.207 | | | | | | |
| 15 | .270 | 1.349 | 97.556 | | | | | | |
| 16 | .231 | 1.155 | 98.711 | | | | | | |
| 17 | .211 | 1.056 | 99.767 | | | | | | |
| 18 | .036 | .178 | 99.945 | | | | | | |
| 19 | .007 | .037 | 99.982 | | | | | | |
| 20 | .004 | .018 | 100.000 | | | | | | |

Source: Calculated by Authors

There are 6 factors retained with an eigenvalue of $1.466 > 1$, satisfying the condition. The total extracted variance is 77.688%, meeting the requirements. It can be concluded that these factors explain 77.688% of the variance in the dataset comprising 20 observed variables included in the EFA.

After analyzing the Pearson correlation, we observe that the independent variables and the dependent variable are all positive and statistically significant at a high level of confidence. Specifically, four-factor groups will be included in the regression model based on the significance values (2-tailed) being less than 0.05. This indicates that these variables have a significant correlation with the dependent variable CB, including IN, SA, PR, and RM.

Regression Analysis

To determine which factors significantly impact consumer behavior, a linear regression equation is employed:

$$CB = \beta_0 + \beta_1.IN + \beta_2.SA + \beta_3.PR + \beta_4.RM$$

Table 4. Model Summary

| Independent variables | Unstandardized Coefficients (B) | P-value | Sig | VIF | Standardized Coefficients (B) | B | Ranking |
|-----------------------|---------------------------------|---------|-------|-------|-------------------------------|-------|---------|
| (Constant) | 0.207 | | | | | | |
| IN | 0.199 | 3.275 | 0.001 | 1.000 | 0.199 | 0.199 | 4 |
| SA | 0.282 | 4.631 | 0.000 | 1.000 | 0.282 | 0.282 | 2 |
| PR | 0.387 | 6.355 | 0.000 | 1.000 | 0.387 | 0.387 | 1 |
| RM | 0.248 | 4.084 | 0.000 | 1.000 | 0.248 | 0.248 | 3 |

Dependent variable: CB - Consumer Behavior

| | |
|-------------------------|-------|
| Sample size | 185 |
| The sig. of the test F | 0.000 |
| R ² | 0.330 |
| Adjusted R ² | 0.315 |
| Durbin Watson | 2.227 |

Source: Calculated by Authors

Table 6 indicates that the VIF values for the independent variables are all below 10, thus concluding that multicollinearity among the independent variables is absent. The model is devoid of multicollinearity. The Durbin-Watson statistic is 2.227, which falls within the range of 1.5 to 3. Consequently, the model exhibits no autocorrelation. The significance of the test $F = 0.000 < 0.05$, indicating that the population R^2 is statistically distinct from 0. This signifies that the developed linear regression model is suitable for the population. The adjusted R-squared value of 0.315 signifies that the independent factor in the regression analysis explains 31.5% of the variance in the dependent variable, with the rest 68.5% attributed to extraneous variables and stochastic errors. Significance value t-test for each independent variable. The independent variables IN, SA, PR, and RM have significance levels below 0.05, so demonstrating that these factors are statistically significant in the model, influencing the dependent variable CB at the 5% significance threshold. The testing results indicate that the typical distribution of residuals is intact.

The regression model:

$$CB = 0.207 + 0.199IN + 0.282SA + 0.387PR + 0.248RM$$

Based on the regression results, all groups of factors have a positive relationship with the variable "Consumer Behavior".

Discussion

Based on the regression model of factors affecting consumer behavior towards the night economy in Hanoi, we can see the level of influence of 4 factors in the following order: PR has a strong impact first comes the dependent variable CB, followed by the variables SA, RM, and IN.

Price is the primary factor influencing consumption of goods and services in Hanoi's nocturnal economy. The research findings demonstrate that higher costs are associated with an increased likelihood of customers using products and services at night, contrary to P. Thimmapuram (2010) prior study, which proposed that higher prices could reduce consumption of goods. Furthermore, the study by Nguyen Chi Phuong (2022) reveals that tourism offerings are available from 7 a.m. to 5 p.m.; yet, these products constitute just 30% of total service revenue. Between 6 PM and 6 AM, products generate the largest income, accounting for approximately 70% of overall earnings. This suggests that consumers are willing to incur higher expenses for goods and services during nighttime hours. Nevertheless, the price factor remains a significant determinant of consumption choices, suggesting that consumers tend to favor more affordable products and services at night.

According to Nguyen Hoang Phuong (2022), consumer safety is a paramount concern, especially when traveling to areas with midnight economic activity. In 2022, Hanoi enacted changes allowing businesses, restaurants, and eateries to operate beyond 9:00 p.m. each day. However, the timeframe after 9:00 p.m. poses several risks related to social vices, limited security staff, and heightened monitoring difficulties. The social difficulties stemming from the night-time economy in Asia do not completely correspond with those in the Western context. Violent crime presents a considerable obstacle to the progression of the night-time economy in the UK and Europe; conversely, in China, it is a minimal issue (Hobbs et al., 2003). In Vietnam, the growth of the night-time economy may unintentionally create conditions that promote increased criminal activities and widespread social vices, such as prostitution, drug trafficking, and gambling, thereby complicating the duties of social administrators (Tran Thi Nguyen Cam, 2022). Hoang Thi Huong (2023) research reveals several limitations and shortcomings associated with nocturnal tourism activities. We must recognize societal vices including drinking, public disorder, and nitrous oxide usage, among others. Some businesses that frequently use music often increase the volume to unreasonable levels, beyond the permitted hours, and face government penalties. Penalties include multiple instances of illegal parking, violations of municipal ordinances, and traffic offenses, among others. Moreover, delayed commercial operations impede the effectiveness of environmental sanitation authorities, as some enterprises exploit the pilot program to operate beyond the allowed hours on other days of the week.

According to Robert Cialdini, the author of the book "Influence: The Psychology of Persuasion," we tend to be influenced by individuals with authority because we trust their knowledge, confidence, and credibility. This is why consumers are easily influenced by famous influencers. According to statistics, Vietnamese consumers are increasingly relying on influencers for their shopping decisions. Consumers regard influencers as credible and approachable individuals, and their endorsements significantly affect consumer behavior, especially among

youth who are more engaged on social media and more susceptible to the influence of Key Opinion Leaders (KOLs). Trust in a brand significantly increases the likelihood of people purchasing its items by over 53%, as shown by Edelman. Consequently, establishing a reputation and excelling in communication are essential elements for the advancement of the nighttime economy and consumer behavior. Survey results reveal that the majority of consumers base their buying decisions on the popularity of goods and services on social media and their widespread awareness. Consumers tend to search for the places they plan to visit on social media or ask friends and family if those places are trendy before making consumption decisions.

Ultimately, infrastructure, particularly nocturnal entertainment venues, significantly captivates Hanoi consumers. Research by Hoang Thi Huong (2023) indicates that Beijing, China, has enhanced public transport services, encouraged night-time dining establishments, and facilitated the extension of business hours. Japan advocated for the improvement of transportation infrastructure, as well as the regulation of site-specific conditions and labor standards. Hanoi presently features several nocturnal business zones, including Ta Hien Street, the weekend strolling street surrounding Hoan Kiem Lake, Tran Nhan Tong walking street, Tong Duy Tan food street, and the Son Tay ancient citadel relic site. Nonetheless, the services lack diversity, concentrating mostly on low-value food and retail offerings, functioning within residential zones, and failing to maintain order, which may lead to disputes with the population that does not engage in the night-time economy. Currently, no region in Hanoi meets the criteria for the nighttime economy's sustainable operation. Hanoi possesses the spatial and infrastructural capability to cultivate a night-time economy in tourism; yet, there is presently no region that adequately fulfills the requirements for sustainable operation. Night-time tourism offerings remain confined to pedestrian streets, night markets, and nightclubs. The regulatory framework and infrastructural investment in Hanoi remain considerably restricted. Ho Chi Minh City has a designated strategy for implementing nocturnal economic initiatives aimed at attracting tourists, generating employment and income for workers, fostering and safeguarding national culture and arts, while simultaneously ensuring order and security, and maintaining a green, clean, and aesthetically pleasing environment.

5. RECOMMENDATIONS

Recommendations for government

On July 27, 2020, the Prime Minister of Vietnam signed Decision No. 1129/QĐ-TTg, which approved the project for the development of the night-time economy in Vietnam. This indicates that Vietnam has commenced leveraging and directing the execution of nighttime economic development. Increasing the investment budget in Hanoi's nighttime economy is crucial to supporting its growth and development. This additional funding can be allocated towards infrastructure improvement, marketing campaigns, and the creation of attractive and safe nighttime destinations. Regulatory agencies should play an active role in ensuring the safety and hygiene of registered restaurants and eateries. Regular inspections and certification issuance will help to maintain high standards and build consumer confidence in the nighttime economy. It is imperative

to establish a special task force dedicated to managing the night market. This task force should enforce proper management procedures and licensing requirements, ensuring compliance among vendors and addressing any issues promptly. To maintain quality standards, it is necessary to impose fines and revoke business licenses in response to customer feedback or complaints. This will incentivize businesses to prioritize customer satisfaction and uphold service standards. A separate organizational model should be developed to manage the nighttime economy, distinct from existing local government agencies. This dedicated entity can provide focused attention and expertise, fostering the growth and sustainability of nighttime economic activities. The widespread deployment of surveillance camera systems in residential areas and public spaces, along with the development of management software for reporting incidents, will enhance safety and security. Smart mobile devices can access this system, facilitating efficient monitoring and response. Establishing a quick response force linked to the area's shared information network is critical for ensuring overall control and swift emergency response in the nighttime economy. This coordinated effort will enhance safety and address any unforeseen situations promptly. Effective communication about the night-time economy on various social media platforms, along with the involvement of celebrities, can help raise awareness and attract more consumers. Engaging influencers and leveraging digital platforms will increase visibility and promote participation. Strong measures should be taken against the dissemination of false information and exaggerated advertising of consumer products. Strict regulations and penalties will help maintain integrity and protect consumers from deceptive practices. Developing new pedestrian and cultural spaces specifically designed for nighttime activities will increase the nighttime economy's attractiveness. These spaces can include entertainment venues, art installations, and cultural events, creating vibrant and engaging experiences for consumers. Piloting the development of the nighttime economy in areas with significant potential in services, commerce, and tourism, as well as upgrading already popular areas, will contribute to its overall growth. This strategic approach will optimize resources and ensure sustainable development. Promoting cultural tourism products that showcase ethnic heritage will attract both domestic and international visitors. Highlighting the unique cultural aspects of Hanoi's nighttime economy will create memorable experiences and differentiate it from other destinations. Extending the operating hours of night-time economic activities, particularly during peak consumer participation times such as holidays and weekends, will accommodate consumer preferences and maximize economic potential. Flexibility in operating hours will cater to different lifestyles and increase consumer spending opportunities.

Recommendations for businesses

Offering incentives and complimentary gifts is an important strategy to stimulate demand in the nighttime economy of Hanoi. These incentives can encourage more consumers to explore and participate in nighttime activities, ultimately boosting economic growth. Promotions during special occasions play a vital role in attracting consumers and creating a sense of excitement. By offering special discounts, exclusive deals, or unique experiences during festivals, holidays, or significant events, businesses can drive consumer interest and increase participation in night-time economic activities.

Maintaining food quality and safety requires investing in equipment to preserve food and preventing its reuse from previous days. This measure builds consumer trust and confidence in the hygiene standards of establishments, leading to repeat visits and positive word-of-mouth recommendations. Publicly displaying prices for goods and services is essential in promoting transparency and trust between businesses and consumers. Clear and visible pricing information allows consumers to make informed decisions, eliminating any potential misunderstandings or hidden costs, thus enhancing their overall satisfaction. In the night-time economy, leveraging information technology for efficient and synchronized management is of paramount importance. Digital platforms and management systems can streamline operations, facilitate online reservations, and improve customer service and operational efficiency.

Combining various forms of entertainment in night-time tours in Hanoi is crucial to diversifying the consumer experience. By incorporating elements such as live performances, cultural showcases, or interactive activities, the nighttime economy can offer unique and memorable experiences, attracting a wider range of consumers and enhancing their overall satisfaction.

6. CONCLUSION

Experts indicate that the night-time economy is garnering global attention, and Vietnam is progressively recognizing the potential to develop this sector, particularly in dynamic tourism locations. The study identified four factors significantly influencing customer behavior through exploratory factor analysis (EFA): price appropriateness, safety, reputation and media, and infrastructure. The criteria of price appropriateness exert the most significant influence. The research findings can provide a basis for subsequent studies, assisting firms in developing effective strategies and enabling the government to formulate improved management policies. This article advocates for additional research in various locales, including Ho Chi Minh City, Da Nang City, and Can Tho, to generalize the findings within the realm of the night-time economy. Furthermore, conducting more comprehensive research on the many sorts of enterprises within the night-time economy is a viable research avenue.

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CHALLENGES FOR HUMAN RESOURCE MANAGEMENT IN THE CONTEXT OF HIGHER EDUCATION AUTONOMY: A CASE STUDY AT TAN TRAO UNIVERSITY

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ABSTRACT

University governance, at its core, is essentially the management of human resources within the university, a topic that has garnered significant attention from both domestic and international researchers, each with different approaches. Based on an overview of human resource management research and an analysis of various approaches, the article selected an approach to human resource management for public universities, especially in the context of autonomy. The article also focuses on assessing certain aspects of human resource management at Tan Trao University and its impact on the human resource's and the university's development. From this, the article recommended several issues and challenges that need further addressing when studying human resource management in an autonomous environment in higher education.

Keywords: Human resource management, higher education, autonomy, approaches, Tan Trao University.

1. INTRODUCTION

Human resource always plays a particularly important role in the development of an organization. Among management issues, managing people is arguably the most difficult and complex. Ultimately, all management matters are related to human management. Human resource management in general, and human resource management in universities in particular, have been researched by many experts and human resource managers both domestically and internationally.

'University autonomy' is one of the key policies in the comprehensive reform of education in Vietnam. University autonomy is defined as the right of universities to self-govern and self-administer in directing, planning, implementing, and controlling their educational and scientific research activities. Speaking on the issue of university autonomy, Minister of Education and Training of Vietnam stated that autonomy is not self-sufficiency and not leaving universities to fend for themselves financially. The issue of academic autonomy and faculty members plays an important role in university autonomy. The most crucial aspect of autonomy is how it reaches the scientists and lecturers. University autonomy should not stop at the management level or in the issuance of regulations. The important thing is that rights and responsibilities must extend to the internal units of the university, from faculties to departments and lecturers (Communist Party of Vietnam Online Newspaper, 2023). To implement the roadmap for autonomy, universities need governance mechanisms that promote innovation among staff and lecturers. This is because scientific research and innovation are inseparable activities of a true university. Research and innovation form the foundation for lifelong learning skills and the entrepreneurial potential of

students (Dang Ung Van & Nguyen Thai An, 2023). Scientific research should be regarded as an investment field for universities, with the potential to bring important resources to accelerate the achievement of university autonomy goals.

In general, current researches have presented the theoretical framework of strategic human resource management, human resource management models, the process of applying human resource management in management organizations, policies, solutions for human resource development, and school governance. However, these studies have not addressed the theory of HRM in the context of university autonomy nor analyzed the practical issues and solutions for human resource management in autonomous public universities today. Autonomy allows universities to independently direct, plan, and implement innovative activities in both education and scientific research effectively, meeting the needs of society and the labor market. However, university autonomy requires enhanced governance capabilities in universities, including human resource management, financial management, and risk management. As a result, university autonomy also plays an important role in the development and improvement of education and training quality in Vietnam.

2. METHODOLOGY AND THEORETICAL FRAME

2.1. Methodology

This article employs research methods including an overview study and analysis of characteristics to identify conflicts and research directions related to human resources and human resource management in the context of autonomy at public universities.

Additionally, to gain a clearer understanding of the current situations of human resource management at Tan Trao University within the context of autonomy, the research conducted in-depth interviews with senior managers and human resource managers, and a questionnaire with lecturers working at Tan Trao University.

2.2. Concepts and approaches

Human resource

The concept of human resources has been researched and published by many organizations and individuals. Researchers share a common view that "human resources" refers to the entirety of human labor, encompassing both physical and intellectual capabilities, utilized in the processes of production, business, and social development. Human resources are not only individuals capable of working but also include factors related to their skills, knowledge, experience, motivation, and attitude toward work. Human resources play a crucial role in driving the economic, social, and technological development of a nation or organization. Therefore, the development and management of human resources are core factors in enhancing the efficiency and competitiveness of organizations and enterprises.

Human Resources in public universities

Based on the concepts of human resources, this article defines the human resources of a public university as all individuals with physical strength, intellectual capacity, and professional

skills working in various positions to fulfill the functions and duties of the public university. In this study, the human resources of a public university include the management staff, lecturers, and support specialists who assist and serve the university's educational activities.

Human Resource Management

When discussing human resource management, French and Dessler particularly emphasize the scope and content of related activities. According to French, human resource management is understood as a system of philosophy, lifestyle, procedures, and practices related to managing people within an organization (Nguyen Thanh Hoi and Phan Thang, 2001; Nguyen Thanh Binh, 2007). This perspective stresses that human resource management is not merely a series of administrative tasks but involves the development of a comprehensive philosophy on how an organization interacts with and manages its personnel, thereby influencing the overall culture and performance.

According to Torrington and Hall: "Human resource management is a series of activities that, firstly, allow workers and the organization hiring them to agree on goals and the nature of work relationships, and secondly, ensure that all agreements are implemented" (Nguyen Thanh Binh, 2016).

HRM involves designing formal systems within an organization to ensure the efficient and effective use of human talent in achieving the organization's goals (Mathis & Jackson, 2010). Human resource management aims to recruit competent, agile, and dedicated individuals, manage their activities, reward performance, and develop their capacities (Price, 2007).

Tran Kim Dung (2018) defines "Human resource management as a system of philosophies, policies, and functional activities related to attracting, training-developing, and retaining people within an organization to achieve optimal results for both the organization and its employees". Human resource management activities involve all issues related to the rights, obligations, and responsibilities of employees to achieve high efficiency for both the organization and its employees. In practice, these activities are diverse, rich, and vary greatly depending on the organizational structure. Almost all organizations must carry out basic activities such as identifying staffing needs, recruitment planning, staff allocation, training, rewarding, and disciplining employees.

HRM in public universities

Based on the concepts of HRM from authors like Ivancevich and Chau Van Luong, human resource management in public universities in this article encompasses activities such as planning, recruitment, utilization, performance appraisal, training, development and monitoring and assessing human resource development outcomes to achieve the university's goals.

Autonomous environment in HRM in public universities

In this study, the autonomous environment in HRM at public universities is understood as the legal framework in which universities are granted the authority by relevant agencies to make decisions regarding organization and personnel, depending on the level of autonomy achieved. Specifically, human resource management in an autonomous environment refers to the university being granted autonomy by relevant authorities in activities such as planning, recruitment,

utilization, evaluation, training, development, policy-making, creating a conducive environment, and monitoring and assessing human resource development outcomes, corresponding to the current level of autonomy.

According to Government Decree No. 99/2019/ND-CP, which provides detailed guidance on the implementation of certain provisions of the Law on Amendments and Supplements to the Law on Higher Education, and based on the degree of autonomy, public universities exercise autonomy over their organizational structure and personnel within the authority granted to them. The system of binding regulations and relationships concerning tasks and powers in the autonomy of organizational structure and personnel at public universities, along with the associated management levels, creates the autonomous environment in this domain. The nature of the autonomous environment regarding organizational structure and personnel differs from the non-autonomous environment in terms of the level of authority granted: public universities are given greater decision-making power over their organizational structure and personnel by the relevant authorities.

HRM in an autonomous environment at public universities

HRM in an autonomous environment at public universities shares all the general characteristics of human resource management in any organization. However, all management activities must be tailored to and organized in compliance with the legal framework on autonomy that governs public universities.

3. RESULTS AND DISCUSSION

3.1. Results of literature review

3.1.1. Review on human resources, management, and HRM

Taylor who is the pioneer of the management movement, proposed four principles of scientific management, including (i) Study each task scientifically, analyzing each factor of the work and determining the best method to replace the old way; (ii) Select and train workers scientifically so they can develop to their full potential in their work; (iii) Managers should work sincerely with workers to ensure they follow the scientific principles for development; (iv) Divide work and responsibilities so that managers are responsible for scientific planning, while workers execute the tasks according to the plan.

Pfeffer (1998) proposed a model of human resource management comprising seven elements commonly found in successful organizations: (i) Job security; (ii) Rigorous selection criteria; (iii) Self-managed teams and decentralization as key factors in organizational management; (iv) High compensation based on performance; (v) Training and development; (vi) Reduced status differences; (vii) Sharing financial and performance information.

Singh (2004), based on the research of Russell, Terberg, Powers (1985), Osterman (1987), Fernandez (1992), Roberts (1993), Bartel (1994), Lado and Wilson (1994), Pfeffer (1994), Cianni and Wnuck (1997), Ettington (1997), Milgrom and Doyle (1997), Barak, Maymon, and Harel (1999), argued that developing economies require a specific scale. Based on this, he developed a

human resource management scale in India with seven components: (i) Scientific recruitment; (ii) Job definition; (iii) Training; (iv) Employee evaluation; (v) Salary and rewards; (vi) Career planning and promotion opportunities.

John (2010) focused on studying the application process of human resource management, which includes activities such as compliance with fair employment laws, job analysis, human resource planning, recruitment, selection, motivation, and orientation of employees, performance evaluation and compensation, training and development, labor relations, and ensuring safety, health, and well-being. Suelao (2014) surveyed and analyzed the state of human resources for socioeconomic development in Vientiane from 2006 to 2013, covering eight aspects: (i) Educational attainment of human resources; (ii) Human Development Index (HDI); (iii) Education and training; (iv) Vocational training system; (v) Management system, policies, and conditions ensuring human resource training; (vi) Healthcare system; (vii) Public sector workforce; (viii) State macro policies for human resources.

Allui and Sahni (2016) researched strategic human resource management in Saudi universities, focusing on factors such as (i) Strategic alignment; (ii) Recruitment and selection systems; (iii) Performance evaluation systems; (iv) Compensation and reward systems; (v) Training and development systems; (vi) Retention plans and organizational culture. In a similar study on human resource management in universities, Chukwu and colleagues (2021) explored contemporary issues in human resource management at universities in Southeast Nigeria, concluding that the key functions of human resource management in universities include recruitment, selection, orientation, compensation, performance evaluation, job design and description, collective bargaining, retirement, and termination.

In a study of human resource management at Nigerian universities in Osun State, Ilesanmi and colleagues (2015) concluded that effective human resource management leads to improved performance of both employees and students, with the operating environment significantly impacting human resource management activities.

In Vietnam, researchers have explored various approaches to human resource development, focusing on global experiences with policies and solutions to enhance organizational human resource efficiency.

Pham Thanh Nghi and Vu Hoang Ngan (2004) conducted a study on the scientific foundations of human resource management in Vietnam during industrialization and modernization, examining factors influencing human resource management, critical issues, and management policies, as well as human resource development solutions. The study also highlighted practical experiences and lessons in human resource management from different sectors and regions in Vietnam, as well as from East Asian and Southeast Asian countries and other developed nations. Tran Anh Tai (2014) introduced management theories, including personnel management, covering issues such as management principles, recruitment processes, employee evaluation, and training and development forms. Nguyen Quoc Chi and Nguyen Thi My Loc (2014) argued that the human resource management process includes seven activities: human resource planning, recruitment, selection, socialization/orientation, training and development,

performance evaluation, and promotion, transfer, demotion, and dismissal. Vu Duc Le (2017) clarified: (i) The theoretical and practical foundations of public university faculty development policies (planning, attracting, recruiting, using, evaluating, training, rewarding, and honoring) in Vietnam; (ii) Identified policy gaps and inconsistencies, and the factors influencing these issues; (iii) Proposed goals, perspectives, directions, and solutions to improve policies for developing public university faculty in Vietnam.

Based on research on HRM at local universities in the central region of Vietnam, Chau Van Luong (2014) explored three key functions of human resource management: recruitment and selection (job design and analysis, human resource planning, recruitment, selection), training and development, and retention (evaluation, rewards, motivation, insurance, labor relations). Tran Kiem (2016) emphasized that specific management activities of university rectors include: (i) Planning and developing the workforce in terms of quantity and structure; (ii) Recruitment and appointment; (iii) Utilization; (iv) Training and development (according to professional standards); (v) Motivating employees (benefits, policies, etc.); (vi) Quality control of the workforce. Tran Kim Dung (2018) assessed the difficulties and shortcomings in human resource management in Vietnam, highlighting the need for fundamental changes in human resource management practices, including new policies on recruitment, training, compensation, rewards, and evaluation to meet modern requirements and market economy conditions. Le Khanh Tuan (2019), in his research on teacher development, emphasized that to ensure comprehensiveness, human resource development should focus on both team development and individual development within the team. Tran Khanh Duc (2019) studied modern education management models and proposed a human resource management process consisting of the following steps: (i) Identifying staffing needs; (ii) Job description and job standards; (iii) Advertising/Recruiting personnel; (iv) Arranging and deploying personnel; (v) Using, developing, and guiding personnel to adapt; (vi) Evaluating work results/Rewarding/Promoting.

3.1.2. Review on HRM in the higher education autonomy

Regarding university governance, particularly human resource management autonomy, numerous authors have conducted studies. Some notable works include:

Leonard et al. (1986) described three elements of the human resource development model: (i) The role of human resource development (specialist, manager, consultant); (ii) Expertise (professionalism, organization, dependency); (iii) Competency levels (basic, intermediate, advanced). The authors also discussed the model's usefulness for professional organizations, universities, employers, and individuals. Anderson et al. (1998) identified key components of university autonomy: (i) Autonomy in human resources; (ii) Autonomy in student admission and management; (iii) Academic and curriculum autonomy; (iv) Autonomy in academic standards; (v) Autonomy in research, publishing, teaching, and student supervision; (vi) Administrative and financial autonomy, including budget management and the use of university resources.

Thomas & Terhi (2009) used four basic aspects outlined in the Lisbon Declaration by the EUA (European University Association) as a starting point: academic, financial, organizational, and personnel autonomy. Henard & Mitterle (2009) proposed good university governance

practices, including: (i) Transparency in university procedures and obligations; (ii) Publication of university governance mechanisms; (iii) Establishment of a structure for higher education provision and stakeholder participation; (iv) Focus on collective governance; (v) Ensuring the relationship between governance and autonomy in universities.

In Vietnam, granting autonomy to higher education institutions is one of the key tasks identified in the Resolution of the 12th Party Congress, aimed at fundamentally and comprehensively reforming education and training in the country. In September 2016, the government issued Resolution No. 89/NQ-CP, supporting the implementation of university autonomy. Numerous authors have studied HRM in autonomous university environment. Some notable examples include:

Nguyen Hai Long (2008), in his research on granting autonomy in personnel management to schools, highlighted the impact of management mechanisms on human resource management. Nguyen Trong Tuan (2018) assessed the autonomy of public higher education institutions in Vietnam by evaluating the implementation of autonomy, its achievements, limitations, and proposing solutions for more effective future implementation. Dang Quoc Bao and Nguyen Thi Hue (2017) likened university autonomy and accountability to the "accelerator" and "brake" of a vehicle on a long journey. Universities exercise autonomy in three areas: academic, financial, and personnel autonomy. These must operate in harmony, with academic autonomy as the development goal, financial autonomy as the driving force, and personnel autonomy as the foundation. Autonomy is the "accelerator" and accountability is the "brake." As the "accelerator" pushes, the "brake" must be responsive for safe and efficient operation. Le Duc Tho (2020) researched personnel management in public universities in Vietnam. He evaluated the current state of university autonomy in personnel management and proposed solutions to improve mechanisms and policies related to personnel autonomy in public universities. One solution was to continue revising and developing legal frameworks related to university autonomy, including personnel autonomy. Pham Duc Chinh (2023) discussed the challenges of faculty management in the context of university autonomy in Vietnam. He pointed out two major issues resulting from the long-standing administrative and subsidized education system: (i) The current faculty management system fails to attract passionate university lecturers; (ii) The separation of teaching and scientific research leads to a lack of emphasis on research by lecturers and a disconnect between research institutes and teaching duties. The author also analyzed policies regarding the use of professors and associate professors under recently issued decrees and proposed two policies to attract and retain university faculty: (i) Separate the roles of university lecturers from those of state officials; (ii) Allow autonomous public universities to exercise greater freedom in managing their highly qualified teaching staff.

3.1.3. Proposed HRM model for public universities in the context of university autonomy

Based on the overview of the above studies, this research proposes a human resource management process in the autonomous environment of public universities in Vietnam as follows (Figure 1):

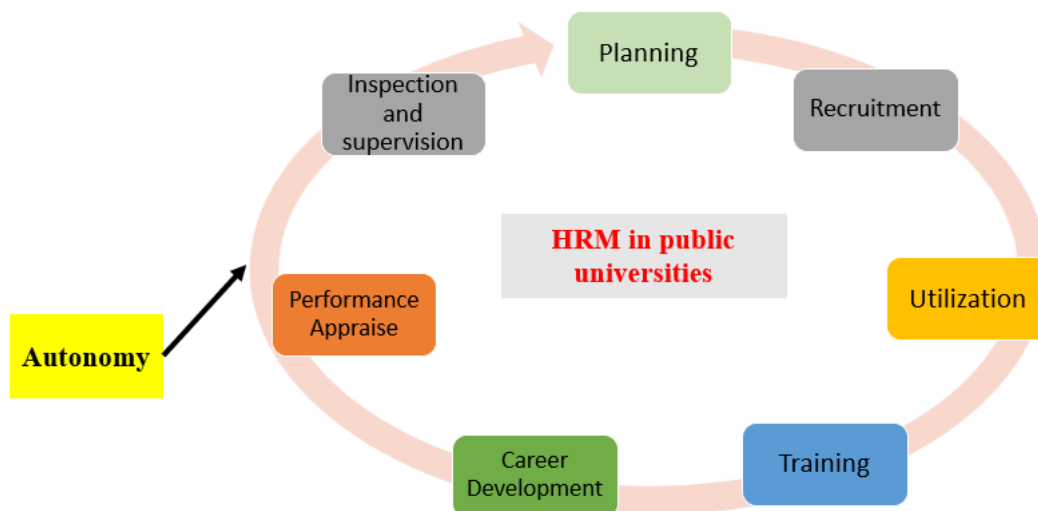


Figure 1: Proposed HRM model for public universities in the context of university autonomy

Source: Synthesized by the author

The HRM model in the autonomous environment of universities, as presented above, inherits the steps and approach confirmed by theoretical studies. The novelty of this process lies in the content of the steps, which reflect the integration of influencing factors from the autonomy context into the specific conditions of universities in Vietnam today.

3.1.4. Personnel autonomy in public universities

According to the Law on amendments and supplements to certain articles of the Law on Higher Education and Decree No. 99/2019/ND-CP issued by the Government, which provides detailed guidelines on the implementation of certain provisions of the Law on amendments and supplements to certain articles of the Law on Higher Education, universities are granted autonomy over organizational structure and personnel matters. This includes the establishment, reorganization, and dissolution of internal and affiliated units; determining or submitting for approval the number of employees and job positions within the university; the right to recruit, employ, and dismiss staff and other workers; and making decisions regarding administrative and managerial personnel in accordance with legal regulations. Thus, the autonomy of public universities is reflected in two primary areas of operation: organizational structure and personnel, with the following characteristics:

(1) Autonomy over organizational structure: Universities have the autonomy to establish, reorganize, and dissolve internal and affiliated units to effectively carry out educational activities that align with the university's vision, mission, and objectives during each development phase.

(2) Autonomy over personnel: Universities are granted the authority to participate in determining the number of employees and job positions in public universities; they also have the right to recruit, employ, and dismiss staff and other workers in accordance with the organizational structure chosen by the university, aiming to enhance the quality of services supporting the university's educational activities. Based on the degree of autonomy, public universities exercise

their autonomy over organizational structure and personnel within the scope of their delegated authority. Specifically, personnel autonomy in the current autonomous environment at public universities is implemented as follows:

- **HR Planning in the autonomous environment of public universities:** When planning human resources in an autonomous environment, public universities must fully carry out the following tasks: (1) Identify the full legal basis for university autonomy, the theoretical foundations of human resource management, and analyze and evaluate the current state of human resources from the previous period, along with the vision, goals, and targets for human resource development at the university to establish a human resource development plan; (2) Based on the approved human resource development plan, develop a Job Position Scheme for each stage of the human resource development plan according to Government Decree No. 106/2020/ND-CP dated September 10, 2020, which regulates job positions and the number of employees in public service units; (3) Based on the approved Job Position Scheme, the university annually develops a human resource development plan that fits the institution's specific characteristics and situation.

- **HR Recruitment in the autonomous environment of public universities:** Based on job needs, job positions, professional standards, and the university's salary budget, public universities carry out recruitment, selection, hiring decisions, and evaluate recruitment efficiency after each round, following Government Decree No. 115/2020/ND-CP dated September 25, 2020, which regulates the recruitment, use, and management of public employees.

- **HR Allocation and Utilization in the autonomous environment of public universities:** Based on the Job Position Scheme and employment contracts, the university rector develops a plan for allocating and assigning tasks; assigns responsibilities, monitors task performance by public employees, and ensures the necessary conditions for employees to fulfill their duties.

- **HR Training and Development in the autonomous environment of public universities:** Following Government Decree No. 101/2017/ND-CP dated September 1, 2017, on training and development for officials, civil servants, and public employees (as amended by Decree No. 89/2021/ND-CP dated October 18, 2021), and based on the evaluation of human resources and the requirements of each job position, public universities analyze the needs and goals to guide the planning and implementation of human resource training and development, and assess the effectiveness of training through the achievement of set goals.

- **HR Development in the autonomous environment of public universities:** Compensation policies, including salaries and other incentives, along with career development pathways, are key to attracting and retaining human resources, particularly to "retain" and leverage the talents and contributors to the development of public universities. These measures help motivate and improve the effectiveness of human resources. Additionally, universities should focus on creating a working environment that fosters motivation, encouraging employees to willingly and actively work toward achieving the organization's goals.

- **HR Performance Appraise in the autonomous environment of public universities:** Universities must choose appropriate methods and models for evaluating the work performance of their human resources. Modern, fair evaluation models linked to job outcomes will encourage employees to improve productivity and work efficiency.

- HR Inspection and Supervision in the autonomous environment of public universities:

To effectively perform the functions of inspection, supervision, and evaluation of human resource development, the university rector must organize the following activities: (1) Develop and refine standards and criteria for inspection, supervision, and evaluation of human resource development outcomes; (2) Assign and decentralize specific inspection, supervision, and evaluation activities for human resource development; (3) Create communication channels for direction and reporting, specifying the type, content, and deadlines for reports from all authorized management entities; (4) Collect and process information to make timely management decisions or adjust action plans when necessary; (5) Regularly conduct interim and final evaluations to assess the results of implementation and draw lessons for improvement in the next management cycle.

4. DISCUSSION ON A CASE STUDY OF HRM AT TAN TRAO UNIVERSITY IN THE CONTEXT OF AUTONOMY

In-depth interviews were conducted with experts, including senior managers and those directly responsible for human resource management activities, to collect qualitative data for the research purposes of this study. A case study at Tan Trao University was carried out in December 2023, gathering qualitative and quantitative data through interviews with the leadership of the department of organizing and politics (responsible for human resource management), the department of examination and quality assurance (responsible for managing the teaching performance of lecturers), and the department of scientific management and international cooperation (responsible for managing the research performance of lecturers). The interview results indicated a consensus among opinions regarding the current state of human resource management and its impact on human resource development, particularly on the innovation of lecturers at Tan Trao University. Also, a questionnaire was responded by lecturers who are working at Tan Trao university to evaluate some impact of HRM on lecturers' working results and commitment.

4.1. Current situation of HRM

Currently, the university's human resource management is in the initial stages of being reformed to promote innovation among staff and lecturers. Management activities are being progressively formalized through internal processes, adhering to the regulations of the law, the sector, and the governing authorities (Tuyen Quang Provincial People's Committee). In 2024, the university is implementing the organizational restructuring plan and the job position scheme that have been approved by the Provincial People's Committee. Regarding the "Autonomy" process, as of December 2023, Tan Trao University has focused primarily on financial autonomy, achieving 34.5%.

- Organizational management structure: The structure consists of the Party Committee – University Council – Executive Board – Offices/Departments/Centers, and an affiliated secondary school. The department primarily responsible for human resource management is the Department of organizing and politics (currently, the Office of Administration).

- Recruitment: Based on the personnel needs proposed by affiliated units and the Job position Scheme, the university prepares a recruitment plan for approval by the Provincial People's

Committee. The recruitment process is carried out according to the plan and under the direct supervision of the Provincial People's Committee. The university has made recommendations regarding policies to attract highly qualified human resources, as detailed in the university's human resource reports. However, to date, the Provincial People's Committee has not issued any specific policies for attracting talent to Tan Trao University.

- Training and development: Tan Trao University places great emphasis on the training and development of staff and lecturers to meet the institution's work requirements. The university regularly collects information on the training needs of staff and lecturers to develop an annual training and development plan. There are specific written policies on financial, time, and resource support for lecturers pursuing advanced degrees (doctoral studies both domestically and internationally), in addition to general support policies from the province, the Ministry, and the State. The university frequently organizes internal training and professional development workshops for staff and lecturers and allocates funds for departments to hold professional seminars aimed at enhancing lecturers' capabilities. While the university adheres to state regulations for staff planning, there are currently no activities to establish career development pathways for staff and lecturers at the university. Regarding compensation and financial support, salaries for staff and lecturers are paid according to the State's regulations for public employees in public service units, and additional financial rewards and support are implemented through the internal spending regulations. However, most lecturers feel that their income is relatively low compared to their contributions. For example, the overtime teaching compensation is lower than that of similar institutions, financial support for scientific research has decreased in recent years due to financial difficulties (e.g., international publication support dropped from VND 5 million per paper before 2022 to VND 3 million per paper), and financial support for attending conferences is minimal (mostly just covering travel expenses as per the Provincial People's Council regulations). The low income from lecturing has led to a decline in lecturers' commitment to their work and their desire to innovate and contribute to the institution.

- HR Allocation and Utilization: With the university's scale of training and other functions, Tan Trao University ensures job stability for its permanent staff and lecturers. In 2023, following the policy of streamlining the organizational structure and reducing the workforce, as well as the plan to restructure the organization and implement the job position scheme, the university reduced over 50 contracted professional staff. This restructuring has helped redefine job roles and ensure stability for the remaining staff and lecturers, but it has also negatively impacted their morale. Without stable revenue sources (from tuition, other training funds, scientific research, technology transfer, and other services), job security for the current workforce cannot be guaranteed, especially as the financial autonomy process continues. The tasks of lecturers are detailed in the university's work regulations, which are reviewed and updated according to the law. However, Tan Trao University has only recently completed its Job Position Scheme, which is pending approval from the Provincial People's Committee, and job descriptions for individual lecturer positions are still lacking.

- HR Performance appraise: The university uses a performance evaluation model based on results. Each year, detailed guidelines for evaluating and ranking the work quality of staff and lecturers are created, with clear criteria (a scoring table) aligned with the regulations on workload.

Lecturers always receive their evaluation results and have the right to provide feedback. However, the university has yet to develop a system of KPIs for evaluating specific job positions.

- HR Inspection and Supervision: Tan Trao University has been developing and refining standards and criteria for the inspection, supervision, and evaluation of human resource development outcomes. A communication and reporting channel has been established via the electronic office system, allowing for more timely and efficient information gathering and decision-making. In addition to regular interim and final evaluations, the university also conducts internal inspections and supervision to improve management effectiveness.

4.2. Impact of HRM in the context of university autonomy at Tan Trao University:

It can be said that HRM significantly influences the development of lecturers, the core force of the university, especially in promoting their innovation. Lecturers at the university perform their tasks according to prescribed norms, with their innovation results primarily reflected in two areas: Teaching and Scientific Research. However, the current management policies at the university do not effectively encourage lecturers' desire for innovation, thereby affecting both the university's and individuals' innovation outcomes.

(1) Regarding teaching: Most lecturers exceed their teaching hour requirements in each academic year. However, the compensation for teaching hours beyond the set limits is low compared to the industry standard and the average income in the area. This discourages lecturers from taking on extra teaching hours. As a result, many courses require external lecturers to teach at higher rates, even though the university has sufficient qualified internal faculty. Moreover, the current policies do not encourage lecturers to further their education, improve teaching methods, or foster new creativity in their teaching.

(2) Regarding scientific research: Most lecturers only register to fulfill the minimum required hours for scientific research, as the university does not have a mechanism to recognize or compensate for additional research work beyond the required amount. The number of scientific publications has been declining in recent years due to a decrease in the number of lecturers and the insufficient financial and resource support for scientific research activities.

Table 1. Results in teaching and research of lecturers at Tan Trao university

| Teaching (2023-2024) | | Research (2019-2023) | | | | | |
|--------------------------|------------------------|----------------------|---------------------|------------------------|-------------------|-----------------|---------------------|
| Exceeding teaching hours | Adjunct teaching hours | National projects | Provincial projects | Institutional projects | Scientific papers | Published books | Institutional ideas |
| 21,911.95 | 24,514.95 | 9 | 5 | 137 | 2,198 | 105 | 64 |

Source: Tan Trao University

(3) Regarding organizational commitment: Overall, the majority of lecturers at the university shows a relatively high level of commitment to the organization. For example, lecturers working under labor contracts express a strong desire to be officially recruited into the university's staff; over 90% of lecturers perform their tasks well or better; and lecturers demonstrate responsibility in their assigned duties.

The results of the linear regression analysis indicate that the model's Sig. F coefficient is 0.000, which is significantly smaller than 0.05, indicating that the regression model is meaningful and fits the collected dataset. The model's Durbin-Watson coefficient is 1.785, showing no autocorrelation in the model (Trong H., Ngoc C. N. M., 2008). The adjusted R² coefficient is 0.689, which is less than the R² coefficient of 0.691. With this value, we can conclude that the linear regression model is suitable for the data and can be used. Table 2 below shows that the adjusted R-squared is 0.689, that is, 68.9 percent of the change in the organizational commitment is explained by the variation of the independent variables in the model.

Table 2. Summary of Linear Regression Analysis on the impact of HRM on faculty's organizational commitment at Tan Trao University

| Model Summary | | | | | | | |
|-----------------------|-------------------------------|-----------------------------|------------------|---------------------------|----------------|-------------------------|-------|
| Model | R | R Square | Adjusted RSquare | Std. Error of theEstimate | Durbin -Watson | | |
| 1 | 0.831 | 0.691 | 0.689 | 0.48584 | 1.785 | | |
| ANOVA | | | | | | | |
| Model | | Sum of Squares | df | Mean Square | F | Sig. | |
| 1 | Regression | 155.210 | 7 | 22.173 | 95.584 | 0.000 | |
| | Residual | 66.191 | 312 | 0.210 | | | |
| | Total | 220.401 | 319 | | | | |
| Independent variables | | Coefficients | | | | | |
| | | Unstandardized Coefficients | | Standardized Coefficients | Sig. | Collinearity Statistics | |
| | | B | Std. Error | Beta | | Tolerance | VIF |
| | RM (Recruitment) | 0.111 | 0.060 | 0.132 | 0.008 | 0.438 | 1,256 |
| | TD (Training and Development) | 0.526 | 0.050 | 0.564 | 0.000 | 0.725 | 1,458 |
| | PA (Performance Appraisal) | 0.478 | 0.067 | 0.448 | 0.005 | 0.578 | 1,858 |
| | CN (Compensation) | 0.237 | 0.058 | 0.256 | 0.000 | 0.754 | 1,357 |
| | LD (Leadership) | 0.181 | 0.063 | 0.214 | 0.003 | 0.614 | 1,465 |

Source: Synthesized from the survey's result

The results show that the t-tests for the five independent variables, RM, TD, PA, CN, and LD, all have Sig. coefficients less than 0.05. The linear regression model shows that the TD variable (Training and Development) has the highest coefficient at 0.564, followed by the PA variable (Performance Appraisal) at 0.448, the CN variable (Compensation) at 0.256, the LD variable (Leadership) at 0.214, and the least by RM variable (Recruitment) at 0.132. Specifically, Table 6 provides important data to test research hypotheses.

The university's management system is gradually becoming more aware of the impact of human resource management on lecturers' innovation. However, the current human resource management system at Tan Trao University remains incomplete, resulting in ineffective support for the innovation of lecturers and the university. Tan Trao University must implement reforms in human resource management to promote innovation in the urgent context of "autonomy" in higher education, ensuring the institution's survival and development in line with its vision, mission, and goals.

5. CONCLUSION

From the overview of the research issues and the case study at Tan Trao University, it is evident that the theoretical points on strategic human resource management, human resource management models, the application process of human resource management in management organizations and real-life situations, policies, human resource development solutions, human resource management scales, and school management can be inherited. However, certain issues remain unaddressed in the existing studies, such as the theory of human resource management in an autonomous environment, the human resource management model in public universities within an autonomous context, the current state of human resource management in public universities under autonomy, and solutions for managing human resources in the current autonomous environment of public universities. These are the key issues that need to be further studied to contribute to enhancing human resource management capacity in the autonomous environment of public universities in the future.

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CHAPTER II. ENVIRONMENT AND SUSTAINABLE TOURISM

PRESERVING AND PROMOTING THE THAI FESTIVAL OF OFFERING BUFFALO TO WORSHIP THE GOD FOR TOURISM DEVELOPMENT

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ABSTRACT

The festival of Offering buffalo to worship the god (Dâng trâu tế trời) is a distinctive cultural event of the Thai ethnic group in the mountainous regions of Thanh Hoa and Nghe An. This festival allows people to express gratitude to the gods, and pray for peace and a bountiful harvest. However, due to various objective and subjective reasons, the festival was interrupted for several decades. Today, it has been revived in many localities, restoring the unique cultural traditions of the Thai people and fostering opportunities for exchange and solidarity among different ethnic groups. The festival also promotes unique local cultures, including cuisine and handicrafts, significantly contributing to the development of community and cultural tourism. Through research methods of ethnographic fieldwork and document synthesis, this paper will explore the origins and cultural significance of the festival of Offering buffalo to worship the god by the Thai people in Thanh Hoa and Nghe An. The author also proposes solutions to preserve and enhance the festival's unique cultural value in tourism development.

Keywords: Cultural preservation, Festival tourism, Festival of Offering buffalo to worship the god

1. INTRODUCTION

Festivals are an essential and vibrant part of the social and cultural life in every country. As concerns about food, clothing, and finances have diminished, people's spiritual and mental needs have become more significant. Cultural needs, including participation in festivals, which were once less prominent, now have the opportunity to emerge and thrive. Moreover, modern society's curiosity about the outside world continues to grow. During their "outing journey", people often seek new experiences, particularly cultural ones. Traditional festivals, with their deep connections to local culture and beliefs, play a crucial role in fulfilling this desire for exploration and discovery.

Today, festivals have evolved from being merely cultural activities and community traditions of residents to become significant and attractive tourism resources. These events, alongside cultural and historical relics, offer visitors the opportunity to experience unique cultures, learn about local customs, and appreciate the cultural values of each area vividly. For the local community, the influx of tourists during festivals brings various economic, cultural, and social benefits. Economically, tourism generates job opportunities and revenue for locals through services like passenger transportation, parking, goods and souvenir sales, accommodation, food and beverage services. The presence of tourists also revitalizes the festivals, allowing residents to showcase the values inherent in these celebrations. Locals not only get to promote their culture and lifestyle but also have the chance to engage in cultural exchange with visitors. This interaction helps reduce cultural differences, particularly in remote and underprivileged areas that rely heavily

on state resources. Around the world, numerous festivals have been successfully integrated into tourism activities. Renowned events like the Bullfighting festival and Tomato-throwing festival in Spain, the Beer festival in Germany, and the Carnival in Venice, Italy, draw millions of both domestic and international tourists each year. In Vietnam, various localities have also effectively leveraged the value of festivals in tourism, including the Tran Temple Festival, Huong Pagoda Festival, Spring Festival and Autumn Festival in Con Son Kiep Bac, etc.

Recognizing these trends, in the Vietnam Tourism Development Strategy to 2030, with a vision to 2050, the Government emphasizes a development perspective: focused on cultural tourism. The strategy highlights the importance of preserving and promoting heritage values and national cultural identity while developing tourism. The Government has identified a key breakthrough task for the upcoming period: “implementing policies to support community participation in tourism development; linking cultural tourism with community life experiences to enhance economic and cultural standards, contributing to hunger eradication and poverty reduction, particularly in remote, border, and island areas...”.

The festival of Offering buffalo to worship the gods (Lễ hội Dâng trâu tế Trời) is a quintessential cultural activity of the Thai ethnic people in the mountainous districts of Thanh Hoa and Nghe An. This festival provides an opportunity for the community to express gratitude and pray for peace and bountiful harvests from the gods. However, over time, the festival has faded due to various factors such as social changes, modernization, and the decline of traditional cultural values. In the last decade, the festival has been revived and reorganized in various localities. The revival of this festival has played a significant role in restoring the unique cultural traditions of the Thai people. It allows people from Thai villages to return on pilgrimage, meet, exchange, and foster friendship, thereby strengthening solidarity among fraternal peoples. Additionally, the festival provides a platform for the Thai people to showcase their indigenous culture, display and introduce their traditional cultural elements, including cuisine, handicrafts, agricultural products, and harvests from the mountains and forests. This contributes to the development of community tourism and cultural tourism, thereby promoting the local economy and society. This paper will summarize the cultural values of the festival of Offering buffalo to worship the god, the most significant cultural activity of the Thai people, and propose solutions to preserve and promote the unique cultural values of the festival in tourism development.

2. METHODOLOGY

In this study, the author employed ethnographic fieldwork as the primary research method. By immersing in the community, the author engaged directly with and observed a range of daily activities and social interactions, leading to a profound understanding of the Thai's culture. Through conversations with villagers, particularly the elderly, the researcher gathered rich data on traditional customs, rituals, and community events, especially their festival of Offering buffalo to worship the gods. This immersive approach offered authentic insights into the values, beliefs, and social dynamics that shape the Thai's society, offering a comprehensive perspective that might be missed by other research methods. Notably, the author participated in the festivals of Offering

buffalo to worship the gods. Through this fieldwork, the author not only documented the rituals and customs associated with the festival but also experienced its emotional and spiritual significance for the Thai people. Additionally, the author supplemented this ethnographic data by gathering information from various sources, including books, scientific articles, and reports on the Thai Festival of Offering buffalo to worship the gods.

3. STUDY RESULTS

3.1. The origin and cultural values of the festival of Offering buffalo to worship the gods

3.1.1. The origin of the festival

The Thai people, along with other ethnic groups in Vietnam, possess a spiritual cultural foundation rooted in animistic beliefs. They believe that everything (humans, animals, trees, and objects) has a soul. In the spiritual world of the Thai people, individuals have multiple souls and astral bodies (thirty souls in the front, fifty souls in the back). In addition to their belief in souls and spirits, the Thai people also have a strong belief in various gods and ghosts that influence their lives. Among these, the King of God (Then, Pha) holds the highest status. This god is believed to give birth to all species and things, governing all aspects of human life. Consequently, rituals related to the God (Then, Pha) are significant and reflect the community's beliefs and aspirations towards this supreme deity. One such ritual is the festival of Offering buffalo to worship the god, which is the largest festival of Thai people in Thuong Xuan and Nhu Xuan districts (Thanh Hoa province) and Que Phong district (Nghe An province) (Nguyen Manh Tien & Mai Hong Hai, 2018). The festival aims to express gratitude to the Gods, honor ancestors who helped establish villages and pray for favorable weather and bountiful harvests.

According to Thai legend, the Thai people migrated to Thanh Hoa in search of land, establishing Muong Chieng Van/ Chieng Van village (now known as Trinh Van commune, Thuong Xuan district) and other villages. However, they faced numerous challenges such as natural disasters, food and clothes shortages. Desperate for a capable leader to guide them, they sent representatives to Muong Troi/Muong Pha (the heaven) to request the King of Gods (Po Pha) to send someone to govern the vast Muong Chieng Van area. In response, the King of Gods sent his brother, who became the King of Muong Chieng Van (Tao Lo Y). He taught the people how to deal with natural disasters, make crossbows, weave nets and cloth, and practice agriculture. Under his leadership, the community thrived and became more prosperous (Tran Le Bao, 2021).

Recognizing the Cam family as his descendants, the King of Muong Chieng Van (Tao Lo Y) appointed a reputable person from this family to govern Chieng Van village on his behalf. He then returned to heaven on a full moon night in July (on the lunar calendar), ascending from the top of Pu Pom Hill. To honor the King of Gods (Po Pha) and King of Muong Chieng Van (Tao Lo Y), the people of Chieng Van village selected members of the Cam family, considered descendants of the god, to worship the gods. Every year on the full moon day in July, they held a festival of Offering white buffalo to the gods. At Pu Pom Hill, where Tao Lo Y ascended to the heaven, they built a nine-compartment temple (Chin Gian Temple) with a stilt-style structure

and thatched roof, representing the 9 villages¹³ inhabited by Thai people, and conducted ceremonies to offer a white buffalo to the gods. The most important offering of this festival was a healthy young buffalo that had not been used for plowing and had no physical defects. Additionally, each village prepared 9 piglets, 90 small chickens, 90 pairs of dried fish, and a jar of wine for the festival (Thao Nguyen, 2017).

Traditionally, the festival followed a three-year cycle: the first year it was held in the hamlets (*bản*), the second year in the villages (*mường*), and in mid-August of the third year, a grand festival took place at Chin Gian Temple. However, the festival ceased after 1945. To fulfill the spiritual and cultural needs of the Thai people and honor their ancestors, the festival was revived in 2005 at Chin Gian temple in Que Phong district, Nghe An, taking place on February 14th-15th on the lunar calendar. By 2019, with the efforts of local government and community, the festival was revived in Nhu Xuan district (Thanh Hoa), held from January 23rd to 25th. Since 2023, the authorities in Thuong Xuan district (Thanh Hoa) have also initiated efforts to revive the festival.

3.1.2. The cultural values of the festival

The Thai Festival of Offering buffalo to worship the god is rich in cultural value, deeply reflecting their worldview and philosophy of the universe. This practice highlights the close relationship between humans and nature. It also reflects the integration of reality and spirituality in the lives of Thai people.

In this festival, offering a buffalo to the god is more than a simple act of worship; it symbolizes respect and gratitude to the supernatural forces who bring good rain and abundant harvests. It embodies a belief in the balance and harmony between humans and the universe and serves as a way for Thai people to pray for a peaceful and prosperous life. The festival of Offering buffalo to the god is not only an opportunity to show reverence and thankfulness to the gods but also a chance for people to honor their ancestors, who founded and established their villages.

The festival of Offering buffalo to the god serves as an opportunity for the Thai community to come together, fostering solidarity and preserving their cherished cultural traditions. In the festival's lively and bustling atmosphere, participants can engage in various folk culture activities, including striking the wood (*khua luống* - six to eight people use wooden sticks to strike on a hollowed-out tree), singing Thai folk songs (*hát khặp*), competing in crossbow shooting, tug of war, throwing a scared ball through the ring (*ném cùn*), bamboo dancing, playing gongs, and stilt walking. These activities not only provide entertainment but also strengthen communal bonds, allowing people to share joyful moments and build spiritual strength and motivation for a prosperous new year.

A distinctive aspect of this festival is the harmonious combination of spiritual and practical elements. The buffalo, regarded as a "Holy Treasure" in Thai culture, holds a significant role in agricultural production and serves as a sacred symbol linked to spiritual beliefs. The buffalo

¹³ Muong Chang, Muong Pan, Muong Lu (Nhu Xuan – Thanh Hoa); Muong Chieng Ban, Muong Phu, Muong Luoc (Thuong Xuan – Thanh Hoa); Muong Mun (Mun), Muong Mun (Mùn), Muong Chai (Quy Chau - Nghe An).

symbolizes strength and perseverance in both the agricultural and spiritual lives of the community. Offering buffalo to the god expresses deep reverence and respect for the gods and demonstrates love and respect for the buffalo itself.

This festival serves as a vital opportunity for the Thai community to preserve and promote their traditional cultural values. The traditional dances, songs, and costumes vividly showcase the richness and diversity of Thai culture. Additionally, the festival of Offering buffalo to worship the god allows younger generations to deepen their understanding and appreciation of their cultural and historical heritage, thereby contributing to the preservation and development of the cultural identity of the Thai people.

Thus, the Thai festival of Offering Buffalo to the gods is a piece of clear evidence of the richness and diversity of Vietnamese culture. This festival reflects the solid relationship between humans, nature, and the universe, while also presents community cohesion and gratitude to ancestors. In a rapid social modernization, maintaining and developing traditional rituals like the festival of Offering buffalo to the god becomes even more important. Such practices not only help preserve cultural identity but also enrich the spiritual lives of people, creating a strong connection between the past and present. Additionally, as a valuable cultural heritage, it must be preserved and promoted to ensure that future generations can understand and appreciate the traditional cultural values of their nation.

3.2. Solutions to preserve and promote the festival of Offering buffalo to worship the god for tourism development

The festival of Offering buffalo to worship the god not only holds significant cultural importance for the Thai people but also serves as a vital resource for the tourism economy. It stands out as a key attraction for cultural tourism, spiritual tourism, and community tourism in the mountainous regions of Thanh Hoa and Nghe An, offering enriching and meaningful experiences for both domestic and international visitors. There are some strategies to preserve and enhance the heritage value of the festival to support local tourism development:

- Raising awareness of community and society about the value and significance of the festival.

Local authorities must propose educational programs to raise awareness among the Thai community and the broader society about the intangible cultural heritage of the festival of Offering buffalo to worship the god. These initiatives should aim to enhance understanding of the festival's value and its significance, thereby fostering a foundation for positive behavioral adjustments at both the individual and community levels. By educating and disseminating information about the festival of Offering buffalo to worship the god, the localities can preserve and promote traditional values while cultivating a society that respects and takes pride in Vietnam's rich cultural diversity. When individuals gain a profound awareness of cultural heritage, they are more likely to engage in practical actions to protect, preserve, and disseminate these valuable traditions. Additionally, a comprehensive understanding of cultural heritage helps society responsibly exploit and promote these values, ensuring sustainable and harmonious development between tradition and modernity.

Training and teaching traditional rituals to the younger generation is extremely crucial. Localities can bring the content of cultural heritage to school curricula. Additionally, to ensure the festival's values deeply integrate into people's lives, especially the youth, mass media must be thoroughly exploited. The communication activities must be regular and diverse in both content and form. This approach aims to create interest and encourage participation from individuals and organizations in preserving cultural heritage. So that the festival truly thrives and remains an integral part of the community's cultural and spiritual life.

Moreover, local authorities should promote the involvement of residents in organizing and managing the festival. This approach not only raises awareness about the festival's significance but also allows the community to convey and share their unique cultural values. As the owners of heritage, the local community will ensure the authenticity and richness of the festival's activities. Additionally, their participation contributes to stimulating the local economy and enhancing community solidarity.

- Enhancing the activities of management and planning for the festivals and related relics

The Buffalo Offering Festival has been basically brought up in various localities, playing a significant role in preserving and promoting the traditional cultural values of the Thai people. However, to sustain and attract the participation of community and tourists, localities must implement effective planning for the festival. This involves selecting an appropriate location that is spacious and comfortable enough to accommodate a large number of attendees. Additionally, infrastructure improvements such as parking facilities, restrooms, dining areas, and rest spaces should be prioritized to ensure a pleasant and convenient experience for visitors.

The government must develop regulations to manage and protect festival cultural heritage, ensuring that its original value is preserved. To maintain the appeal of the festival of Offering buffalo to worship the god, it is essential to preserve the rituals, customs, folk performances, and games (such as including striking the wood, singing Thai folk songs, competing in crossbow shooting, tug of war, throwing a scared ball through the ring, bamboo dancing, playing gongs, and stilt walking) as well as traditional costumes. These traditional rituals not only provide the festival with unique characteristics but also preserve the Thai cultural identity, create connections between generations, and enhance pride in cultural heritage. In addition to preserving traditional values, incorporating modern elements harmoniously is necessary to attract tourists. Modern games and entertainment activities can make the festival more appealing to young people and international visitors.

Local authorities must strictly regulate the festival of Offering buffalo to worship the god to prevent the risk of commercialization, which can erode traditional cultural values. Many traditional Vietnamese festivals have already been degraded by commercialization in the pursuit of economic development. When festivals become commercialized, their original meanings and cultural values are often overshadowed by business activities. This not only leads to a loss of cultural identity but also impacts the experiences of both local communities and tourists. To avoid this fate for the festival of Offering buffalo, local authorities should implement specific measures, such as tightening the management and control of commercial activities in the festival area. Organizers

should prioritize preserving traditional rituals and customs and encourage active participation from local communities. Additionally, public education and awareness campaigns about the importance of preserving traditional cultural values are crucial. Only when the festival is celebrated with a spirit of respect and conservation, its cultural values can be maintained and passed on to future generations.

- Designing narratives and presentations about the festival and establishing connections with tour operations to organize tours to the festival of Offering buffalo to the god.

To create compelling tourism products, it is essential to develop comprehensive presentations about the festival of Offering buffalo to worship the god and related historical relics. These presentations should highlight the pride of Thai generations and showcase their distinctive culture and history. Special attention should be given to the Buffalo symbol, which is closely linked to the wet rice agricultural civilization, to celebrate the cultural identity and traditional values of the community. By combining cultural and historical elements with engaging narratives, unique tourism products can be crafted to attract tourists and contribute to the preservation and promotion of local cultural values.

To effectively attract tourists, it is essential to integrate the festival into tourist routes and regional destinations. Local authorities should establish strong partnerships with tourism businesses, particularly travel companies, to develop tours that combine sightseeing and experiencing the festival of Offering buffalo to worship the god. Additionally, the festival should be paired with other tourist activities such as exploring Thai cuisine and visiting traditional craft villages. This approach not only enhances the appeal of travel programs but also provides tourists with rich and immersive experiences. Moreover, it enables localities to leverage cultural values, generating economic benefits for the community.

Local authorities should also collaborate with researchers to conduct studies and surveys to better understand tourists' needs and preferences. The insights gained from this research should be used to refine and enhance festival activities to align with tourist tastes. Furthermore, localities can continuously monitor and learn from the festival tourism development practices of other regions, both domestically and internationally, to innovate and introduce unique ideas.

- Continuously researching, restoring, and embellishing relics, while improving infrastructure and tourism facilities.

It is essential to continue researching, restoring, and embellishing the Chin Gian Temple relic, where the festival of Offering buffalo to worship the god takes place. Achieving this requires close coordination between government agencies, social organizations, and local communities. For effective restoration and renovation, financial resources must be mobilized from both the state budget and socialized capital sources, such as sponsorships and contributions from domestic and international organizations and individuals. It is crucial to study the culture of the Thai people carefully, avoiding the integration of Kinh culture into the architectural construction of the monuments. Additionally, using advanced technology in the restoration and conservation process is vital to ensure the authenticity and sustainability of the relics.

To facilitate tourist attendance at the festival, localities should improve transportation infrastructure, build bridges across rivers and streams, and develop parking lots. This will enhance ease of movement, reduce congestion, and ensure safety. Furthermore, enhancing accommodation services will provide more options to meet the needs and budgets of tourists and improve service quality, creating a positive impression and encouraging tourists to come back. Finally, upgrading food services in terms of quality and diversity is essential, ensuring food hygiene and safety while reflecting local culinary culture.

- Enhancing management capacity for cultural officials and professional skills for tourism labor force

Local cultural officials play a crucial role in preserving and promoting traditional culture. To enhance their capacity, it is essential to organize comprehensive training programs that cover cultural management knowledge, leadership skills, and problem-solving abilities. Additionally, improving understanding of cultural policy and its effective implementation is vital. Providing opportunities for cultural officials to practice and apply their knowledge in real-world scenarios helps consolidate learning and enhances adaptability and creativity. Furthermore, it is important to offer training programs for residents to develop tourism professional skills and improve the quality of tourist services. These courses may include communication skills, accommodation management, food and beverage service, tour guiding, and travel safety. This initiative not only enhances service quality but also creates job opportunities and increases income for local communities, contributing to sustainable tourism development. Specifically, it is needed to provide in-depth knowledge about festivals to tour guides. When tour guides have a clear understanding of the history, significance, and activities of festivals, they can convey information engagingly and accurately. This helps visitors gain a deeper appreciation of local culture, enhancing the value of their trips. Additionally, a thorough understanding of festivals enables tour guides to answer questions and handle situations flexibly, ensuring visitors have a complete and memorable experience. This, in turn, supports the sustainable development of the tourism industry.

- Compiling thematic documents and promoting the festival

Local authorities should compile thematic documents and disseminate research results, combining them with videos on mass media to reach the community and society. This effort will foster pride among generations of Thai people and society, especially about the role of buffalo symbol in a wet rice agricultural civilization, and cultural identity. Additionally, promoting the festival via social networks is essential in the digital age. On social fan pages and websites of the districts and provinces, posting pictures and videos about the festival will help domestic and international audiences recognize and understand its values, especially its spiritual significance, then encourage tourists to visit.

4. CONCLUSION

The festival of Offering buffalo to worship the god is a cultural heritage rooted in the spirituality and folk beliefs of agricultural communities in Southeast Asia and the mountainous

valleys of Vietnam. As the country progresses toward industrialization, modernization, and economic and cultural globalization, many traditional cultural values are being continuously impacted and transformed. This includes the festival of Offering buffalo to worship the god. Preserving and promoting the value of this festival is essential for building and developing an advanced Vietnamese culture that is rich in national identity.

To keep the values of the festival of Offering buffalo to worship the god alive, integrating it into tourism development is essential. This approach enables the community to generate more income from tourism services, handicraft products, and culinary specialties while motivating to maintain the festival, thus preserving its unique cultural identity. Interactions between tourists and local people enhance cultural awareness and strengthen community solidarity. Leveraging the festival of Offering buffalo to worship the god for tourism development is not only a key strategy for cultural heritage preservation but also a sustainable economic development plan for the locality.

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DIVERSIFIED TOURISM DEVELOPMENT IN TUYEN QUANG AND THAI NGUYEN: ENHANCING VISITOR ATTRACTION AND LOCAL INCOME

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ABSTRACT

This study investigates the potential for diversified tourism development in Tuyen Quang and Thai Nguyen provinces, with a focus on enhancing visitor attraction and boosting local income. By using a mixed-methods approach that incorporates quantitative surveys and qualitative interviews, the research evaluates current tourism resources, infrastructure, and marketing strategies. The findings highlight that both provinces have significant cultural, historical, and natural assets that remain underutilized, limiting their tourism potential. Through a diversified approach that targets niche markets such as eco-tourism, cultural tourism, and community-based tourism, the study proposes a strategic framework to unlock these assets' full potential. The results suggest that focused investments in improving infrastructure, developing robust marketing campaigns, and increasing community involvement are essential for maximizing tourism's economic impact. Recommendations emphasize cross-sector collaboration, comprehensive policy development, and sustainable practices to ensure long-term growth. This research provides valuable insights for local governments and stakeholders to enhance tourism development in these provinces and promote sustained economic benefits for local communities.

Keywords: Diversified Tourism, Local Income, Visitor Attraction, Tuyen Quang, Thai Nguyen

1. INTRODUCTION

Tourism is widely recognized as an important driver of economic development, driving job creation, investment, and infrastructure improvements. This is particularly important in areas rich in natural beauty and cultural heritage, where tourism can transform local economies and promote sustainable livelihoods. This study focuses on two northern provinces of Vietnam, Tuyen Quang and Thai Nguyen, both of which have significant tourism development potential due to their unique cultural traditions, historical sites, and stunning natural landscapes. However, despite this potential, their tourism industries remain underdeveloped compared to other regions in Vietnam.

This study explores the concept of diversified tourism development—an approach that goes beyond traditional attractions and integrates diverse forms of tourism such as cultural tourism, ecotourism, adventure tourism, and community-based tourism. By diversifying their tourism products, Tuyen Quang and Thai Nguyen have the potential to attract more visitors, thereby enhancing the visitor experience and bringing greater economic benefits to local communities.

The study also examines the broader socio-economic impacts of tourism, assessing how increased visitor numbers can generate higher local incomes, boost small and medium-sized enterprises (SMEs), and improve infrastructure. With a particular focus on identifying gaps in current strategies, the study provides a framework for improving the sustainability and

competitiveness of the tourism sector in these provinces. By recommending specific interventions and policies, the study aims to guide local governments and stakeholders in maximizing the tourism potential of these areas while ensuring that development benefits are equitably distributed to communities.

2. LITERATURE REVIEW

The literature review provides a comprehensive overview of existing research related to diversified tourism development, its impacts on visitor attraction, and local income. This section synthesizes key findings from relevant studies to frame the context for the research on Tuyen Quang and Thai Nguyen.

2.1. Diversified Tourism Development

Diversified tourism development involves promoting various forms of tourism to attract different market segments and mitigate risks associated with relying on a single tourism type. According to Buhalis (2000), diversification can enhance a destination's resilience by spreading demand across multiple tourism products and services. This approach not only attracts a broader range of visitors but also supports sustainable development by reducing environmental and social pressures on specific attractions. In the context of Vietnam, Tran (2021) highlights that diversification into eco-tourism, cultural tourism, and community-based tourism has been effective in other provinces, providing a model for Tuyen Quang and Thai Nguyen.

2.2. Visitor Attraction and Market Segmentation

Research on visitor attraction emphasizes the importance of targeting niche markets such as eco-tourism and cultural tourism. Weaver and Lawton (2007) argue that focusing on niche markets can increase a destination's appeal by offering unique experiences that cater to specific interests. For instance, eco-tourism and cultural heritage tourism have been shown to attract tourists seeking authentic and immersive experiences (Swarbrooke, 1999). Studies by Nguyen and Pham (2022) demonstrate that Vietnamese provinces with well-developed niche markets have experienced increased visitor numbers and longer stays, suggesting that similar strategies could benefit Tuyen Quang and Thai Nguyen.

2.3. Economic Impact of Tourism

The economic impact of tourism is a crucial area of research, with studies often highlighting the benefits and challenges associated with tourism development. According to Briedenhann and Wickens (2004), tourism can contribute significantly to local income by creating jobs, generating revenue, and stimulating local businesses. However, the benefits are not always evenly distributed. Hall (2008) points out that the economic gains from tourism can be uneven, with local communities sometimes receiving a smaller share of the benefits. This disparity underscores the need for targeted investments in infrastructure and community involvement to ensure that tourism development translates into tangible benefits for local residents.

2.4. Infrastructure and Marketing Strategies

Effective infrastructure and marketing strategies are vital for successful tourism development. According to Pearce (1989), high-quality infrastructure, including transportation, accommodation, and visitor services, is essential for enhancing the tourist experience and encouraging longer stays. Additionally, research by Kotler et al. (2002) emphasizes that robust marketing strategies are necessary to increase a destination's visibility and attractiveness. In the case of Tuyen Quang and Thai Nguyen, studies indicate that improved infrastructure and more effective marketing could significantly boost visitor numbers and local economic benefits (Hanh, 2023).

2.5. Community Participation

Community involvement in tourism development is increasingly recognized as a key factor in ensuring sustainable and equitable growth. According to Tosun (2000), involving local communities in tourism planning and decision-making helps to create products that reflect local culture and values, enhancing the authenticity of the tourist experience. Furthermore, community participation can foster a sense of ownership and support for tourism initiatives, leading to more sustainable outcomes (Scheyvens, 2002). Research by Hoang et al. (2023) highlights successful examples in other Vietnamese provinces where community engagement has led to the development of unique and attractive tourism products.

The literature review underscores the importance of a diversified approach to tourism development, effective marketing, and infrastructure improvement, as well as community involvement. These factors are critical in enhancing visitor attraction and increasing local income. The insights gained from previous research provide a valuable foundation for analyzing the tourism potential of Tuyen Quang and Thai Nguyen and developing strategies to optimize their tourism assets.

3. METHODS

This study used a mixed-methods approach, including both quantitative and qualitative data. Quantitative data were collected through surveys of tourists and local businesses to assess tourism trends, infrastructure, marketing strategies, and economic impacts of tourism. Random sampling was used to ensure diverse representation.

Qualitative data were collected through semi-structured interviews with key stakeholders, including government officials, tourism operators, and community leaders. These interviews provided insights into tourism potential, infrastructure challenges, and marketing strategies.

4. RESULTS

4.1. Tourism Resources

Tuyen Quang and Thai Nguyen both possess a range of attractive destinations, including historical sites, natural landscapes and cultural festivals. However, these tourism resources have not been effectively promoted or integrated into a synchronous tourism strategy.

Historical Relics: Tuyen Quang has important historical relics such as Tan Trao Historical Relic Site and Hung Temple. According to a survey of 150 tourists conducted in May 2024, 68% of tourists said they did not know about these historical relics before coming to Tuyen Quang (Nguyen, 2024). Similarly, Thai Nguyen owns relics such as Phu Luong Historical Relic Site and Mau Temple, but these relics have not been widely promoted (Le, 2024).

Natural landscapes: Tuyen Quang is famous for areas such as Na Hang Lake and Hoang Lien National Park, while Thai Nguyen has Nui Coc Lake and Tam Dao National Park. According to a survey of 200 local tourism businesses, 75% said that tourism infrastructure is limited and not attractive enough to attract tourists (Tran, 2024).

Cultural festivals: Cultural festivals such as the Hang Pagoda Festival in Tuyen Quang and the Spring Festival in Thai Nguyen are both very attractive. However, 60% of tourists surveyed said they did not know about these festivals before coming and felt that information about these events was lacking (Nguyen & Do, 2024).

4.2. Visitor Attraction

Both Tuyen Quang and Thai Nguyen have the potential to increase their tourist appeal if they capitalize on niche markets such as ecotourism and cultural heritage tourism. However, current marketing efforts are not effective enough and need to be improved.

Ecotourism: Tuyen Quang with Na Hang Lake and Hoang Lien National Park has great potential for ecotourism. According to a survey of 100 visitors in June 2024, 72% said they were very interested in ecotourism activities but only 40% of them knew about these destinations through existing information channels (Pham, 2024). Similarly, in Thai Nguyen, Nui Coc Lake and Tam Dao National Park are also highly appreciated for their ecological potential but only 35% of visitors surveyed knew detailed information about these locations (Ha, 2024).

Cultural heritage tourism: Both provinces have unique cultural heritages, such as traditional festivals and craft villages. A survey of 120 tourism businesses showed that 65% of businesses said that cultural heritage tourism promotion activities are weak and have not attracted significant attention (Nguyen, 2024). In particular, cultural festivals in Thai Nguyen and Tuyen Quang have not been effectively promoted through mainstream and online media channels.

Current marketing efforts: According to an analysis of 30 interviews with tourism operators and local officials, 80% believe that current marketing strategies are not strong enough to attract potential tourists. Most strategies focus on general promotion, lacking clear differentiation and orientation towards niche markets (Tri, 2024).

4.3. Local Income

Although tourism has contributed to some of the revenue of Tuyen Quang and Thai Nguyen provinces, there is still a significant gap between tourism revenue and local economic benefits. The study found that improving infrastructure and investing in tourism projects could narrow this gap and create more job opportunities for local communities.

The gap between tourism revenue and local benefits: Based on data from 50 tourism businesses in Tuyen Quang and Thai Nguyen, tourism revenue accounts for only about 15% of the total income of local communities (Le, 2024). A survey of 200 households in tourist areas showed that 70% of them did not perceive a significant increase in income from tourism activities, mainly due to the lack of direct employment opportunities and the uneven distribution of revenue (Nguyen & Phan, 2024).

Improve infrastructure: According to interviews with 20 tourism operators and local officials, 85% believe that current infrastructure is weak and needs to be upgraded. Problems include poor roads, lack of high-quality accommodation, and uneven visitor support services (Tri, 2024). Improving infrastructure can increase the attractiveness of destinations and encourage visitors to stay longer, thereby increasing tourism revenue and benefits to the community.

Investment in tourism: Research shows that provinces have not invested enough in tourism projects that have a direct impact on the community. A survey of 30 tourism investors showed that 60% of them are willing to invest in tourism development projects if there are support policies and incentive mechanisms from local authorities (Ha, 2024). Potential projects include building resorts, developing community-based tourism tours, and improving tourist support services.

5. DISCUSSIONS

This study highlights the need for a diversified tourism strategy that incorporates different market segments and emphasizes sustainable practices. To maximize economic benefits from tourism, improving infrastructure, enhancing marketing, and encouraging community participation are essential. Cross-sectoral collaboration and strategic planning are essential for effective implementation.

5.1. Diversified tourism strategy

To enhance the attractiveness of tourism in Tuyen Quang and Thai Nguyen, it is important to apply a diversified tourism strategy. This strategy not only expands the choices for tourists but also helps to optimize the potential of the provinces, ensure sustainable development and minimize risks related to dependence on a single type of tourism.

5.1.1 Leveraging the potential of market segments

Ecotourism: Tuyen Quang and Thai Nguyen both have rich natural landscapes, including conservation areas, lakes, and mountains and forests. Developing ecotourism in these areas can meet the increasing demand of tourists for experiences close to nature and environmental protection. The ecotourism activities not only help conserve natural resources but also create additional income for local communities through the development of accommodation services, tour guides, and experiential activities..

Cultural heritage tourism: Tuyen Quang and Thai Nguyen possess many unique cultural heritages, including traditional festivals, historical relics, and traditional craft villages. Exploiting

and developing cultural heritage tourism can create a unique tourism product, attracting tourists who are interested in learning about local culture and history. The shows that cultural heritage tourism products not only help preserve cultural values but also enrich visitors' experiences, thereby creating opportunities for tourism revenue growth.

5.1.2. Benefits of tourism diversification

Reduced stress and risk: By focusing on only one type of tourism, destinations can be at great risk from declining demand or fluctuations in the tourism market. Diversifying tourism types helps spread risks and reduce stress on specific destinations. For example, if an area relies solely on cultural tourism and experiences a decline in tourists due to external factors, ecotourism or community-based tourism activities can compensate for this shortfall.

Enhance attractiveness and sustainability: Investing in cultural and ecological experiences not only attracts tourists who care about environmental protection but also those who seek unique and novel experiences. This not only enhances the attractiveness of destinations but also contributes to the sustainable development of tourism through the preservation of local resources and culture.

Creating employment opportunities and economic development: Different tourism segments can create a variety of employment opportunities for local communities, ranging from jobs related to tour guides, customer service, to jobs in the service industry and production of traditional goods. This helps increase income and improve the quality of life of local people.

5.2. Improve infrastructure

Infrastructure plays an important role in attracting and retaining tourists, as well as optimizing economic benefits from tourism for the community. Poor infrastructure not only reduces the attractiveness of destinations but also limits the ability to develop sustainable tourism. To improve this situation, Tuyen Quang and Thai Nguyen provinces need to focus on upgrading and developing synchronous and high-quality infrastructure.

5.2.1. Improve transport infrastructure

Roads and transport connections: Poor transport infrastructure, such as damaged roads and inadequate public transport, can reduce the convenience and accessibility of tourists. The improving roads and transport connections is necessary to reduce travel time and enhance connectivity between tourist destinations. Upgrading the road system, especially the main routes to tourist areas and surrounding localities, can help reduce travel difficulties and increase tourist satisfaction.

Public transport: Investing in public transport such as buses, taxis, and bike rental systems can improve accessibility and convenience for visitors. Developing efficient public transport routes helps reduce traffic congestion and provides flexible travel options for visitors, thereby enhancing their experience and encouraging longer stays.

5.2.2. Upgrading accommodation facilities

Quality and diversity of accommodation facilities: The low-quality accommodation facilities can reduce tourist satisfaction and affect their decision to return. Investing in hotels, motels, and resorts with good facilities and quality services can create a positive impression and increase the sustainability of the destination. Providing diverse accommodation options from luxury to budget also helps attract different customer groups and meet the needs of diverse tourists.

5.2.3. Creating employment and revenue opportunities for local businesses

Employment opportunities: Infrastructure upgrades will create many employment opportunities for local communities, from infrastructure construction and maintenance to jobs in the tourism service industry. This can help improve people's income and improve their quality of life. The large infrastructure development projects can create hundreds of direct and indirect employment opportunities for local people.

Revenue for local businesses: High-quality infrastructure also facilitates the growth of local businesses, including those providing food and beverage services, shopping, and entertainment. Increased visitor numbers and length of stay due to good infrastructure can lead to increased revenue for these businesses. Improved infrastructure creates a favorable business environment, thereby encouraging investment and local economic development.

5.2.4. Positive impacts on visitor numbers and length of stay

Increased visitor numbers: Improving infrastructure, especially transportation and accommodation, can increase the ability to attract tourists and improve the occupancy rate of accommodation facilities. The destinations with better infrastructure often record significant increases in the number of tourists and tourism revenue.

Increased length of stay: When visitors have a convenient and comfortable experience thanks to quality infrastructure, they tend to stay longer and spend more. Providing high-quality services and amenities can encourage visitors to extend their stay and explore more destinations in the area, thereby increasing tourism revenue and economic benefits for the community.

5.3. Improve marketing and encourage community participation

To increase the effectiveness of attracting tourists and optimize the benefits from tourism, it is important to improve marketing strategies and encourage the participation of local communities. These factors not only help to increase the presence of the destination but also build a sustainable and attractive tourism environment.

5.3.1. Marketing improvement

Ineffectiveness of current marketing strategies: Studies show that the current marketing strategies of Tuyen Quang and Thai Nguyen have not achieved the desired results in attracting tourists. Part of the reason is the lack of promotion and communication, leading to the destinations not being fully introduced to the target audience. This directly affects the accessibility and recognition of the destination in the competitive tourism market.

Develop creative and coherent promotional campaigns: Promotional campaigns need to be creative and coherent to attract visitors' attention and create a lasting impression. Developing promotional campaigns that include promotional videos, blog posts, and online events can create excitement and motivate visitors to explore destinations. These campaigns should be designed to highlight the unique features and competitive advantages of Tuyen Quang and Thai Nguyen..

5.3.2. Encourage community participation

Create unique tourism products: The participation of local communities can bring about unique tourism products that are more suitable to the needs of tourists. By incorporating cultural elements, traditions, and unique local activities into tourism products, tourists will have the opportunity to experience new and deeper things about local culture. For example, community tours, farming experiences, or traditional culture classes can create a difference and attract tourists.

Preserving cultural and environmental values: Community participation not only helps create unique tourism products but also contributes to preserving cultural and environmental values. When local communities actively participate in the tourism development process, they will feel responsible and motivated to protect local cultural heritage and natural environment. This not only helps preserve important values but also increases the sustainability of tourism activities.

5.4 Inter-sectoral collaboration and strategic planning

For effective and sustainable tourism development, inter-sectoral collaboration and strategic planning are essential. Coordination among stakeholders and the establishment of a comprehensive strategic plan help optimize resources and ensure that tourism strategies are implemented in a coordinated and effective manner.

5.4.1. Stakeholder Collaboration

Government Agencies: Government agencies play an important role in tourism development and management. They are responsible for formulating policies, providing financial resources, and establishing necessary regulations to support the tourism industry. Coordination between government agencies at the local and national levels can facilitate the implementation of tourism projects and improve necessary infrastructure. research emphasizes that close coordination between government agencies and relevant organizations is a prerequisite to ensure the success of tourism strategies.

Community organizations: Community organizations and local groups should also be involved in the tourism development process. Community participation helps ensure that tourism projects meet the needs and desires of local people, while creating acceptance and support from the community. Community organizations can help preserve cultural and environmental values, and contribute ideas and initiatives to improve the quality and attractiveness of tourism products.

5.4.2. Comprehensive strategic planning

Define clear goals: Strategic planning requires defining clear and specific goals to guide activities and decisions in the tourism development process. Goals need to be clearly defined,

measurable, and achievable within a specified time frame. This helps stakeholders have a common direction and easily track progress in implementing strategies.

Specific implementation steps: The strategic plan must include specific implementation steps, including resource allocation, budgeting, and identifying the activities required to achieve the set goals. These steps must be designed to ensure alignment and coordination among stakeholders, and be able to adjust and adapt to changes in the operating environment.

Evaluation and adjustment: To ensure that tourism strategies are implemented effectively and sustainably, there needs to be a mechanism for regular evaluation and adjustment. Monitoring and evaluating the results achieved against the set goals helps to detect problems early and adjust plans promptly. Stakeholders should regularly hold review and update meetings to ensure that tourism strategies continue to meet market needs and requirements.

6. CONCLUSION

Research on diversified tourism development in Tuyen Quang and Thai Nguyen has shown that the two provinces possess rich tourism resources, including historical sites, natural landscapes, and cultural festivals. Overall, the research indicates that adopting a diversified tourism strategy, improving infrastructure, enhancing marketing, and encouraging community participation are key factors for sustainable tourism development in Tuyen Quang and Thai Nguyen. Cross-sectoral collaboration and coordinated strategic planning are essential to ensure that tourism development efforts not only attract visitors but also bring long-term economic and social benefits to local communities.

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TOURISM DEVELOPMENT MODEL ASSOCIATED WITH GREEN AGRITOURISM IN SOME COUNTRIES AND LESSONS FOR TUYEN QUANG, VIETNAM

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ABSTRACT

In the face of globalization and climate change, green agriculture-linked tourism is rising in countries like Thailand, Australia, Japan, and Israel. These models enhance local economies, protect the environment, and preserve cultures. Japan emphasizes agricultural tourism through hands-on activities, while South Korea showcases smart agricultural villages for efficient tourism management. Thailand merges eco-tourism with traditional farming for unique offerings. Tuyen Quang can adopt similar strategies by leveraging its natural resources, such as tea and fruit orchards, to create appealing tourism products. Additionally, promoting environmental education is vital for sustainable development, helping to preserve cultural values and provide a stable income for residents..

Keywords: Green agricultural tourism, lessons for Tuyen Quang.

1. INTRODUCTION

Tuyen Quang's tourism image has improved significantly in recent years, attracting a large number of local and foreign visitors. Table 1 demonstrates the number of tourists and revenue from the tourism industry in Tuyen Quang province from 2017 to August 2022.

Table 1. The number of tourists and total tourism revenue in Tuyen Quang
from 2017 to the first 8 months of 2022

| Criteria | 2017 | 2018 | 2019 | 2020 | 2021 | The first 8 months of 2022 |
|--------------------------------------|-----------|-----------|-----------|-----------|-----------|----------------------------|
| The number of tourists in total | 1.590.900 | 1.760.600 | 1.945.650 | 1.708.000 | 1.605.000 | 1.699.000 |
| The number of domestic tourists | 1.585.350 | 1.754.570 | 1.939.025 | 1.704.330 | 1.602.981 | 1.693.050 |
| The number of international tourists | 5.550 | 6.030 | 6.625 | 3.670 | 2.019 | 5.950 |
| Tourism revenue | 1.380 | 1.556 | 1.750 | 1.500 | 1.488 | 1.580 |

Source: Tuyen Quang Department of Culture, Sports, and Tourism

Interviews with five tourism companies indicate that cultural tourism constitutes about 60% of Tuyen Quang's tourist numbers and revenue. With significant investment in tourism and

infrastructure, the province welcomed over 2.6 million tourists in 2023, generating 3.2 trillion VND in revenue, with a goal of 2.7 million tourists and 3.6 trillion VND in 2024. Most visitors engage in cultural experiences, primarily from northern provinces, making up 99.6% of tourists. Tuyen Quang's diverse natural and cultural resources, including attractions like Ban Ba Waterfall and Na Hang Lake, position it well for sustainable tourism development. The article suggests developing "green" tourism models linked to nature to enhance the local economy.

2. LITERATURE REVIEW

2.1. Tourism

Tourists are individuals who voluntarily leave their usual surroundings to visit a different environment, engaging in various activities regardless of distance (Hall, 2008; Holloway & Taylor, 2006; Jafari, 2002). In 1963, the UN Conference on International Travel and Tourism defined "visitors" as non-residents, including tourists those staying at least 24 hours and excursionists, who stay less than 24 hours. However, this excludes domestic tourists. In 1976, the Tourism Institute defined tourism as short-term movement to destinations outside one's usual environment, covering all purposes, including day trips (Cooper, 2008; Holloway & Taylor, 2006).

2.2. Green Agriculture

Green agriculture, or sustainable agriculture, is defined as an integrated system of practices that, in the long term, satisfies food needs, enhances environmental quality, efficiently uses nonrenewable and on-farm resources, sustains farm viability, and improves farmers' and society's quality of life (U.S. Farm Bill, 1990).

A sustainable farm produces high-quality food while protecting resources, relying on natural processes and renewable resources rather than purchased materials (Reganold & cs., 1990). Additionally, sustainable agriculture involves management processes that conserve resources, minimize waste, prevent problems, and promote resilience in the agricultural ecosystem (MacRae & cs., 1989).

2.3. The model of green agritourism

The term "agritourism" originated from Italy's first national law in 1985, intending to restore farms and diversify income through agriturismo. There is no standard global definition, with terms like rural tourism and farm visits used interchangeably. The National Agricultural Law Center of the United States defines agritourism as a "commercial enterprise at a working farm, ranch, or agricultural plant for the enjoyment of visitors that generates income for the owner". "Green" tourism refers to environmentally friendly practices benefiting both producers and consumers. Tourist involvement in local farm activities embodies green agritourism, linking agriculture and visitors. Various studies propose models related to this tourism type and local agricultural practices. A notable study is "Conceptualization and Potential of Agritourism in Extremadura (Spain) from the Perspective of Tourism Demand" by Sánchez-Martín & cs.

Another study “The perceived benefits of agritourism: The provider’s perspective” by authors Christine Tew and Carla Barbieri, also illustrates the diversity of agritourism activities linked to environmental benefits

In short, the diversity of agritourism activities varies depending on geographical location and local culture, thereby creating unique attractions for this type of tourism.

3. METHODOLOGY

This article uses qualitative research based on secondary data from reputable sources to address sustainable tourism development. The research process includes (1) Identification of Data Sources: Selecting trustworthy articles from scientific journals on sustainable tourism from countries like Thailand, Australia, Japan, and Israel; (2) Data Collection: Analyzing key arguments and strategies from the literature on sustainable tourism; (3) Synthesis and Analysis: Comparing models from various countries to identify success factors. (4) Model Selection: Choosing practical sustainable tourism models relevant to Tuyen Quang, informed by theoretical frameworks and best practices. (5) Proposal of Solutions: Formulating solutions to enhance green agritourism in Tuyen Quang, tailored to local needs. The article aims to provide insights and recommendations for sustainable tourism development in Tuyen Quang.

4. RESULTS AND DISCUSSION

4.1. Green agritourism in Tuyen Quang

Tuyen Quang's tourism industry has seen significant growth, with increasing visitor numbers leading to new jobs and higher community incomes. The focus on environmental protection and ethnic culture is emphasized through the development of green tourism, utilizing natural products, and reducing plastic use. Several green tourism destinations have received positive feedback from tourists, indicating a promising trend for future tourism development in the area.

“Green” activities

Many areas in the province are developing green tourism using eco-friendly materials like bamboo and rattan instead of plastics. Highland districts are popularizing eco-friendly amenities in homestays and offering services like electric vehicle transport, bike rentals, and tours of forests and orchards.

Eco-tourism spots like Na Hang Lake and Tat Ke-Ban Bung Nature Reserve attract visitors with activities such as kayaking and enjoying local dishes. Districts like Yen Son and Ham Yen also offer sightseeing and fruit garden experiences, featuring beautiful nature-friendly spots. This strategy enhances tourism while preserving the environment and promoting the region's friendly image.

The report from the Department of Agriculture and Rural Development of Tuyen Quang province indicates that the province has over 448,000 hectares of forestry land, with forest area exceeding 415,000 hectares, encompassing both natural forests and plantation forests. Each year,

the province plants more than 10,000 hectares of new forests, including over 1,000 hectares of high-quality plantation forests. The forest coverage rate is 65%, ranking among the top three provinces nationwide in terms of forest coverage. Therefore, local management policies focus on protecting forest coverage, particularly in ecotourism areas such as Na Hang, Lam Binh, and Chiem Hoa.

The province has initiated several policies to support agricultural development through the National Organic Agriculture Development Project (2020-2030). Key policies include (1) support for organic production transition; (2) assistance with technology transfer and certification; (3) 100% coverage of certification costs for products meeting international standards, up to 300 million VND per project; and (4) 80% support for interest on investment loans for organic production infrastructure, capped at 5 billion VND per project. These measures aim to enhance green agritourism connections (Phillips & cs., 2010).

However, green tourism development is lacking in some areas. In Tan Trao commune, traditional bamboo and rattan tourism products have declined, with only a few items available in homestays. Limited services, like check-in points and boat tours on Na Nua Lake, exist, and many destinations do not emphasize environmental protection, hindering Tuyen Quang's growth as a tourist destination.

4.2. Green agritourism in several countries

4.2.1. Thailand

The agriculture sector in Thailand has long been crucial due to its fertile lands, leading to over 1,200 agricultural tourism sites by 2016 (Rasri, AEOC). In 2018, the market value of agricultural tourism was estimated at 15.7 billion baht, with about 2.5% of Thai tourists participating (approximately 3.27 million visits) and average expenditures of 605 baht per person.

This sector showcases rural lifestyles and local heritage through activities like silk weaving and terrace farming, with notable sites including Suphattra Land and Royal Ratchaphruek Park. The potential for growth is supported by collaboration with the MICE industry, though agricultural significance has declined due to non-agricultural development and challenges like price volatility and climate change (Thuvachote, 2007).

Integrating agricultural and tourism services is vital for rural development (Tanupol et al., 2020), with the sector evolving to include farm tours and local food distribution since its promotion in 1995 (Department of Agricultural Development, 2005). Thailand is thus diversifying its tourism offerings beyond traditional agricultural activities.

4.2.2 Australia

Agritourism has generated distinctive culinary tourism products, becoming an increasingly important sector of Australia's economy, providing direct and indirect benefits to Australian agricultural businesses and regional markets. Traditionally perceived as staying on farms or visiting cellar doors, agricultural tourism now encompasses a variety of activities where agriculture and tourism intersect. Essentially, it involves visiting a region to participate in farm-

related or food-related activities. Businesses (including restaurants, markets, farm shops, and natural attractions) offer educational activities or participate in event-based activities. Approximately 1.8 million domestic and international tourists visited Australian farms from 2015 to 2016, with this number increasing by approximately 9% annually. This sector is currently valued at USD 9.4 billion annually. The economic benefits from agricultural tourism are particularly suited to Australia as it occurs in regions often with limited non-agricultural economic.

To achieve its goals, Australian tourism has focused on compiling statistics related to visitors' agritourism experiences on "Green" farms, particularly in the South West regions.

Tourism operators have identified five key experiential purposes for visitors participating in agricultural tourism: (1) Learning; (2) Interaction; (3) Hands-on experience; (4) Location; and (5) Duration of stay. These purposes reflect the depth and prominence of agricultural tourism services provided to visitors, demonstrating effective management aligned with tourist needs.

Data collected from interviews reveal that nearly two-thirds (64%) of agricultural tourism services include educational experiences, which extend beyond tangible products. Common educational activities encompass guided farm tours, agricultural demonstrations, tastings, and workshops, focusing on regional practices and practical skills. Examples include beekeeping, fruit preservation, and sustainable farming techniques. The learning experiences identified are generally less formal and often involve multiple visits for structured activities like horseback riding lessons.

4.2.3. Japan

Agritourism was introduced relatively recently in Japan under the "Act on Promotion of Infrastructure Development for Rural Tourism" enacted in 1994. The Ministry of Agriculture, Forestry and Fisheries of Japan has been pivotal in promoting agricultural tourism, playing a central role in its development. Even today, agricultural tourism continues to be highly anticipated by tourism officials and farmers as a means to stimulate both the agriculture and tourism sectors. Consequently, this form of tourism has gained wide popularity across Japan and has achieved significant success.

According to a report by Allied Market Research, the global agricultural tourism market, including Japan, is projected to reach USD 111.1 billion by 2032, with an annual growth rate of 12.5%. This indicates strong development in the sector and substantial potential for the future.

Japan has implemented essential policies and development models for green agricultural tourism, establishing a foundation for future progress. In the Minami-Shinshu region, the "Minami-Shinshu Kosha" organization connects farmers and tourists from 15 cities, emphasizing educational tourism for school students. Approximately 22,476 elementary and 11,035 junior high students participated in agricultural tourism, representing 0.7% and 1.5% participation rates, respectively.

In 2009, 322 schools engaged in agricultural tourism, with 110 from Minami-Shinshu, holding a 34% market share. Iida City's agricultural department offers working holiday programs that allow tourists to assist farmers during busy seasons, fostering community through the "Yui" system, in which tourists share meals and lodging with farm families, creating a "homeland" atmosphere.

Another perspective on agricultural tourism is found in the Aizu region, located to the west of Fukushima in the southernmost Tohoku region of Honshu Island

Aizubange, in the southern Tohoku region of Japan's Honshu Island, is a promising agricultural area but attracts around 1 million tourists annually. Recognizing agriculture's importance over tourism, the government partnered with the Japan Agricultural Association to establish the “Kitakata Green Tourism Support Center” in 2005, supporting community-driven agricultural tourism.

The focus on educational tourism is significant, with about 7,000 students visiting for day trips and 1,800 staying overnight each year. The government's investment in Aizubange, a village of 17,000 residents, aims to enhance living conditions and promote agricultural tourism. Local management connects residents and tourists to meet diverse needs.

Agricultural tourism in Japan prioritizes educational experiences, especially for younger students, while the local government fosters community ties with tourism businesses to ensure authentic experiences.

4.2.4. Israel

Rural tourism is rapidly growing in Israel, beginning in the late 1980s with a focus on rural accommodation services (Fleischer & Pizam, 1997). It is primarily centered around Kibbutzim, communal agricultural settlements established in 1909, combining Jewish cultural values with agricultural practices for authentic experiences. However, limited investment in accommodation has resulted in basic lodgings evolving into upscale cabins with amenities. Additional services, such as wine, natural juices, and chocolates, are also provided (Anat Tchetchik, Aliza Fleischer, & Israel Finkelshtain, 2006).

In 2012, Israel's Ministry of Agriculture and Rural Development reported 2,604 agricultural tourism sites across 200 rural communities, including farm activities, food processing, visitor centers, and outdoor entertainment. By 2004, rural lodging represented 18% of the domestic tourism market in terms of room nights, comprising 8,000 lodging units across about 210 locations, including cooperative settlements (Moshavim), collective communities (Kibbutzim), and non-agricultural rural towns, extending from the northern border with Lebanon to the southern Red Sea. The growth in lodging units over the past two decades is illustrated in Figure 8.

Israel is shifting from agricultural reliance to increased investment in tourism. In 2014, the “Enhancing National Policy and Implementation Tools for Rural Development in Israel” plan was launched, allocating \$46 million for agricultural tourism sites from 2015 to 2020 (MOAG, 2014). Support is provided regionally for heritage farm preservation and infrastructure improvements, communally for village aesthetics and visitor centers, and at the enterprise level through grants of up to \$25,000 for tourism attractions. Overall, Israel is focusing on community value through Kibbutzim lodging and policies supporting the transition from agriculture to services.

4.3. The lessons from the model of developing green agricultural tourism in some countries apply to Tuyen Quang

Based on the analysis of green agricultural tourism in Thailand, Australia, Japan, and Israel, lessons can be applied to Tuyen Quang. (1) Thailand: Similar to Vietnam in cultural and natural

resources, but significantly invests more in tourism. Its agricultural tourism benefits from well-developed infrastructure integrated with other tourism types, diversifying offerings; (2) Australia: Known for its vast biodiversity, Australia uses its unique species to create various tourism products, focusing on connecting visitors with nature and employing statistical data for development; (3) Japan: Invests in community connections and targets school students with educational agricultural activities, blending various tourism products; (4) Israel: Uses a community-based approach, integrating businesses and strategically upgrading infrastructure to enhance visitor engagement.

Regarding the tourism destination of Tuyen Quang, according to the report from the Department of Agriculture and Rural Development of Tuyen Quang province, statistics show that agricultural land covers 92% of the total area (540,537.72 hectares). Moreover, Tuyen Quang possesses natural resources intertwined with cultural heritage sites, considered similar advantages to the models of the aforementioned countries. Therefore, to effectively develop eco-agricultural tourism in Tuyen Quang province, the destination should implement the following solutions:

Firstly, establish sustainable tourism policies focusing on cultural, social, and environmental aspects alongside economic growth and profitability goals. Simultaneously, prioritize community well-being and promote responsibilities among stakeholders in the tourism industry. These policies should be phased in and enhance local tourism business participation.

Secondly, enhance the development of agricultural and rural tourism, ecotourism, and community-based tourism in areas with natural advantages such as Ham Yen, Chiem Hoa, Lam Binh, and Na Hang. This approach capitalizes on the potential competition for destinations, particularly in proximity to Hanoi, where this type of tourism has not been extensively developed, making Tuyen Quang stand out.

Thirdly, strengthen connectivity between the Tuyen Quang Department of Tourism and local agricultural tourism communities to enhance tourism value exploitation. Both parties should create conditions for promoting local tourism policies based on distinctive regional products.

Fourthly, adjust land use policies to facilitate the construction and upgrade of infrastructure facilities as a foundation for developing eco-agricultural tourism locally.

Fifthly, encourage tourism enterprises to participate in a unified green tourism supply chain standard. Provide training for accommodation and service providers to ensure consistent visitor experiences. Conduct statistics and quality assessments of agricultural services to meet tourists' precise needs.

5. CONCLUSION

Agritourism is a growing trend, particularly in promoting sustainable tourism. Tuyen Quang, in northern Vietnam, has great potential for eco-agricultural tourism by learning from successful models in Thailand, Australia, Japan, and Israel. The province should develop a strategy to enhance green tourism, diversify offerings, and create tourism products linked to local agricultural traditions. Additionally, it's essential to implement supportive policies for tourists and assist local communities in preserving resources and cultural values at tourism sites.

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COMMUNITY-BASED TOURISM FOR SUSTAINABLE DEVELOPMENT OF ETHNIC MINORITY COMMUNITIES IN SAPA

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ABSTRACT

Theoretically, the development of tourism focused on promoting the sustainable development of local communities, ensuring equitable distribution of benefits, and protecting the environment is a global goal of the tourism industry, including in Vietnam. Practically, community-based tourism in Sapa has been integrated into local investment programs to meet the standards set by the Association of Southeast Asian Nations (ASEAN), while highlighting the distinctive characteristics of the region's ethnic minorities. This study examines the accessibility and visibility of Ta Van and Ta Phin to tourists, the representation of cultural identities associated with ethnic minority communities in local tourism activities as well as ethnic minority homestay owners on online tourism platforms. A quantitative approach was employed to assess these factors on digital tourism platforms. The findings highlight the visibility and accessibility of these villages, the significance of local cultural identities in community-based tourism, and the ethnic minority homestay owners online. However, the results reveal that their presence is relatively modest in comparison to others. Furthermore, this study proposes several solutions to enhance the visibility of ethnic minority communities and their culture in the development of community-based tourism. It provides policymakers, businesses, and tourism entrepreneurs with critical insights into the position of local minority communities within the context of community-based tourism, enabling the formulation of policies and strategies that ensure sustainable development, with ethnic minority communities as the focal point.

Keywords: Community-Based Tourism, ethnic minority homestay owners, Sapa tourism, online tourism platforms, visibility of ethnic communities

1. INTRODUCTION

The development of community-based tourism (CBT) in Vietnam is a key component of the National Program and Objectives for New Rural Development for the period 2021-2025, as outlined in Resolution No. 25/2021/QH15 (Vietnam Assembly, 2021). This program includes significant support and investment for enhancing community-based tourism. According to Clause 2, Article 19 of the 2017 Tourism Law, provincial People's Committees are responsible for conducting surveys, research, planning, and developing community-based tourism initiatives.

In Lao Cai, community-based tourism has become a focal point of regional development efforts. The province is recognized for its popularity as a community-based tourism destination, featuring over 20 tourist routes (Vietnam Farmers' Union 2023). In accordance with this document, Lao Cai is actively working to develop community-based tourism models that meet the Association of Southeast Asian Nations (ASEAN) standards, particularly in Sapa and Bac Ha.

In Sapa, according to Lao Cai Radio and Television, several villages, including Ta Van, Cat Cat, and Ta Phin, have been specifically planned and developed to support community-based tourism. Also, the province strategically highlights ethnic cultural elements to attract both

domestic and international tourists, for instance, Lao Cai offers unique tourism products related to ethnic minority cultures, such as experiencing a day as a Dao farmer, participating in the Rose Festival, and engaging in textile competitions (Mai 2023).

Among the villages targeted for community-based tourism development, Ta Van and Ta Phin are distinguished as key sites. These villages are included in the top 5 community tourism destinations in Lao Cai, with ongoing efforts to align with the standards set by ASEAN.

Our study examines the appeal of Ta Van and Ta Phin to tourists, as well as the presence of cultural identities associated with ethnic minority communities in local community-based tourism. In the information age we live in, the availability of information on online tourism platforms—such as specialized travel service websites and platforms like Airbnb and Booking.com that connect service providers to customers—is a crucial factor that enables CBT operators to reach both existing and potential customers. Therefore, the presence of ethnic minority homestay owners on online tourism platforms is also a focal point of our research. This study seeks to answer the following questions:

1. To what extent are the two CBT villages, Ta Van and Ta Phin, accessible and visible to tourists?
2. How are the cultural identities of ethnic minorities featured in CBT activities in Ta Van and Ta Phin?
3. How are ethnic minority homestay owners represented on digital tourism platforms?

2. LITERATURE REVIEW

CBT has attracted attention from not only government authorities and policymakers but also researchers and society at large. Researchers have explored various aspects and models of CBT in different contexts. For instance, Okazaki (2008) reviews the principal theories used to discuss community participation and shows the way this model can be used to assess participation levels in a study site. Similarly, Blackstock (2005) reviews the CBT approach in light of fieldwork in a North Queensland tourism destination. A study in El Salvador conducted by López-Guzmán, Sánchez-Cañizares et al. (2011) highlighted the local community perception of the importance of tourist development in creating jobs and generating wealth, although the previous technical training from private and public institutions is required. Perme, Singh et al. (2024) pointed to the need for comprehensive management and external support to foster sustainable development. Research made by Ditta-Apichai, Sroyetch et al. (2024) in Thailand identified a lack of community capacity and power imbalances as major obstacles to the success of CBT.

In Vietnam, CTB has garnered attention from researchers, particularly in the context of Sapa. Vu (2020) highlights the risks of alienation faced by ethnic minorities due to uncritical promotion of CBT including (1) the marginalization of native representatives in CBT ventures; (2) the paradoxes arising from interactions between ethnic minorities and tourists; and (3) the alienation of ethnic minorities in value production activities. Tran and Ngo (2021) evaluate the sustainability of tourism development in Sapa (Lao Cai) by examining three key aspects: economic, social, and

environmental. Their research reveals disparities in the perspectives and actions of different stakeholders, as well as the challenges of achieving sustainable tourism. Pham (2023) investigates local communities' perspectives on sustainable tourism development in Sa Pa, focusing on the views of local government leaders, tour organizers, and residents of Sa Pa town regarding the impact of tourism on the community and environment. Phan, Nguyen et al. (2023) identify five key factors influencing the development of community-based night tourism in Sapa including: environment, culture and services, infrastructure, security and safety, and main tourism development policy. Among these, "security and safety" and "infrastructure" are found to have the strongest impact. Pham (2024) discusses the positive outcomes of environmental audits on the performance of tourism companies, while also addressing the challenges and barriers encountered in conducting such audits. However, up to our knowledge, there has been no research focussing on the visibility of minority ethnic groups in CBT in the region.

3. METHODOLOGY

A quantitative research approach was used to gather data on the advantages and presence of Ta Van and Ta Phin as tourist destinations, as well as the representation of these villages and their ethnic communities in CBT activities in the region. Specifically, the study examined the portrayal of local cultural identities in CBT, as reflected in 163 tours offered by 10 tour providers (Luxtour, Klook, Sapa Express, Viettrekking, Halotravel, Saoviet Travel, The Sinh Tourist, Dream Travel, Smile Travel, Saigon Tourist, Holiday Indochina, and SinhTour) and 113 reviews from five travel websites or blogs (Digiticket, 2trip, Klook, Holiday Indochina, and Tripadvisor). Additionally, the first 100 rental advertisements (50 from each platform) on Airbnb and Booking.com, using the keywords "Ta Van, Sapa, Lào Cai, Vietnam" and "Ta Phin, Sapa, Lào Cai, Vietnam," were analyzed (last accessed on July 26, 2024).

Tour descriptions, housing advertisements, and travel reviews were systematically categorized and coded into themes such as natural/cultural beauty, ethnic groups (of homestay owners), tourist sites, and visitor experiences. The data was then thematically analyzed and organized to provide a structured and insightful evaluation of CBT in these regions.

4. RESULTS

4.1. The advantages of Ta Van, Ta Phin in practicing CBT

Ta Van and Ta Phin, two CBT villages near Sapa, offer unique attractions rooted in their natural landscapes and rich cultural heritage. Ta Van, 7-10 kilometers from Sapa in Muong Hoa Valley, features terraced rice fields, forested hills, traditional houses, and stunning views of the Hoang Lien Son Range. Its moderate climate adds to its appeal for nature lovers seeking tranquillity. Similarly, Ta Phin, 12 kilometers northeast of Sapa, shares the same scenic beauty with hilly terrain and views of the valley and stream, making both villages ideal for eco-tourism activities like trekking and cycling.

Culturally, Ta Van and Ta Phin are home to diverse ethnic groups that enrich visitors'

experiences. Ta Van is mainly inhabited by the Giay, Dao, and H'mong, while Ta Phin is home to the Red Dao and H'mong. Both villages offer homestays where tourists can explore local customs, rituals, and cuisine. In Ta Van, visitors can engage in handicrafts like embroidery and wood carving, while Ta Phin is known for its Red Dao herbal baths and herbal medicine. Traditional festivals such as Ta Van's Roong Poooc and Ta Phin's Put Tong further showcase the villages' cultural richness, making them prime destinations for community-based tourism in Sapa.

Table 1. Features of Ta Van and Ta Phin

| CBT villages | | Ta Van | Ta Phin |
|--|---------------------------------|---|---|
| Features | | | |
| Geographic location and natural features | Location | Around 7-10 kilometers from the town of Sapa* | About 12 kilometres northeast of Sapa |
| | | Muong Hoa Valley area | Muong Hoa Valley area |
| | | Hoang Lien Son Range vista | Hoang Lien Son Range vista |
| | Natural Landscapes | Moderate temperature | Moderate temperature |
| | | Terraced Rice Fields | Terraced Rice Fields |
| | | Forested Hills | Forested Hills |
| | | Traditional villages with traditional houses | Traditional villages with traditional houses, communal areas. |
| | Topology | Hilly Terrain | Hilly Terrain |
| | | Valley | Valley |
| | | Stream | Stream |
| Cultural experiences of daily life | Minority ethnic groups | Giay | Red Dao |
| | | Dao | H'mong |
| | | H'mong | Some others (minor) |
| | Homestays | Customs | Customs |
| | | Rituals | Rituals |
| | | Cuisine | Cuisine |
| | | Scenic surrounding | Stunning view |
| | Handicrafts | Embroidery | Embroidery |
| | | Traditional textile weaving | Traditional textile weaving |
| | | Carved wooden objects | Silver jewellery |
| Traditional pottery | | Herbal crafting | |
| Traditional herbal medicine | Traditional Red Dao herbal bath | Herbal remedies | |
| | Herb picking with locals | Experiential learning about herbs Therapeutic practices | |
| Festivals | Traditional festivals | (H'mong) Gau Tao Festival | (Red Dao) Put Tong Festival |
| | | (Red Dao) Put Tong Festival (Giay) Roong Poooc Festival | (H'mong) Gau Tao Festival |

(*). Distance changes upon the root tourists choose.

4.2. The presence of Ta Van and Ta Phin on digital tourism platforms

This part of study explores the presence of Ta Van and Ta Phin on digital tourism platforms. The analysis draws on tours offered by ten tourism companies, including Luxtour, Klook, Sapa Express, Viettrekking, Halotravel, Saoviet Travel, The Sinh Tourist, Dream Travel, Smile Travel, Saigon Tourist, Holiday Indochina, and Sinhtour. Additionally, five travel websites or blogs (Digiticket, 2trip, Klook, Holiday Indochina, and Tripadvisor) that provide reviews of destinations and tourism products are included in the study. To protect the privacy of the research subjects, the names of tourism service providers, websites, and blogs have been anonymized in this report. Instead, we used identifiers such as TP1, TP2, or Web/B1, Web/B2 or the like.

As shown in Table 2, seven out of the 10 tourism companies offer tours to Ta Van and/or Ta Phin as part of their Sapa-related itineraries, indicating that these destinations have been introduced to both domestic and international tourists. Three of the 10 service providers do not include either village in their itineraries, while three other providers offer only one tour involving these destinations. This suggests that the representation of Ta Van and Ta Phin in Sapa's tourism landscape is still modest. The activities commonly available to tourists in these villages are also somewhat limited. Across all seven tours that include Ta Van and Ta Phin, the most frequent activities are local community visits, local food experiences, and sightseeing, which are offered in all seven tours. These activities reflect a focus on cultural immersion and the natural environment, allowing tourists to experience the local way of life and appreciate the scenic beauty of the region. Trekking and village stays, which highlight the geographic and natural features of the area, are offered in five out of seven tours. Less common are experience of handicraft producing, cycling/motorbike tours, and picking herbs with locals, which appear in only three and one tour(s), respectively.

The activities available to tourists in Ta Van and Ta Phin predominantly focus on leveraging the unique natural and geographical conditions of the region. Trekking, cycling tours, and sightseeing take advantage of the area's distinctive landscape and offer visitors a chance to explore the natural beauty of the mountainous terrain. At the same time, the local culture is introduced through activities like local food experiences and visits to local communities, where tourists can interact with ethnic minorities and gain insight into their traditional ways of life. These tours provide an initial introduction to the culture and lifestyle of the ethnic minorities in Ta Van and Ta Phin, the depth of cultural immersion differs depending on the specific tour package.

This study also analyzes reviews of Ta Van and Ta Phin on various travel websites and blogs. As shown in Table 3, review numbers fluctuate across platforms, with 6, 9, 16, 8, and 9 reviews, but overall, the villages maintain a strong online presence. The most commonly reviewed activities include local community visits, food experiences, and sightseeing. The Red Dao herbal bath and accommodation owners are reviewed on four out of five platforms, making them particularly popular. Other activities like herbal picking, trekking, and village stays appear on three platforms, offering visitors deeper engagement with ethnic minority traditions. This strong presence of Red Dao culture emphasizes that Ta Van and Ta Phin are not only natural attractions but also cultural hubs, where tourists can have meaningful interactions with Vietnam's ethnic communities.

Table 2. The presentation of Ta Van, Ta Phin and offered activities on advertised tours

| Offered tours & activities | | Tour providers | | | | | | | | | |
|---------------------------------------|-------------------------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | | TP1 | TP2 | TP3 | TP4 | TP5 | TP6 | TP7 | TP8 | TP9 | TP10 |
| Number of Sapa tours | | 15 | 7 | 22 | 16 | 14 | 10 | 5 | 30 | 13 | 31 |
| Number of Ta Van/ Ta Phin tours | | 1 | 1 | 3 | 8 | 0 | 0 | 0 | 8 | 1 | 6 |
| Offered activities in Ta Van/ Ta Phin | Cycling/motorbike tours | | | | | | | | | | √ |
| | Local community visit | √ | √ | √ | √ | | | | √ | √ | √ |
| | Local food experience | √ | √ | √ | √ | | | | √ | √ | √ |
| | Red Dao herbal bath | | | | √ | | | | √ | | √ |
| | Handicraft making experiences | | | | | | | | | | √ |
| | Sightseeing | √ | √ | √ | √ | | | | √ | √ | √ |
| | Trekking | √ | | | √ | | | | √ | | √ |
| | Village stay | | | √ | √ | | | | √ | √ | √ |
| | Herbal picking with locals | | | | | | | | | | √ |

Table 3. The presentation of Ta Van, Ta Phin and reviewed items on tourism Websites/Blogs

| Reviewed items | | Website/Blog | | | | |
|--|----------------------------|--------------|---------|---------|---------|---------|
| | | Web/ B1 | Web/ B2 | Web/ B3 | Web/ B4 | Web/ B5 |
| Number of Sapa sites, activities and homestay | | 13 | 16 | 24 | 35 | 25 |
| Number of Ta Van/ Ta Phin sites, activities and homestay | | 6 | 9 | 16 | 8 | 9 |
| Reviewed activities in Ta Van/ Ta Phin | Cycling/Motorbike tours | | | | √ | |
| | Local community visit | √ | √ | √ | √ | √ |
| | Local food experience | √ | √ | √ | √ | √ |
| | Red Dao herbal bath | | √ | √ | √ | √ |
| | Sightseeing | √ | √ | √ | √ | √ |
| | Trekking | √ | | | √ | √ |
| | Village stay | | | √ | √ | √ |
| | Herbal picking with locals | | √ | √ | | √ |
| Other reviewed fields | Accommodation owners | | √ | √ | √ | √ |
| | Check-in sites | √ | √ | √ | √ | |
| | Souvenir shops | | √ | | √ | |
| | Local trekking/tour guide | √ | √ | | √ | |
| | Souvenirs | | | √ | | √ |

4.3. The presence of ethnic minority homestay owners on digital tourism platforms

The presence of place and service providers on digital tourism platforms plays a crucial role in enhancing visibility and accessibility, especially for local and minority-owned businesses. Research highlights that digital platforms like Airbnb and Booking.com provide small and local service providers with direct access to international markets, helping them showcase their services and connect with travelers globally (Kayumovich 2020). A report from the World Bank emphasizes that digital platforms have increased demand for international tourism services by making it easier for smaller providers to compete alongside larger, more established businesses.

Such platforms have also enabled local tourism providers to offer personalized experiences, such as cultural immersion activities and community-based accommodations, which appeal to modern tourists looking for authentic experiences (Lopez Cordova 2020). The presence of ethnic minority homestay owners in Ta Van and Ta Phin, Sapa, on the Airbnb and Booking.com platforms are reflected in Chart 1 and Chart 2.

It can be observed that the presence of ethnic minority homestay owners is quite modest compared to Kinh owner group. On Airbnb, ethnic minority owners account for 28% of the total advertisements, indicating a relatively active participation, though still significantly lower than Kinh owners, who account for 60%. On Booking.com, the presence of ethnic minority owners decreases significantly, representing only 13% of the listings, lower than on Airbnb, and is overshadowed by both Kinh owners (30.4%) and a large proportion of advertisements without owner information (52.2%). Despite participating in the CBT market, ethnic minority owners have not yet achieved a proportional presence on online platforms, especially when compared to the dominance of Kinh owners and the lack of transparency in owner information on Booking.com.

The struggle of local and ethnic minority service providers in establishing a strong presence on online tourism platforms may be rooted from technological literacy, marketing skills, or limited access to the necessary resources for promoting their services effectively online. Bridging this digital divide is essential for improving their participation in the tourism market and ensuring more equitable distribution of tourism-related benefits.

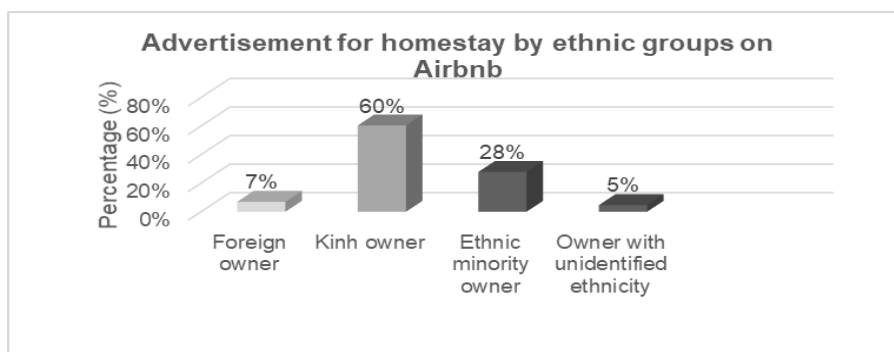


Chart 1. Presence of ethnic minority homestay owner on Airbnb

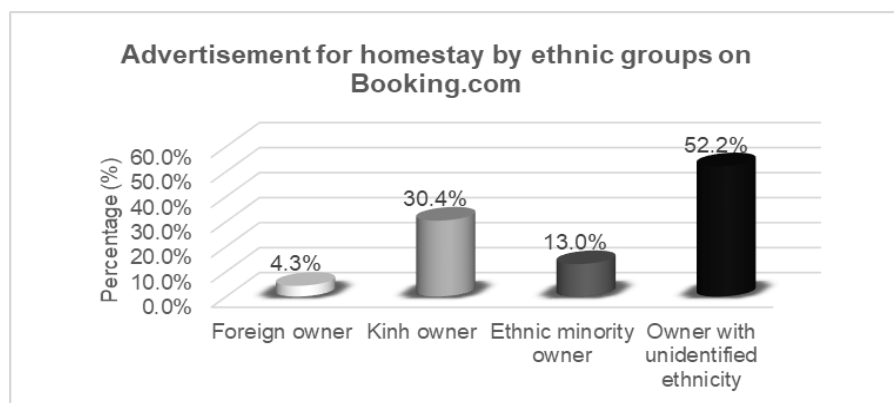


Chart 2. Presence of ethnic minority homestay owner on Booking.com

5. CONCLUSION

CBT presents a promising avenue for the sustainable development of ethnic minority communities in Sapa. By integrating local cultures and natural landscapes, CBT provides these communities with opportunities to participate in and benefit from tourism. Villages like Ta Van and Ta Phin, although modestly represented in tour itineraries, offer unique cultural experiences, such as interactions with ethnic minorities and activities like local food tasting, trekking, and traditional handicrafts. However, as indicated by the lower presence of ethnic minority-owned accommodations on digital platforms and the relatively limited range of activities offered, there remains significant potential to expand their involvement and visibility. Strengthening the local communities' capacity to manage and promote their cultural heritage through tourism can lead to enhanced economic benefits, preservation of traditional lifestyles, and more equitable participation in the tourism market. This approach aligns with the goals of sustainable development by fostering a more inclusive and culturally rich tourism experience in Sapa, ultimately supporting the long-term well-being of the region's ethnic minority communities.

To further support the development of community-based tourism (CBT) in villages like Ta Van and Ta Phin several key strategies can be implemented. Government support is crucial, with policies that offer financial incentives, grants, or low-interest loans to ethnic minority-owned businesses, helping them improve their accommodations and tour services. Collaborative marketing campaigns between local governments and international platforms like Airbnb and Booking.com could further boost visibility. Additionally, preserving cultural heritage is essential to maintain authenticity and avoid over-commercialization. Government initiatives should focus on safeguarding ethnic traditions and promoting culturally respectful tourism. Ensuring community involvement through tourism cooperatives or advisory boards would empower locals to shape tourism development according to their values. These strategies together could enhance the sustainability of CBT, enabling local communities to thrive while preserving their cultural identities and natural environments.

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PRESERVING AND CONSERVING TRADITIONAL FESTIVALS OF ETHNIC GROUPS IN BINH DUONG PROVINCE SUSTAINABLE TOURISM DEVELOPMENT IN THE CONTEXT OF THE FOURTH INDUSTRIAL REVOLUTION

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ABSTRACT

The fourth industrial revolution took place and strongly impacted all economic and social life areas, creating significant opportunities and challenges. In the cultural field, the fourth industrial revolution has also had a strong impact, forcing us to develop strategies to preserve and develop traditional cultural values. In Binh Duong, in the current context, to preserve and conserve traditional festivals of ethnic groups, it is also necessary to propose a system of solutions in the development process. Therefore, to adapt to the new context and preserve and conserve traditional festivals of ethnic groups living in Binh Duong province, it is necessary to turn traditional festivals into tourism products for sustainable development. The discussion focuses on studying the current status of traditional festivals of ethnic groups (Kinh, Hoa, Stieng, Khmer) in Binh Duong province, thereby proposing several solutions to preserve traditional festivals to develop sustainable tourism in the context of the fourth industrial revolution.

Keywords: ethnic communities, Binh Duong tourism, cultural tourism, Binh Duong festivals, sustainable development.

1. INTRODUCTION

In the development process of human social history, sustainable development in the present while still ensuring continued development in the distant future is a development process with a close, reasonable, and harmonious combination of economic development, social development, and environmental protection. Sustainable development is an urgent need, a goal of many countries worldwide. Each country will be based on its own economic, social, political, geographical, and cultural characteristics, to plan the most appropriate strategy. In an era of significant progress and change like today, created by the fourth industrial revolution, the implementation of the goal of preserving traditional cultural values and sustainable development for each country has many opportunities but also faces many challenges. Such a situation raises the need to understand the fourth industrial revolution and the goal of preserving traditional cultural values. To preserve and develop traditional culture, it is necessary to turn traditional cultural values into tourism products in sustainable development. That process sets out for Vietnamese culture and tourism in general and Binh Duong province in particular, a development direction that aligns with international trends and the times. This study points out the opportunities and challenges that the Fourth Industrial Revolution poses for preserving and maintaining traditional festivals of ethnic groups in Binh Duong province in terms of sustainable tourism development.

2. LITERATURE REVIEW

Research on traditional festivals and the preservation of traditional festivals has attracted the attention of many researchers. Scholars have generally approached different angles and aspects of preserving and maintaining traditional cultural festivals of ethnic communities in the current context. In 2009, the Vietnam Folklore Association published the work *Southeast Folk Culture* by Dong Nai Publishing House. The work is a collection of 46 articles on different aspects of Southeast folk culture. Of these, 28 articles are on preserving and promoting Southeast folk culture. The articles mention different contents about the folk culture of ethnic groups in the Southeast and some solutions to preserve the cultural elements of ethnic groups in the Southeast. Traditional cultural festivals of ethnic groups and the preservation and promotion of sustainable tourism development in the context of the 4.0 industrial revolution in the Southeast in general and Binh Duong, in particular, have not been mentioned.

There is also content mentioning the issue of preserving traditional cultural festivals of ethnic groups, including the work *Some Issues about ethnic groups and religions in the South in Development*, co-edited by Vuong Hoang Tru and Phu Van Han and published by the Social Sciences Publishing House in 2011. The work has 20 different articles mentioning some ethnic issues in development. The articles delve into theoretical aspects of approaching ethnic issues in the South, indigenous knowledge, ethnic relations, ethnic music, material culture, and the issue of preserving the standard material and spiritual culture of ethnic groups in the South. In-depth issues on traditional festivals and the preservation and conservation of traditional festivals for sustainable tourism development, especially for ethnic minorities in Binh Duong, have not been mentioned in the work.

Referring to the content of the Fourth Industrial Revolution with state governance is the proceedings of the International Scientific Conference published by the National Political Publishing House in 2018. The work is a collection of 76 articles on the impact of the 4.0 industrial revolution on current social life, from economics to military, politics, culture, and society. The work also includes content referring to the issue of state governance of ethnic minority culture. The content and approach to governance and the State's system of solutions for sustainable cultural development for ethnic minorities in the context of the 4.0 industrial revolution, is an essential theoretical foundation in approaching the content of the research problem.

There are few studies on preserving and conserving traditional cultural festivals of ethnic groups to develop sustainable services in the context of the fourth industrial revolution. Studies have only focused on presenting the general status of traditional festivals of ethnic groups. Some works have also mentioned different aspects of preserving and conserving traditional cultural festivals of ethnic minority communities in Binh Duong. The works have not systematically mentioned cultural festivals and measures to preserve and promote traditional cultural festivals of ethnic communities in Binh Duong to develop sustainable tourism in the current context. Based on the access to the sources of documents, the article uses the research method of the historical science major, which is the historical method and the logical method, to study and clarify the problem. At the same time, to present the results and evaluate the problem, the article uses a

combination of analysis and synthesis methods to analyze and evaluate the results for each problem and objectively explain. Then, summarize and synthesize the analyzed problems to assess and clarify the meaning and impact of the problem.

3. MATERIALS AND METHODS

Based on the access to the sources of documents, the article uses the research method of the historical science major, which is the historical method and the logical method, to study and clarify the topic. At the same time, to present the results and evaluate the topic, the article uses a combination of analysis and synthesis methods to analyze and evaluate the results for each problem and objectively explain. Then, summarize and synthesize the analyzed problems to assess and clarify the meaning and impact of the problem.

4. RESEARCH RESULTS

4.1. Overview of the fourth revolution and sustainable development

4.1.1. Overview of the fourth industrial revolution and sustainable goals

Opportunities and challenges of the fourth industrial revolution: The fourth industrial revolution, with the emergence of robots with artificial intelligence, brings many beneficial applications to society in every country. Thanks to artificial intelligence technology created by humans, robots work intelligently. They can remember, learn, and creatively imitate many things, while humans cannot do many things or find them challenging. The advantage of robots is that they can work 24/7 without having to pay salaries, taxes, or insurance. This also poses a challenge for society regarding using human or robot labor.

Like previous revolutions, the 4.0 industrial revolution promises to help increase income and improve the quality of life for people worldwide. Today, the biggest beneficiaries are consumers accessing and using the digital world. Technology has helped create new products and services, thereby increasing the efficiency and satisfaction of each person's life. Calling a taxi, booking a flight, buying a product, making payments, listening to music, watching a movie, seeing a doctor, watering and fertilizing plants, measuring oxygen levels, feeding shrimp and fish, or playing games..., all can be done remotely. Professor Klaus Schwab commented: "These changes are so profound that never before in history has there been a time when humans faced so many opportunities and risks at the same time" (Klaus Schwab, 2015, p.95). In the future, technological innovation will also change the supply sector, with long-term benefits in terms of efficiency and productivity. Transportation and communication costs will decrease, global logistics and supply chains will become more efficient, and production and trade costs will be reduced. All of these factors will open up new markets and promote economic growth. However, the Fourth Industrial Revolution also posed many challenges and difficulties for countries like Vietnam, which had the advantage of a young and abundant manual labor force. This will no longer be a strength but become a big challenge, even a severe threat. As economists Erik Brynjolfsson and Andrew McAfee have pointed out, "this revolution can also create greater injustice, especially causing the risk of disrupting the labor market" (National Academy of Politics; p.406). Predicting the terrible

impact of robotic technology in the future, famous physicist and cosmologist Stephen Hawking said: "Humanity is facing the possibility of extinction in the next 1,000 years, if not because of nuclear war, then because of the development of robotic technology. When automation replaces humans, workers will be redundant in the whole economy, exacerbating the gap between profits compared to capital and profits compared to labor" (National Academy of Politics; p.406). On the other hand, safe jobs and higher incomes will likely increase after technology gradually replaces humans.

Inequality is an essential economic problem and the most significant social problem related to the Industrial Revolution 4.0. The biggest beneficiaries of innovation will be the providers of intellectual and financial capital, namely inventors, shareholders, and investors. This explains why the wealth gap between those who depend on capital and those who depend on labor is growing. Technology is thus one of the reasons for stagnation and even decline in income for most people in high-income countries: the demand for high-skilled labor has increased while the demand for low-skilled and unskilled labor has decreased.

Despite the risks, the opportunities for countries to recognize the shift early will be even more excellent. In that case, the proper training in occupational behavior will bring early capture of opportunities. For example, with farming, in the digital world, the production process of a specific plant is operated digitally, so it will measure which part, which stage, and at what time will have problems to automatically notify the technical staff and the production manager to meet to solve the problem. All professional behaviors and business methods in the digital world and people will change and transform completely. Many professions have appeared, such as creating sensor systems and using existing systems to convert the real world into a digital one. When one knows the social trends of the fourth revolution, the orientation of countries in terms of training and career orientation for each individual will also change accordingly. Specific industries and fields will set their plans and strategies for the next 5-10 years in the context of the world changing into the digital world to continue to exist and develop. Suppose countries in general, and Vietnam in particular, keep their thinking the same and maintain the old way of doing things. In that case, they will face the risk of stagnation, low productivity and product quality, uncompetitive prices, unemployment, and poverty, which will increase shortly.

4.1.2. Sustainable Development Goals

The world has made efforts to implement the Millennium Development Goals for the period 2000-2015, and recently, the United Nations announced the 2030 Agenda with 17 Sustainable Development Goals (SDGs) to be implemented in the period 2016-2030. The 2030 Agenda has been committed to by 189 members of the United Nations, including Vietnam. This program also identifies 169 comprehensive goals, linked and balanced in sustainable development's economic, social, and environmental aspects". Vietnam's sustainable development perspective was first affirmed in Directive No. 36/1998/CT-TW dated June 25, 1998, of the Politburo on strengthening environmental protection during industrialization and modernization. It emphasizes: "Environmental protection is an inseparable basic content in the guidelines, policies, and plans for socio-economic development of all levels and sectors, which is an important basis to ensure

sustainable development and successfully carry out the cause of industrialization and modernization of the country". The viewpoint of sustainable development has been reaffirmed in the Party's documents. The 12th National Congress outlined the general goal for the five years 2016-2021 as: "Comprehensively and synchronously promoting the innovation process; rapid and sustainable economic development, striving to soon turn our country into a modern industrialized country." industrialized country in the direction of modernity" (Communist Party of Vietnam, 2001, p.76). Thus, sustainable development has become the Party's guidelines and viewpoints and the State's policies.

Sustainable tourism: In all new definitions of tourism, the preservation of resources for future generations is mentioned; the use of tourism to contribute to the protection of o environmental protection; limiting negative economic and social impacts and bringing benefits to ethnic people both economically and socially. The World Tourism Organization (WTO) defines sustainable tourism as the "Development of tourism that meets the needs of present tourists and host areas while protecting and enhancing opportunities for the future in ways that meet economic, social and aesthetic needs while maintaining cultural integrity, vital ecological processes, biodiversity, and life support systems" (Vietnam Folklore Association, 2009; p.503). The long-term sustainability of the environment, society, and economy is always considered the primary goal when developing plans and projects for tourism exploitation and development. Relevant departments must fully consider the possible impacts of infrastructure, facilities serving the tourism industry, and the number of tourists on the cultural values, characteristics, integrity, natural environment, and ethnic residents in Binh Duong.

Impacts of tourism: Each locality and region has its strengths, which must be assessed and utilized as a major controlling factor. The impacts of tourism on the folk culture of ethnic groups can be immediate or long-term, insignificant or extremely dangerous. Therefore, it is necessary to grasp these impacts right from the planning stage until the implementation and evaluation of a tourism project. Usually the environmental impacts (land, water resources, flora and fauna...), on the community and culture (the "erosion" of cultural practices until they become meaningless, conflicts arise when the economic benefits of tourism are not distributed evenly, especially when it creates a large gap between rich and poor, social evils...).

4.2. Traditional festivals of ethnic groups in Binh Duong province

4.2.1. Traditional festivals of Vietnamese people in Binh Duong

Traditional Vietnamese here hold annual festivals during the dry season, mainly in winter and spring. Due to the weather conditions here, very few autumn festivals are held. Vietnamese festivals here start from the tenth lunar month to the end of spring.

The traditional festival of the Vietnamese in Binh Duong and Binh Phuoc is called the Ky Yen festival (praying for peace). Some places also call it the "Blossom Praying Festival," but it is commonly called the "Dinh Worship Festival" or "Dinh Ky Yen Worship Festival" and is held twice a year. The festival held in the spring is called Xuan Ky, and the festival held in the fall (winter) is called Thu Bao (Thu Te); some places combine them to open one period. The Ky Yen

worship festival in the two provinces is held at the village communal houses here. In the past, people often considered the village communal house as a symbol representing the existence and development of the village. Any village in the area without a communal house would not have a place to hold a spacious festival. The position of the village in the area could be better. A cultural land must have a communal house, famous people, prosperous businesses, and wealth. The civilization of the Vietnamese communal house is a traditional civilization. A civilization that consolidates the community. This civilization has dramatically influenced the national consciousness of independence and self-reliance. It has positively affected the fight against foreign invaders to protect the country of our ancestors in the past. Traditional Vietnamese festivals are closely associated with the civilization of village communal houses. Therefore, surveying festivals in Binh Duong and Binh Phuoc is only possible by surveying the village communal houses here.

In terms of quantity, according to incomplete statistics, there are currently 83 village communal houses in the two provinces, and annual communal house worship ceremonies are held. This number is unevenly distributed. Through statistics, it is clear that the southern districts of the province have the most village communal houses, specifically: Thuan An City has 37 houses; Tan Uyen City has 19 houses; Ben Cat Town has 16 houses; Thu Dau Mot City has nine houses.

Among these, there are communes with four communal houses, such as Lai Thieu town, Tan Dong Hiep commune, Binh An commune, Tan Binh commune (Thuan An city) or many communes with three communal houses, such as Phu An, My Phuoc (Ben Cat town), Thanh Phuoc (Tan Uyen city) and quite a few communes with two communal houses. Notably, most communes with communal houses here were rebuilt after the war. There are still very few ancient communal houses left from before, such as Tan An communal house, Phu Long communal house, etc.

The annual communal house festival at communal houses in the two provinces is organized according to the ability of the people in the village. Any prosperous village or commune that can mobilize money and repair the communal house to be spacious will hold a big village festival. The village will also hold a big festival in years with good harvests and favorable conditions. The village festival is a buoy that helps us recognize the relationship between the villages and communes.

The communal house festival of the Vietnamese people is organized according to a relatively strict classical process.

The main ceremony, every three years, is held for three consecutive days, according to the schedule.

Day 1: Early morning: the ceremony of asking for the royal decree - asking for the birth; 5 pm: offering the royal decree, asking for the birth; Evening: offering the whole altar.

Day 2: Morning: Hat boi; Noon: Offering to the juniors and fallen soldiers; Evening: Offering the altar.

Day 3: Morning: Hat boi ends the last week. The ceremony will honor the king; the afternoon will be the closing ceremony and the sending of the decree.

The ceremony and the festival in the Vietnamese communal house worshipping ceremony in Binh Duong and Binh Phuoc are not busy but happen simultaneously due to the participation of the original characters, creating a joyful integration that makes the festival atmosphere more lively, flexible, and attractive. In general, the Vietnamese communal house festival in Binh Duong, Binh Phuoc, is a festival that is a flow of traditional Vietnamese festivals that have been around for centuries. Here, a few communal houses (such as Tan An communal house in Thu Dau Mot city) still retain a relatively methodical form of worship with complete and classical rituals. However, through the survey, we see there are issues to consider: Today's communal houses are rebuilt and simplified quite a lot. Therefore, the sacred nature of the ceremony here is reduced. The worship sometimes needs to be more complex. The festival focuses more on empathy than on worshipping the gods; the legendary nature is lost, leaving behind the feeling of everyday work and low persuasiveness and educational effectiveness. Due to their rather heavy conventional nature, some old communal houses remain with repetitive worship rituals, creating a sense of stagnation and sometimes boredom. The Vietnamese communal house festival in the two provinces still has the custom of empathy and awareness of "A piece in the middle of the village." Quickly creating arrangements, positioning of ranks, and prestige in the communal houseyard. This custom can cause other problems for the village, which is unsuitable for the renovation period.

4.2.2. Traditional Festivals of the Chinese

The traditional Chinese festivals here have two main streams. These are the festival streams of the four Chinese states (Guangdong, Chaozhou, Chongzheng, and Fujian) and the festival streams of the Wang and Ly families (Fujian) held annually.

The festival streams of the four Chinese states: Held on the occasion of the Lantern Festival and the Shangyuan Festival on the 15th day of the first lunar month every year at Ba Pagoda (Phu Cuong Ward, Thu Dau Mot City).

- Progress: Starting after the Lunar New Year, the Ba Pagoda festival opened. The climax and ceremony, the most sublime, is on the 15th of the first lunar month. The ceremony ends with the traditional "14th-day procession of Ba's offerings," lasting two to three hours (not including waiting time) on some main streets around Thu Dau Mot market.

Summary of the content and ceremonies at the Ba Pagoda festival: Going to the pagoda, asking for blessings and borrowing money to pay Ba; Auctioning lanterns and carrying Ba's blessings; Carrying Ba's offerings and showing off power.

The above ceremonies and performances with evident national characteristics (cu dance, hau dance, dragon dance, etc.) attract viewers. People who go to the Ba Pagoda festival do not distinguish between their background, gender, ethnicity, religion, dress, enjoyment needs, time. The peak of the Ba Pagoda festival recently reached millions of viewers, and sometimes a local person auctioned a lantern for 40 million VND.

Notable services around the Ba Pagoda festival are making and selling incense, selling refreshments, releasing birds, releasing fish, and parking. Incense-making service is quite an exciting business because, out of millions of people going to Ba Pagoda, 80% of them buy incense.

Each incense stick offered to the pagoda is at least 15 thousand VND (average price in 1996), so the source of income is quite large.

Ba Pagoda festival not only takes place at "Ba Pagoda" (Thien Hau Cung) in Phu Cuong ward but also takes place at "Ta Phung Thien Hau Cung" in An Thanh commune (Thuan An city). The heavenly palace has 8 "charity boxes" placed in the "temple," which are attractive and fascinating. This performance is only available in a few Southeast Asian countries, such as Malaysia and Thailand. It is not found anywhere else. People explain this phenomenon by stimulating the mind to "the threshold" or being too sublimated to the highest level, creating spiritual excitement and reaching courageous and spontaneous "ecstatic" behavior. In general, traditional Chinese festivals can be classified as craft village festivals. The promotion and worshipping nature here are clearly shown in the ceremonies and its services. Specifically, there are the following ceremonies: Borrowing money to pay the Lady, Asking for the Lady's blessing, Auctioning lanterns, and Putting them into the charity fund box. Services include making incense, selling, raising birds, releasing fish, and accompanying advertising. Primarily, the "temple" worships saints who protect their professions. The cultural characteristics of the traditional Chinese festivals contribute to the community by creating spiritual excitement during the festival, helping people to integrate and relax more.

On the other hand, the living customs, dance images, and performances create a joyful and lively atmosphere and helpful entertainment. What should be avoided in this festival flow is asking for fortune-telling, shaking lots, begging services, and some roles of gods (in the skewer dance) taking advantage of gods to "predict" troublesome things that can create superstition. Putting aside the above factors, traditional Chinese festivals are a beautiful feature of cultural activities.

4.2.3. Traditional festivals of the Stieng people

The Stieng people in the old Song Be often organized the following festivals: Rain-praying ceremony (praying to the rain god) at the beginning of the season to burn fields; New rice offering ceremony (Pabakhieu); Tutba rice offering ceremony (rice pruning); Xerhayba rice harvest ceremony. In these rituals, especially the new rice offering ceremony and the rice harvest ceremony, the Stieng people often have the custom of sacrificing animals (killing chickens, pigs, and buffaloes) to worship the gods. In this sacrificial ceremony, there is a buffalo stabbing ceremony (some places call it the buffalo stabbing ceremony), which is quite attractive and attracts the participation of all village members (bon). Along with the gong music and the buffalo stabbing ceremony, the ceremony Sacrifice has become an essential festival of the Stieng people daily.

In this festival, people have elaborate preparations: Soaking wine for months in advance; Choosing a pole and carving patterns on the pole (the buffalo tie) beautifully; Taking good care of the buffalo to sacrifice to the gods; Preparing beautiful clothes to go to the festival; On the festival day, several strong and beautiful boys and girls in the village are selected to dance around the buffalo in a counterclockwise circle to perform the buffalo stabbing ceremony. The buffalo is slaughtered and divided equally among the villagers to celebrate the good harvest.

Some village boys dance together, and some firm and healthy men participate in the "buffalo stabbing" with the village elder (or a prestigious person) elected by the village as the head of the

ceremony. The buffalo stabbing ceremony manifests the spirit of respect for the gods of the Stieng people. The Stieng people kill buffaloes to offer to the gods for protection and protection, expressing their gratitude for giving them a bountiful harvest. In this festival, it is necessary to avoid the dangerous variation of the sacrificial ceremony, which wastes the custom of turning the buffalo to pay off the debt, wastes time, and leaves behind the consequence of famine in the region. In recent years, due to crop failure and famine, people have rarely organized buffalo stabbing ceremonies. In the future, the locality can help the traditional festival of the Stieng people develop by organizing it more reasonably and systematically in a series of activities of ethnic minorities such as dancing, singing, opening gong ceremonies, etc.

4.2.4. Traditional festivals of the Khmer people

The main festival of the Khmer people in the old Song Be province is the Chol Cho Nam Thmay festival, held in April every year after the harvest (from April 13-15 of the lunar calendar in Nha Bich, Binh Long). During this ceremony, people offer new rice, eat flattened green rice, "splash water," and hold a festival to sing and dance Khmer songs to lull their children, express their love, and praise life. In general, the traditional Khmer festival here, compared to other traditional festivals, has limitations due to their living environment. However, they have contributed to the cultural flow of the province with vivacious, skillful, and attractive festival dances.

Binh Duong is a province where many ethnic groups live together. The ethnic groups here have preserved their own cultural identities and contributed to the familiar voice for the locality's unique cultural and artistic features. The traditional festival of the ethnic groups here vividly demonstrates those positive contributions.

4.3. Traditional festivals of ethnic groups in binh duong province in sustainable tourism development

The remarkable development of digital technology and the connection of all things and devices with artificial intelligence and outstanding labor productivity will be favorable conditions for building an intelligent society. "A smart society will be rich in national cultural identity and optimally protecting nature. With the impact and influence of the 4.0 revolution, the boundaries between countries and the national cultural identity of each country are becoming increasingly blurred. Shortly, there will be a trend of unification and internationalization in the cultural field so that the global cultural ecosystem will lose its diversity" (Central Economic Committee, 2017; p.343). Therefore, preserving national cultural identity will become an essential mission. Preserving national cultural identity in sustainable development is a global objective and need identified by UNESCO since the 80s of the 20th century. Cultural institutions, such as museums, cultural houses, etc, will apply high-tech products and have new cyberspace forms to meet people's cultural needs.

Unlimited cultural exchange and integration. Information technology and transportation development have created an increasingly smaller and flatter world; the boundaries between countries and peoples are increasingly blurred. Cultural exchange between individuals, communities, societies, and cultures will be more direct and effective through real and virtual

methods. The remarkable development of digital technology and integrated translation devices will help break down language barriers.

The hyper-connectivity of things will connect digital libraries worldwide, making the search, transmission, and storage of all information much more efficient and convenient. 3D imaging technology will help us preserve cultural heritage, incredibly tangible or intangible cultural heritage, which helps us develop virtual tourism worldwide. This is one of the great opportunities for choosing and absorbing the quintessence of world culture. At the same time, it is an essential opportunity to promote and introduce each nation's culture and cultural identity to the world.

In the context of the impact of the fourth industrial revolution in the cultural field, the problem is to have a mechanism to integrate and preserve national cultural values. Binh Duong is a province with the country's highest dynamic development and urbanization index. The integration process into the supply chain of international tourism is increasingly widespread. In addition to the economic benefits, preserving indigenous cultural values in Binh Duong is highly urgent. Therefore, economic development in harmony with preserving traditional cultural values in Binh Duong requires a suitable strategy and solution.

The system of human resources, human tourism resources refers to the material and spiritual wealth created by humans from ancient times to the present that can attract people to carry out tourism activities. It includes two types: tangible and intangible. These are myths, extraordinary events, historical relics, architectural art, cultural sites, cultural arts, festivals, beliefs, and technological specialties. In addition to the above cultural tourism addresses, Binh Duong is a land with folk festivals imbued with regional culture. It is a place where religious activities take place and where the culture of indigenous residents and immigrants accumulates and passes on throughout history. Binh Duong has the standard features of Southern folk festivals. However, it also has features due to the direct influence of Central and Central Highlands folk festivals and the nuances of cultural communication between those regions. That is also the characteristic of Binh Duong folk festivals. Festivals can be exploited to serve tourism activities, indirectly introducing indigenous culture practically and vividly.

Currently, the exploitation of ethnic folk festivals in Binh Duong is governed by the law of "market economy" or the term "service" in organizing festivals. Organizers pay special attention to "donation boxes" in some festivals, people see that the Management Board pays close attention to whether visitors come to the festival to worship a lot or a little efficiently; they even care more about the "blessing box" than the content and cultural features of the festival to make a profit. Elements of selling gods and saints still appear, along with superstitious elements. For example, the Thien Hau Thanh Mau, looking at the end of most festivals, the prolonged eating and drinking scene has somewhat affected the inherent cultural beauty of the festival.

To develop cultural tourism with the aim of bringing ethnic festivals in Binh Duong province into activities to serve sustainable tourism development, the limiting factors must be thoroughly overcome and eliminated. In addition, there must be synchronous and scientific solutions.

To attract tourists to ethnic community festivals, the festival must be beautiful and have unique cultural values. To do this, in terms of content, the festivals must be carefully prepared and "dramatized" according to the actual value of traditional festivals. Only the real can be long-lasting

and everlasting, both "dramatized" and "staged" to bring tourists and people participating in the festival a spiritual dish with traditional and modern values. Only then can we create attraction, the main reason they come to the festival. Looking at the world, we see this demonstrated. Every year, the Carnival festival on the streets of Brazil attracts millions of tourists. So, what attracts them? That is the attraction of the Carnival festival. This cannot be denied. However, that alone is not enough because that is the necessary condition.

To serve tourism and bring tourists to the festivals of ethnic groups, organizers in the cultural and tourism sectors must coordinate the necessary conditions synchronously and effectively to promote the image of ethnic festival tourism in Binh Duong, it is necessary to promote the festivals. This promotion must be carried out regularly on many media, from traditional promotion channels to new promotion channels on information technology applications and the internet, so everyone knows. At the same time, traditional forms of manual promotion, such as distributing free flyers (in restaurants, hotels, train stations, airports, etc.) where many people travel, should continue to be focused on.

At the same time, conditions such as security and safety for tourists, the issue of a clean landscape environment, and other accompanying physical conditions such as hotels, restaurants, etc., have enough conditions to welcome guests; staff has the attitude and professionalism of service objects. Thus, to develop sustainable tourism, the Binh Duong tourism industry needs to follow a professional direction, ensuring a highly qualified, advanced workforce with knowledge, professional skills, foreign language communication, and an excellent professional attitude to meet the requirements and create motivation to improve the capacity of Binh Duong tourism. Develop Binh Duong tourism in terms of both quantity and quality. Form a chain of links from individual activities to a form of close links to create a safe, closed chain in tour activities. These are the necessary and sufficient conditions for tourists to come to the festival, and they will be the ones who promote and introduce friends and relatives to the festival.

Developing tourism is associated with preserving the cultural heritage of ethnic communities. In Binh Duong province, there are traditional festival activities. Tourism activities associated with the livelihoods of ethnic people develop the economy, ensure income and social security, and preserve traditional cultural values. Economic development is in harmony with the preservation and development of cultural heritages. Cultural heritages are restructured into a multidimensional value system that develops the economy and lasts.

5. CONCLUSION

The Fourth Industrial Revolution had great potential but brought many challenges and risks to Binh Duong province and Vietnam. The fourth industrial revolution is an opportunity for Binh Duong province to quickly grasp, "take shortcuts", and go straight into the fields, taking advantage of scientific and technological achievements to accelerate the development process of economic sectors. At the same time, taking advantage of the deep integration process of a dynamic province with a high development index also creates certain favorable conditions for the tourism industry. However, when linking economic development with the preservation of traditional cultural values

of ethnic groups in Binh Duong province to develop tourism, the path of sustainable development is the decisive factor for harmonious development. Sustainable development is based on applying advanced science and technology, modern governance, and management mechanisms, and it is based on mobilizing all resources to create multidimensional development towards growth in all fields. This will create tourism products with the brand Binh Duong province towards high income, ensuring social security and livelihoods of ethnic residents in Binh Duong.

Today, cultural tourism is the dominant type of tourism because it reflects the development trend of modern tourism. It meets the needs of tourists to learn about cultural values with the purpose of cultural surveys and cultural exchange to expand awareness and enhance knowledge. Currently, many travel companies are focusing on exploiting this type of tourism. Hopefully, the folk festivals in Binh Duong province and the diverse human resources here are attractive destinations for tour organizers and the public. Local authorities and agencies specializing in culture and tourism must develop appropriate strategies for sustainable tourism development in Binh Duong province. That strategy must be closely linked to the subject of Binh Duong land, which is the ethnic communities living here, and linking sustainable economic development strategy with the exploitation and reasonable preservation of traditional cultural values. Protecting and developing cultural diversity, combining economic development in harmony with preserving cultural values of ethnic communities living in Binh Duong province.

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THE ROLE OF BUDDHIST MONASTERIES IN THE DEVELOPMENT OF ZEN TOURISM IN VIETNAM: A CASE OF TRUC LAM ZEN MONASTERY YEN TU

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ABSTRACT

Zen tourism, a niche segment of cultural, spiritual and wellness tourism, has been gaining popularity on a global scale. In Vietnam, Buddhist monasteries are essential in attracting Zen tourists through offering distinctive experiences that focus on meditation, mindfulness, and spiritual retreats. This study aims to explore factors influencing tourists' decisions to participate in Zen tourism activities, especially at Truc Lam Zen Monastery Yen Tu in Quang Ninh province, from there have a better understanding about the drivers behind their choices and tailor offerings of Zen tourism to meet these motivations effectively and sustainably. The study employs qualitative interviews with Zen tourists to provide insights into their motivations, expectations and experiences. Using text mining techniques, the study analyzes interview data to uncover recurring themes and identify factors that affect Zen tourists' choices. The findings seek to provide a deeper understanding of Zen tourism dynamics in Vietnam and offer strategies to promote Buddhist monasteries as Zen tourism destinations.

Keywords: Zen tourism, Buddhist monasteries, tourism development.

1. INTRODUCTION

The origin of Zen Buddhism dates back to the 6th century when Bodhidharma, an Indian teacher of meditation, initiated a mediation-based Buddhist school, in China, called Chan (Hoover, 1980). Bodhidharma advocated meditation and traditional Buddhist practices, which represents Zen in its early stage (Hoover, 1980). Zen teachings and practices spread from China to Japan, then to the West, Europe, and America in the 20th century (Gabrys & Skinner, 2012). Overtime, the incorporation of meditation into tourism has leveraged the foundational Zen teachings and practices to attract tourists who want to experience spiritual enrichment and mindfulness in their travels. Thus, Zen tourism combines tourism - the exploration of places and cultures, with meditation - a practice that promotes one's strength, both physically and spiritually (Tseng & Shen, 2014, Farkic & cs, 2021, Choe & O'Reagan, 2020).

Zen tourism, a niche within wellness tourism focuses on the wellbeing of one's body, mind and spirit (Smith & Puczkó, 2008). Along with the development of the umbrella wellness tourism sector, it has also gained increasing popularity, especially in the forms of retreats and camps hosted by Buddhist monasteries worldwide.

In Vietnam, Zen camps and monasteries also play a significant role in the country's growing Zen tourism niche, with prominent examples of Truc Lam Monastery located in the peaceful setting of Tuyen Lam Lake in Dalat, Truc Lam Yen Tu Zen Monastery in Quang Ninh offering experiences that focus on meditation and mindfulness, and Truc Lam Sung Phuc in Hanoi offering modernized practices including meditation, formal learning, and unique programs such as

Buddhist weddings to appeal to a broader audience. The development of Zen tourism in Vietnam is well supported by national policies that advocate religious freedom, driving both domestic and international tourists to participate in experiences offered by monasteries. To further an understanding of tourists' engagement in Zen tourism activities at monasteries, this study aims to explore specific factors that influence tourists' decisions, with a particular focus on Truc Lam Zen Monastery Yen Tu in Quang Ninh province. From there, the study draws strategies for Buddhist monasteries in Vietnam to enhance their appeal as Zen tourism destinations.

To fulfill the research objective, this study sets out to answer the following research questions:

1. What are the key factors that influence tourists' decisions to participate in Zen tourism at Buddhist monasteries in Vietnam, particularly Truc Lam Zen Monastery Yen Tu?
2. What are the expectations and experiences of tourists participating in Zen tourism at Truc Lam Zen Monastery Yen Tu?
3. What role do cultural and spiritual aspects play in shaping the Zen tourism experience at Buddhist monasteries?

2. LITERATURE REVIEW

2.1. Origins of Zen Buddhism

In the 1st century CE, Buddhist teachers in Central Asia and India traveled along the Silk Road and brought their teachings to China (Gupta et. al, 2017). Overtime, Buddhism established itself in China, but it wasn't until around the 6th century when Zen Buddhism, a distinct branch, arrived on the scene. With a new wave of Indian teachers, including Bodhidharma, Zen Buddhism began to take shape, aiming at the perfection or realization of one's true nature (Nagatomo, 2006). At that time, it was known as "Chan" (禪), a Chinese transliteration of the Sanskrit word "dhyāna," which means meditation. Zen practices focus on achieving a deep state of meditation and experiential knowledge, rather than relying on theoretical or intellectual understanding (Nagatomo, 2006). This reveals the historical roots of Zen Buddhism, where meditation was considered a crucial component of spiritual practice alongside ethical precepts and wisdom (Hershock, 2015).

The transmission of Zen Buddhism from China to Japan took place during the Kamakura period (1185 - 1333) via two main channels. First, Chan mythology, ideology, teachings and rituals were adopted by Japanese monks via texts and traditions brought from China. Second, the establishment of monasteries in Japan was modeled after those in Southern Song China, followed by the integration of Chinese literati culture into Japanese Zen practice, including poetry, calligraphy, and tea etiquette (Foulk, 2022).

In modern times, Zen Buddhism still remains at its core value of practical meditation as a means to achieve enlightenment, adapting these principles to contemporary lifestyles.

2.2. Evolution of Zen Tourism

Two dual phenomena that paved the way for the evolution of Zen tourism are the *Buddhification* of tourism, as when tourists integrate Buddhist practices into their travel, and the

touristification of Buddhism, as when Buddhist institutions seek to extend their influences by drawing visitors to Buddhist sites (Thibeault, 2018; Thimm, 2021). The growing popularity of Buddhism also encourages tourists to consider Buddhist centers and monasteries as enlightenment destinations, where they would go to obtain spiritually tourist experiences (Geary, 2002; Küblböck, 2013). One main focus of these experiences is meditation, one common Buddhist practice that helps practitioners achieve a sense of leisure or similar benefits (Choe et. al, 2014; Thimm, 2021). Meditating in a Buddhist setting, either in a temple or a monastery, brings out an experience of spiritual or physical healing for those who consider themselves mindful travelers (Choe & O'Reagan, 2020; Thimm, 2021). These transformations explain the integration of Zen Buddhism into tourism, shaping a distinctive niche called Zen tourism.

2.3. Truc Lam Zen Monastery Yen Tu

Yen Tu is located in the Northeastern coastal province Quang Ninh, which is roughly 136 km from the capital city Hanoi. Yen Tu has become a new destination that draws both domestic and international tourists since 2018 thanks to the completion of Hanoi-Hai Phong expressway, Hon Gai international port, and Van Don international airport (Goh & Yeoman, 2020). In the 13th century, King-Monk Tran Nhan Tong (1258-1308) founded the first Vietnamese School of Buddhism called "Thien Tong" or "Truc Lam Zen Yen Tu", which is located on the 1,068m Yen Tu mountain and later on formed the Yen Tu Buddhism complex. Rooted in Truc Lam Zen School, Truc Lam Zen Monastery Yen Tu reflects the historical context of Vietnam when Buddhism had a significant impact on shaping social life and cultural identity; at the same time the monastery represents the intertwined interaction between humans and nature, attracting Zen practitioners and pilgrims every year (Różycka-Tran & Tran 2014, Ngoc, 2022).

2.4. Theoretical framework

This research uses Self-Determination theory (SDT), developed by Ryan and Deci (1985), to analyze the motivations of tourists in Truc Lam Zen Monastery, Vietnam. It fulfils the basic psychology needs such as autonomy, competence and relatedness. The theory has been used to explain in spiritual tourism, explaining that people seek for personal development and transformative experiences (Buzinde, 2020). It also uses in wellness tourism, as it helps to explain tourist well-being that they feel relate to the natural environment (Kondja et al., 2024). In addition, people can be motivated for personal growth, through the journey in the Zen Monastery as the competence in the theory (Miner et al., 2013). Moreover, the nature in Truc Lam Yen Tu could provide the environment for tourists to connect with the teaching of Zen Buddhahist, fulfilling the need of belonging. By adapting SDT theory, this study aims to understand the reasons why people choose for Zen practices at Truc Lam Yen Tu Monastery, therefore, understand their motivation, experience and expectation at Truc Lam Zen Monastery.

2.5. Research gaps

While the history and development of Zen Buddhism has been a popular research topic amongst many scholars, there is little research that examines and explores the emergence of Zen Buddhism and tourism. Zen tourism is considered a niche that has great potential but this sector is still underexplored, especially in how Zen philosophies have been transformed within the tourism

industry, and what factors drive tourist engagement in Zen tourism activities. This research aims to fill these gaps by providing an overview of the intersection between Zen Buddhism and tourism and finding out the underlying reasons why tourists seek out Zen experiences, whether to foster spiritual growth, personal wellness improvement, or cultural exploration.

3. METHODOLOGY

3.1. Research design

This research employs in-depth interviews with 10 participants who have personal experience in Truc Lam Zen Monastery Yen Tu. The interview is designed to focus on tourists' motivations, expectations, and experiences when they visit Yen Tu Monastery, from there identifying main themes in their answers. Semi-structured interviews are used to explore the stories of participants while still maintaining common knowledge from previous research (Picken, 2018). This kind of interview is widely used in other research in the field of tourism (Yuksel et al., 1999; Singh, 2017). However, most prior studies have relied on grounded theory, with the interpretivism philosophy to extract thematic themes based on the researcher's perspective. In contrast, this research adopts the positivist philosophy that believes in the evidence by using topic modeling techniques to identify themes directly from the data collected.

Data collection: The data is collected both physically and digitally. The authors visit Yen Tu Monastery to find and interview volunteers who wish to share their experience either through a face-to-face interview or through an online survey via Google forms. The data is transcribed into Excel, with each question shown in one column. All 10 participants will be kept anonymous in this research, and the details of their answers will be translated in English for further data analysis process.

3.2. Textual data analysis

This research uses text mining techniques such as word clouds, network analysis and topic modeling. Word clouds refer to the frequency of words, network analysis identifies the relation between themes or keywords, and topic modeling extracts the underlying themes. Among them, topic modelling, especially Latent Dirichlet Allocation (LDA) is the key method for identifying factors influencing tourist participation in Zen tourism at Yen Tu Monastery by organizing texts into different topics through word co-occurrence (Blei et al., 2003). Furthermore, the social network analysis (SNA) technique visualizes the relationship between key themes and important keywords. The results from the SNA technique can support data-driven decision-making by understanding the link between key themes and identifying gaps in current research. R program is used for performing text mining.

4. DATA ANALYSIS

4.1. Word clouds

The text mining visualized the interviews script in word clouds (see figure 1). It found that Truc Lam Zen Monastery Yen Tu has important value for spiritual and peaceful environment.

Frequently used words include “spiritual”, “monastery”, “zen”- highlighting their importance to visitors. Other terms like “beautiful”, “sacred”, “visit” or “life”, emphasize the significance of the spiritual atmosphere, and sacred environment. Moreover, words such as “enjoy”, “felt” or “trip”, reveal that visitors often share emotional and sensory experiences, suggesting that these aspects are central to the visitor’s narrative. This initial analysis provides a foundation for the deeper analysis, indicating that both spiritual and emotional experience are critical in visitors’ interactions with the monastery.

4.2. Topic modeling

The model has generated 10 topics through LDA techniques as the best characterize the content of 160 lines of answers through the most representative words:

Topic 1: monastery, spiritual, zen, visit, peace, peaceful, felt, teaching, connection

Topic 2: practices, daily, time, tranquility, atmosphere, seeking, reflection, serene

Topic 3: trip, pagoda, family, peaceful, wish, anything, else, holiday, activity, long

Topic 4: place, also, buddhist, year, inner, activities, peace, find

Topic 5: mediation, experience, practice, mindfulness, focus, environment, particularly, deep

Topic 6: place, spiritual, new, mediation, air, often, however, will, fresh, sacred

Topic 7: life, nature, expected, cultural, session, fully, experiencing, thoughts

Topic 8: experience, people, vietnamese, together, architecture, culture, explore, different, buddhism

Topic 9: natural, experience, mountain, hiking, travel, unique, beauty, landscape, expectation, budget.

Topic 10: beautiful, scenery, enjoy, places, sacred, pray, little, feeling, religious.

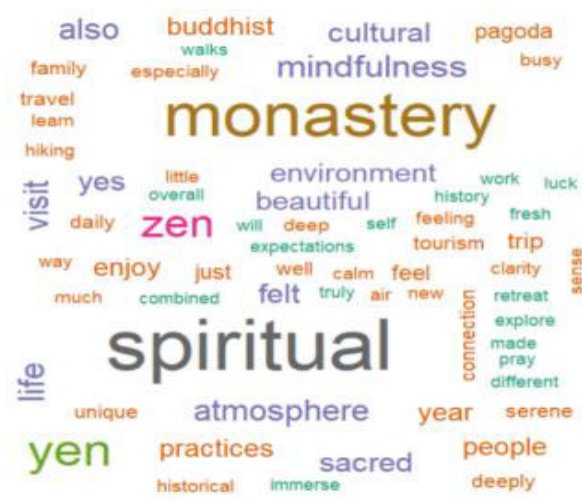


Figure 1. Word cloud for Zen tourism

Topic 1 identifies the Spiritual Monastery, representing the spiritual experience as well as the connections with the peaceful environment. Topic 2 focuses on Zen practices, describing the tourists’ reflection in a serene atmosphere. On the other hand, topic 3 shows the family aspects, often involving group travel. Topic 4 highlights the Buddhist religious role and associated activities. Topic 5 talks about mediation, mindfulness for spiritual and environmental clarity. Topic 6 explains about the unique spiritual journey for the visitors. Moreover, the topics 7 and 8 present nature; one highlights the natural experience while going to the Yen Tu Monastery; they enjoy the beautiful scenery, while another one shows the cultural and architectural aspects of Vietnamese Buddhism. The last two topics focus on the road to the Monastery, they prefer the hiking activities that help them to capture natural and sacred scenery.

Yen Tu Monastery Visitor Responses

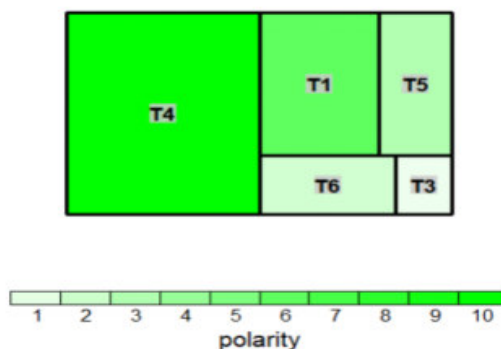


Figure 2. Polarity for the most important topics

The polarity has found the main 5 topics that receive the attention of participants, which are topic 1, 3, 4, 5, 6. We decide to combine all the topics into 5 themes, with the 5 main topics being the central. The 5 themes will be: Spiritual Monastery, Family Visits, Yen Tu Pilgrimage, Zen Tranquility and Natural Culture.

Spiritual Monastery would reflect the deep spiritual and monastic experience that tourists need in Yen Tu, presenting the core spiritual atmosphere of the place. Indeeds, the most important quote of participants in this topic is that “I expected that this would be a sacred, peaceful place surrounded by natural wonders with historical landmarks”, showing that this place is important for them for their spiritual journey.

Family visits focus on the reasons people travel with family, as well as the religious importance of visiting Yen Tu for the family trips. The Yen Tu Pilgrimage shows that this location is an important destination for Buddhist pilgrimages, deeply rooted in Vietnamese spiritual tradition. Zen Tranquility refers to the zen practices and the serene environment that affect visitors’ mindfulness experiences. Finally, the natural culture represents that the natural environment and cultural heritage of Yen Tu are key points for visitors, showing the importance of nature in shaping the overall experience of tourists when they decide to visit Yen Tu.

4.3. Network analysis

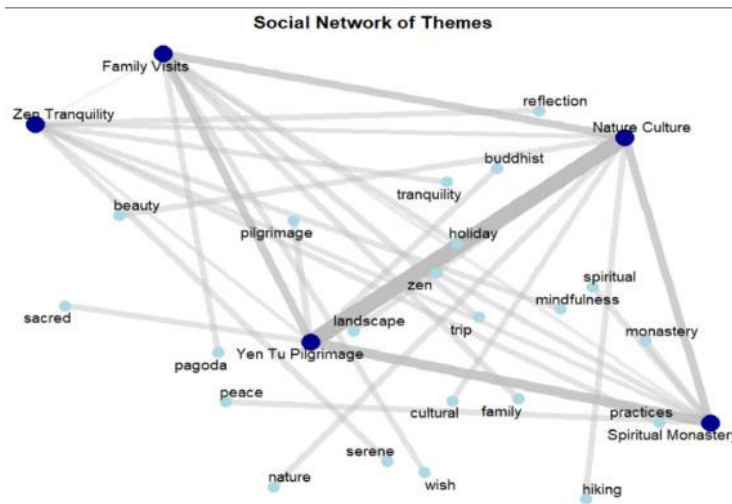


Figure 3. Network analysis of key themes

The topic modeling revealed why people visit Yen Tu Zen Monastery: Spiritual Monastery, Yen Tu Pilgrimage, Zen Tranquility, and Family Visit. The network analysis illustrates the interrelate between themes and associated keywords. Spiritual Monastery is the central theme, associated with the keywords: “monastery”, “spiritual” and “zen”, reflecting the deep spiritual atmosphere toward the visitors’ experiences at Yen Tu. Similarly, Zen tranquility is strongly associated with “mindfulness”, “tranquility” or “practices”, showing that tourists usually go to Yen Tu for their spiritual journey. Family visits have associations with some main keywords such as “pagoda”, “holiday” and “family”. It indicates that the Yen Tu is the family- oriented destination, especially for Tet holiday. In addition, the strong connection between Nature Culture and Yen Tu Pilgrimage suggests that the participants visit Yen Tu for the pilgrimage purpose also choose it because of the nature, making it becomes key factor in choosing Yen Tu over other spiritual sites.

Overall, these themes reveal that visitors perceive Yen Tu because it is combination of spirituality, culture and nature. For instance, people who went to Yen Tu for spiritual purpose usually participate in Zen practices during their visit while Pilgrims appreciate nature surroundings along with their spiritual journey.

4.4. Practical Implication

The findings from this study enhance the Zen tourism at Yen Tu. In detail, the result has identified the reasons why tourists choose to visit Yen Tu and their experience at Yen Tu Monastery, highlighting the importance of natural and cultural elements in engaging tourists in Zen tourism activities. Additionally, tourists choose Yen Tu Monastery as the destination for different purposes, but one important purpose is for family-oriented travels, especially those that happen on holidays. Besides desiring a family bonding time, tourists who come to Yen Tu also look for a satisfying spiritual experience in a natural setting. This finding is supported by previous research, suggesting that natural experience is highly important for the success of spiritual practices (Timothy & Olsen, 2006; Wang et al., 2023).

5. CONCLUSION

It is evident from the study that Truc Lam Zen Monastery Yen Tu plays a central role in promoting Zen tourism in Vietnam and is recognized as a popular tourist destination that serves various interests of tourists, either religious or secular. Among many factors that foster tourists' engagement in Zen tourism activities, especially at Truc Lam Zen Monastery Yen Tu, the study identifies 5 main themes of motivation, namely spiritual monastery, family visits, Yen Tu pilgrimage, Zen tranquility, and natural culture. It reflects 3 key factors that influence tourists' decision to participate Zen tourism include: spiritual enrichment, family orientation and explore natural beauty and cultural heritage. The findings highlight the importance of spiritual enlightenment, natural beauty and cultural significance in shaping an enriching Zen tourism experience for tourists, whether they come to Truc Lam Monastery Yen Tu to seek a spiritual experience, to blend spiritual exploration with family bonding, or to trace back to the historical roots of Zen Buddhism in Vietnam.

Cultural and spiritual aspects significantly shape the Zen tourism experience as the Monastery offer a combination between authentic Buddhist practices and natural environment that aligns with visitors. In other words, the cultural richness of Yen Tu Zen monastery and the natural beauty of the mountain together creates the atmosphere that help to enhance spiritual and emotional fulfilment for tourists.

To further enhance Zen tourism at Yen Tu, it is crucial to offer Zen practices in a setting that integrates natural and cultural elements. Additionally, the importance of family visits and pilgrimage suggests a need to combine Zen practices with family-oriented and spiritual travel, thereby increasing the appeal of Zen tourism. Lastly, the development of Zen tourism should prioritize the preservation of the natural environment and cultural heritage to ensure a sustainable future for this niche market.

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RANKING TOUR OPERATOR USING ANALYTIC HIERARCHY PROCESS: AN EMPIRICAL STUDY

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ABSTRACT

The intangible nature of the tourism service necessitates effective decision-making processes to identify and rank the tour operators in an inquiry-to-book marketplace. Traditional methods of selecting tour suppliers based on solitary criteria are no longer sufficient. Recognizing tour operator evaluation and selection as a multi-criteria decision problem, this study employs the Analytic Hierarchy Process (AHP) to develop a comprehensive ranking methodology. The AHP model was constructed using criteria such as Enquiry Acceptance Rate, Enquiry to Book Conversion Rate, Booked Value, and Destination coverage. Historical data from various tour operators were collected from a marketplace organisation and analysed. The results indicated that the top tour operator achieved the highest rank with a score of 0.83, followed by the second tour operator with a score of 0.79 based on the given historical data set. The study concludes that applying AHP significantly reduces subjectivity in tour operator evaluation and selection, providing a robust framework for optimal decision-making in the tourism industry.

Keyword: tour operator, ranking, market place, Analytic Hierarchy Process, tourism industry.

1. INTRODUCTION

The tourism industry is characterized by intangibility, perishability, inseparability, seasonality, and lack of ownership. Tour operators play a crucial role in this industry by designing, arranging, and offering comprehensive travel packages. Given the increasing competition and diverse customer preferences, the selection of tour operators has become a complex decision-making process. Traditional methods that focus on solitary criteria such as price or reputation are insufficient to capture the multifaceted nature of tour operator performance. This research aims to address this complexity by employing the Analytic Hierarchy Process (AHP) to rank tour operators based on multiple criteria, thereby providing a more holistic and robust evaluation framework.

2. LITERATURE REVIEW

The Analytic Hierarchy Process (AHP) was developed by Thomas L. Saaty in the 1970s as a decision-making technique that structures complex problems into hierarchies of goals, criteria, sub-criteria, and alternatives (Rogova & Lodewijks, 2014). Saaty introduced AHP to address the need for prioritizing alternatives based on pre-specified criteria (Raissi, 2015). Initially proposed in 1971, AHP aimed to solve resource allocation and planning challenges for the military (Agarwal et al., 2014). Saaty's work on AHP has been widely recognized, with its applicability demonstrated

in various fields such as supplier selection, project management, and environmental assessment (Young et al., 2010; Wang et al., 2008; Turğut et al., 2011).

The AHP method involves pairwise comparisons to derive priority scales based on expert judgments (Rogova & Lodewijks, 2014). It has been extensively used in multiple-criteria decision-making scenarios due to its ability to handle qualitative criteria effectively (Yang et al., 2011). AHP has found applications in diverse areas including supplier selection, stormwater management, and bridge risk assessment (Chinda et al., 2013; Azadnia et al., 2013; Guo et al., 2009). The method has been further extended to the Analytic Network Process (ANP) for more complex decision models (Garoma & Diriba, 2014).

Moreover, AHP has been integrated with other techniques like fuzzy logic to enhance decision-making processes (Moradi et al., 2014; Labib et al., 1998). The method has been applied in various industries such as construction, disaster management, and energy systems analysis (Farhan & Fwa, 2009; Battistoni et al., 2013). AHP has also been utilized in software selection, maintenance prioritization, and new product development.

In conclusion, the Analytic Hierarchy Process introduced by Thomas L. Saaty has become a fundamental tool in decision-making processes across a wide range of disciplines due to its ability to structure complex problems, prioritize alternatives, and derive meaningful insights from expert judgments. Its versatility and effectiveness have made it a popular choice for addressing multi-criteria decision-making challenges in both academic and practical settings.

3. METHODOLOGY

3.1. Data Collection

The data utilized in this study was sourced from tour marketplace organization that facilitates connections between travelers and various tour operators from the period 01/01/2024 to 30/06/2024. The dataset encompasses 283 tour operators, each uniquely identified by a Tour Operator ID, operating tours across 118 countries.

Table 1. Description of Dataset Parameters

| Statistic | Booked Value (AUD) | Conversion rate (CR) (%) | Destination coverage (DC) | Accepted rate (AR) (%) |
|-----------|--------------------|--------------------------|---------------------------|------------------------|
| Min | 0.00 | 0.00 | 1.00 | 0.00 |
| Max | 1340247.98 | 0.50 | 24.00 | 1.00 |
| Average | 30693.90 | 0.06 | 2.70 | 0.47 |
| Median | 0.00 | 0.00 | 1.00 | 0.50 |

This extensive dataset allows for a comprehensive analysis of the tour operators' performance and geographical coverage, ensuring robust and reliable findings. The parameters included in the dataset are Tour Operator ID, Acceptance Rate, Booked Value (AUD), Coverage

(Numeric), and Conversion Rate (%). These parameters provide a multifaceted view of each tour operator's operational metrics and market reach.

Table 2. Description of Dataset Parameters

| Parameter | Description |
|--------------------------------|---|
| Tour Operator ID | A unique identifier for each tour operator, ensuring distinct recognition within the dataset. |
| Acceptance Rate | Indicates the proportion of inquiries accepted by the tour operator, reflecting their responsiveness and willingness to engage with potential customers. |
| Booked Value (AUD) | Represents the total monetary value of bookings made through the tour operator, expressed in Australian Dollars (AUD), highlighting the financial performance of the operators. |
| Destination Coverage (Numeric) | Denotes the number of distinct regions or countries serviced by the tour operator, illustrating their geographical reach. |
| Conversion Rate (%) | Signifies the percentage of inquiries that culminate in actual bookings, providing insight into the effectiveness of the tour operators in converting inquiries into confirmed sales. |

3.2. Analysis method

The data analysis was conducted using the Analytic Hierarchy Process (AHP) framework, a systematic and structured procedure designed to facilitate decision-making in complex scenarios. This framework involves a series of methodical steps to ensure a comprehensive and objective evaluation of the tour operators based on multiple criteria derived from the dataset. The AHP framework's robustness lies in its ability to handle both qualitative and quantitative data, making it an ideal choice for this study. The process begins with (1) the construction of a pairwise comparison matrix, followed by (2) the calculation of criteria weights, (3) evaluation of tour operators, (4) normalization of scores, (5) calculation of overall scores, and finally, the (6) ranking of tour operators.



Figure 1. Six steps of ranking operators using Analytic Hierarchy Process

The first step in the AHP framework involves constructing the pairwise comparison matrix. Four criteria were defined based on the given dataset: Acceptance Rate (AR), Conversion Rate (CR), Booked Value (BV), and Destination Coverage (DC).

Expert judgment was utilized to construct the pairwise comparison matrix, with matrix values representing the relative importance of each criterion compared to the others on a scale of 1 to 9, where 1 indicates equal importance and 9 indicates extreme importance (Saaty, 1980). Intermediate values (2, 4, 6, 8) were used for compromises between these values.

Once the pairwise comparison matrix was constructed, the second step was to calculate the criteria weights. This involved normalizing the pairwise comparison matrix by summing each column, dividing each element by the sum of its column, and then calculating the average of each row by summing each row of the normalized matrix and dividing by the number of criteria. The resulting weights reflect the relative importance of each criterion in the overall evaluation process. This step is crucial as it ensures that the decision-making process is grounded in a balanced consideration of all relevant factors, thereby enhancing the robustness and reliability of the analysis.

Following the calculation of criteria weights, on the third step, each tour operator was evaluated based on raw scores against each criterion. These scores, derived from the given data, represent the performance of each tour operator in terms of AR, CR, BV, and DC. This evaluation provides a detailed insight into the strengths and weaknesses of each tour operator relative to the defined criteria, allowing for a nuanced understanding of their operational effectiveness. By systematically assessing each tour operator's performance, the analysis ensures a thorough and objective evaluation.

The subsequent step involved normalizing the scores using the max method. This process entailed identifying the highest score in each criterion using the max function and then dividing each score by the maximum value of its respective criterion. This scaling process ensures that all scores are standardized between 0 and 1, facilitating a fair comparison across different criteria. Normalization is essential as it mitigates the impact of varying scales and units of measurement, thereby ensuring that the evaluation is both equitable and accurate.

Finally, the overall scores for each tour operator were calculated by combining the normalized scores with the criteria weights. This synthesis of individual performance metrics into a single composite score reflects the overall performance of each tour operator. The tour operators were then ranked based on their overall scores, with the highest-scoring operator deemed the top candidate. This ranking provides a clear and objective hierarchy of tour operators based on their performance across multiple criteria. By adhering to this systematic approach, the data analysis provided a comprehensive and objective evaluation of the tour operators, offering valuable insights for stakeholders in the marketplace organization.

4. RESULTS

The criteria for evaluating the tour operators were defined based on the given dataset, encompassing Acceptance Rate (AR), Conversion Rate (CR), Booked Value (BV), and

Destination coverage (DC). Acceptance Rate (AR) is the percentage of inquiries accepted over the total number of inquiries received, indicating the responsiveness of the tour operators. Conversion Rate (CR) represents the percentage of accepted inquiries that resulted in bookings, reflecting the effectiveness of the operators in converting inquiries into actual sales. Booked Value (BV) is the total value of bookings in Australian Dollars (AUD), highlighting the financial performance. Destination coverage (DC) refers to the number of countries covered by the tour operator, illustrating their geographical reach (Table 1).

The pairwise comparison matrix was constructed using expert judgment to determine the relative importance of each criterion. The matrix values, ranging from 1 to 9, represent the comparative significance of each criterion, with 1 indicating equal importance and 9 indicating extreme importance. For instance, AR was deemed moderately more important than CR (value of 3), strongly more important than BV (value of 5), and very strongly more important than DC (value of 7). These values were reciprocated accordingly (Table 3). The calculated sums of each column were used to normalize the matrix, ensuring that the evaluation process is balanced and grounded in a comprehensive consideration of all relevant factors.

Table 3. Pairwise Comparison Matrix

| Criteria | AR | CR | BV | DC |
|----------------------|------|------|------|-------|
| Acceptance rate | 1 | 3 | 5 | 7 |
| Conversion rate | 1/3 | 1 | 3 | 5 |
| Booked value | 1/5 | 1/3 | 1 | 3 |
| Destination coverage | 1/7 | 1/5 | 1/3 | 1 |
| Total | 1.68 | 4.53 | 9.33 | 16.00 |

Normalization of the pairwise comparison matrix involved dividing each element by the sum of its column and then calculating the average of each row to determine the criteria weights. The resulting weights were 0.56 for AR, 0.26 for CR, 0.12 for BV, and 0.06 for DC (Table 4). These weights reflect the relative importance of each criterion in the overall evaluation process, with AR being the most significant and C the least. This step is critical as it ensures that the decision-making process is both systematic and objective.

Table 4. Normalized Pairwise Comparison Matrix and Criteria Weights

| Criteria | Normalized AR | Normalized CR | Normalized BV | Normalized DC | Weight |
|----------------------|---------------|---------------|---------------|---------------|--------|
| Acceptance rate | 0.6 | 0.66 | 0.54 | 0.44 | 0.56 |
| Conversion rate | 0.2 | 0.22 | 0.32 | 0.31 | 0.26 |
| Booked value | 0.12 | 0.07 | 0.11 | 0.19 | 0.12 |
| Destination coverage | 0.09 | 0.04 | 0.04 | 0.06 | 0.06 |

Each tour operator was evaluated based on raw scores against each criterion, derived from the given data (Table 5). For example, Operator 1 had an AR of 1.00, a CR of 1.00, a BV of 0.01, and a DC of 0.04. These raw scores provide a detailed insight into the performance of each tour operator, highlighting their strengths and weaknesses.

Table 5. Subset of Tour Operator's raw data

| Company | Booked Value (AUD) | Conversion rate (%) | Destination coverage | Acceptance Rate |
|-------------|--------------------|---------------------|----------------------|-----------------|
| Operator 1 | 20007.55 | 0.5 | 1 | 1 |
| Operator 2 | 6257.4 | 0.4 | 7 | 1 |
| Operator 3 | 707930.89 | 0.28 | 3 | 0.95 |
| Operator 4 | 39729 | 0.4 | 1 | 0.95 |
| Operator 5 | 56054.38 | 0.31 | 4 | 1 |
| Operator 6 | 101251.37 | 0.33 | 1 | 0.98 |
| Operator 7 | 33831.58 | 0.38 | 1 | 0.92 |
| Operator 8 | 1340247.98 | 0.13 | 24 | 0.83 |
| Operator 9 | 137709.7 | 0.26 | 1 | 1 |
| Operator 10 | 22898.16 | 0.43 | 1 | 0.86 |

The scores were then normalized to facilitate a fair comparison across different criteria. The max method was used to normalize the scores, scaling them between 0 and 1 (Table 6). For example, the maximum values identified were 1340247.98 for Booked Value (BV), 0.50 for Conversion Rate (CR), 24 for Destination Coverage (DC), and 1 for Acceptance Rate (AR). Each raw score was then divided by the maximum value of its respective criterion to scale the scores between 0 and 1 (Table 6).

Table 6. Normalized Scores of Tour Operators

| Company | Normalized AR | Normalized CR | Normalized BV | Normalized DC |
|-------------|---------------|---------------|---------------|---------------|
| Operator 1 | 1 | 1 | 0.01 | 0.04 |
| Operator 2 | 1 | 0.8 | 0 | 0.29 |
| Operator 3 | 0.95 | 0.56 | 0.53 | 0.13 |
| Operator 4 | 0.95 | 0.8 | 0.03 | 0.04 |
| Operator 5 | 1 | 0.63 | 0.04 | 0.17 |
| Operator 6 | 0.98 | 0.67 | 0.08 | 0.04 |
| Operator 7 | 0.92 | 0.77 | 0.03 | 0.04 |
| Operator 8 | 0.83 | 0.26 | 1 | 1 |
| Operator 9 | 1 | 0.52 | 0.1 | 0.04 |
| Operator 10 | 0.86 | 0.86 | 0.02 | 0.04 |

The overall scores for each tour operator were calculated by combining the normalized scores with the criteria weights (Table 7). For instance, Operator 1 achieved an overall score of 0.83, indicating its strong performance across the defined criteria. The tour operators were then ranked based on their overall scores, with Operator 1 emerging as the top candidate. This ranking provides a clear and objective hierarchy of tour operators, based on their performance across multiple criteria.

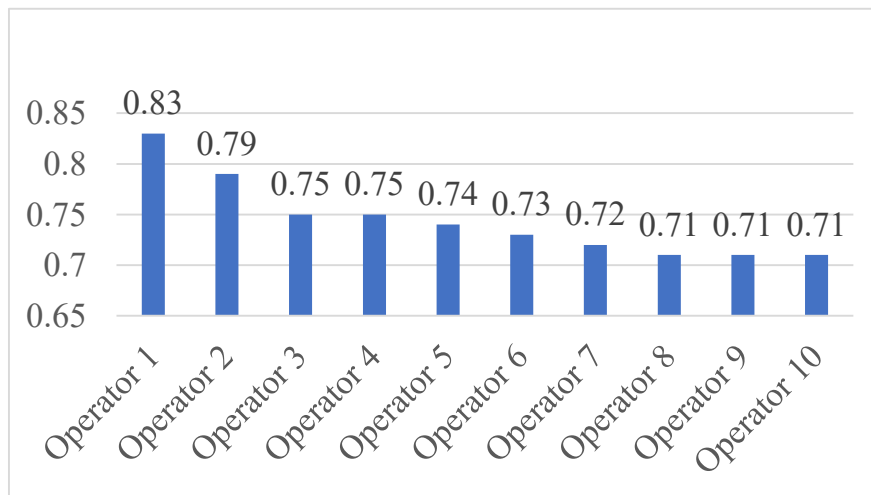


Figure 2. Overall Scores and Rankings of Tour Operators

The final ranking of the tour operators revealed that Operator 1, Operator 2, Operator 3, were the top three operators, with overall scores of 0.83, 0.79, and 0.75, respectively. These results underscore the effectiveness of the AHP framework in providing a comprehensive and objective evaluation of the tour operators. The systematic approach ensures that the evaluation is both rigorous and transparent, offering valuable insights for stakeholders in the marketplace organization.

5. CONCLUSION

The results of this study align well with the established literature on the Analytic Hierarchy Process (AHP). The AHP framework, developed by Thomas L. Saaty in the 1970s, structures complex problems into hierarchies of goals, criteria, sub-criteria, and alternatives (Rogova & Lodewijks, 2014). This study's approach of defining criteria and constructing a pairwise comparison matrix is consistent with Saaty's methodology, which has been widely recognized for its applicability in various fields such as supplier selection, project management, and environmental assessment (Young et al., 2010; Wang et al., 2008; Turğut et al., 2011). The alignment with previous research underscores the reliability and validity of the findings, reinforcing the robustness of AHP as a decision-making tool.

The use of expert judgment to derive priority scales through pairwise comparisons is a cornerstone of AHP, as noted by Rogova & Lodewijks (2014). This study's normalization of the pairwise comparison matrix and calculation of criteria weights are in line with the method's ability

to handle qualitative criteria effectively, as demonstrated in multiple-criteria decision-making scenarios (Yang et al., 2011). The consistency of these steps with previous research strengthens the validity of the findings, confirming that the AHP framework is well-suited for evaluating the performance of tour operators in a comprehensive and objective manner.

Moreover, the application of AHP in this study mirrors its use in diverse areas such as supplier selection, stormwater management, and bridge risk assessment (Chinda et al., 2013; Azadnia et al., 2013; Guo et al., 2009). The integration of normalized scores with criteria weights to calculate overall scores and rank alternatives is a standard practice in AHP, further validating the methodology used in this study. The systematic approach ensures that the evaluation process is rigorous and transparent, offering valuable insights that are consistent with the strengths of AHP reported in the literature.

The findings of this study also support the versatility and effectiveness of AHP as a decision-making tool, as highlighted by its wide application in various industries, including construction, disaster management, and energy systems analysis (Farhan & Fwa, 2009; Battistoni et al., 2013). The ability to structure complex problems, prioritize alternatives, and derive meaningful insights from expert judgments makes AHP a popular choice for addressing multi-criteria decision-making challenges in both academic and practical settings. The results of this study reinforce the established benefits of AHP, demonstrating its applicability in evaluating tour operators.

The proposed AHP model has the potential to significantly impact the tourism industry by providing a structured and systematic approach to evaluating tour operators. By facilitating more informed and objective decision-making, the model can help stakeholders identify high-performing tour operators, thereby enhancing overall service quality and customer satisfaction. The ability to prioritize alternatives and derive meaningful insights from expert judgments can also aid in strategic planning and resource allocation, ultimately contributing to the sustainable growth and competitiveness of the tourism industry.

Despite the robust methodology and significant findings, this study is not without its limitations. One limitation is the reliance on expert judgment for constructing the pairwise comparison matrix. While expert judgment is a cornerstone of AHP, it introduces a degree of subjectivity that could influence the results. Future research could mitigate this by incorporating a larger and more diverse panel of experts to enhance the reliability of the pairwise comparisons.

Another limitation is the scope of the criteria used for evaluation. This study focused on four criteria: Acceptance Rate (AR), Conversion Rate (CR), Booked Value (BV), and Destination Coverage (DC). While these criteria are relevant and significant, they may not encompass all the factors that could influence the performance of tour operators. Future research could expand the set of criteria to include other relevant factors such as customer satisfaction, tour quality, and operational efficiency. This would provide a more holistic evaluation of tour operators.

The dataset used in this study comprises 283 tour operators operating in 118 countries. While this sample size is substantial, it may not be fully representative of the global tour operator market. Future studies could benefit from a larger and more diverse dataset, including tour operators from different regions and market segments. This would enhance the generalizability of the findings and provide a more comprehensive understanding of the tour operator industry.

Additionally, this study utilized a static dataset, capturing a snapshot of the tour operators' performance at a specific point in time. The dynamic nature of the travel and tourism industry means that performance metrics can fluctuate due to various factors such as seasonal demand, economic conditions, and geopolitical events. Future research could adopt a longitudinal approach, analyzing the performance of tour operators over an extended period. This would provide insights into trends and patterns, as well as the impact of external factors on tour operator performance.

The use of AHP in this study demonstrated its effectiveness in multi-criteria decision-making; however, integrating AHP with other decision-making techniques could further enhance the robustness of the evaluation process. For instance, combining AHP with fuzzy logic or the Analytic Network Process (ANP) could address some of the inherent limitations of AHP, such as handling interdependencies among criteria and dealing with uncertainty in expert judgments. Future research could explore these integrated approaches to provide a more nuanced and comprehensive evaluation framework.

In conclusion, the results of this study not only align with but also reinforce the established benefits of the Analytic Hierarchy Process. The consistency of the methodology and findings with previous research underscores the robustness of AHP as a tool for multi-criteria decision-making, making it a valuable framework for evaluating tour operators and other complex decision-making scenarios. The systematic approach adopted in this study ensures a rigorous and transparent evaluation process, offering valuable insights for stakeholders in the marketplace organization.

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RESEARCH AND DESIGN A NUMBER OF UNIQUE SOUVENIR PRODUCTS HUNG KINH PERIOD SERVED THE TOURISM DEVELOPMENT OF PHU THO PROVINCE

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ABSTRACT

Phu Tho is the Land of the Ancestors - the birthplace of the Vietnamese nation. Notably, it is home to the legend of the Hung Kings, which serves as an encyclopedia of cultural life rich in the early national identity, acting as a living museum of the history, culture, and society of the Van Lang and Au Lac periods. Therefore, the research aims to explore the values of traditional culture and the distinctive symbols from the Hung Vuong era to design unique souvenir products with high economic, cultural, and aesthetic value, contributing to the development of tourism in Phu Tho specifically and in Vietnam generally in the context of current integration. The research team employed key methods such as typological analysis, comparison, sociological investigation, and practical application to ensure the arguments are scientifically robust and practically relevant. The results achieved include the design of five souvenir samples that embody the cultural characteristics of the Hung Vuong era.

Keywords: Design, products, souvenirs, Hung Vuong culture, tourism.

1. INTRODUCTION

Folklore from the Hung Vuong era, particularly its legends, serves as an encyclopedia of cultural life rich in national identity from the early historical period, acting as a living museum of the history, culture, and society of the Van Lang and Au Lac periods. The legends of the Hung Vuong era preserve historical events, customs, beliefs, and religions, clearly reflecting the life and culture of the Vietnamese people in the early days of nation-building. This heritage embodies profound cultural values of the Vietnamese ethnic community [1]. Exploring the symbolic values of the Hung Vuong era to design souvenir products will enhance cultural quality, create a distinct Hung Vuong identity, and improve the competitiveness of tourism products. This approach will also lead to solutions for preserving and promoting the value of national heritage, fostering the development of tourism in Phu Tho specifically and in Vietnam generally. The goal of this research is to examine the distinctive symbols of Hung Vuong culture to design souvenir products based on these cultural symbols, providing an effective and feasible way to introduce and promote the cultural values of the nation. This will contribute to a deeper understanding of the vitality of cultural heritage in the spiritual life of the people of Phu Tho, the entire country, and the international community. Discovering the symbolic values from the Hung Vuong era for product design will be a crucial element in stimulating demand and fostering innovation and development in the tourism industry of Phu Tho and Vietnam as a whole.

2. LITERATURE REVIEW

The research group on symbols: The study of symbols is currently a topic of great interest among scientists worldwide. Current research projects not only focus on theoretical aspects but also delve deeply into specific symbols. A notable example of this research trend is the "Handbook of Typical Symbols in Hung Vuong Culture," created by author Trinh The Truyen and the research team in 2020. In this document, the authors concentrated on topics such as: cultural symbols and their potential for tourism product design, a system of symbols characteristic of Hung Vuong culture, and several souvenir products designed based on Hung Vuong cultural symbols. It can be affirmed that this is a comprehensive study of Hung Vuong cultural symbols.

The research group on Hung Vuong period culture: In this group, we mainly survey research works discussing the cultural characteristics of the Hung Vuong era, specifically linked to the Hung Vuong legends. First, there are the literary and folklore research works of researcher Nguyen Khac Xuong, who has conducted field studies, collected, and left behind numerous important books and research projects related to the Hung Vuong legends, such as Hung Vuong Legends (Nguyen Khac Xuong, 1979) and Hat Xoan Phu Tho (Nguyen Khac Xuong, 2008), along with many other works examining the culture and folklore of Phu Tho. Many of Nguyen Khac Xuong's research contributions have played a significant role for research institutes and domestic scholars in clarifying the history of the Hung Vuong era in Phu Tho province. Author Nguyen Vu Tuan Anh, in his book *The Hung Vuong Era through Legends and Myths*, writes about the Van Lang society - a period that has receded deeply into the past - through the Hung Vuong legends related to issues and phenomena in traditional Vietnamese culture and Eastern culture. He aims to demonstrate the logical correlation between these issues and seek the roots of a brilliant civilization that has existed in human history. The book consists of nine chapters, with eight dedicated to discussing prominent legendary stories such as: Banh Chung Banh Day, Con Rong Chau Tien, Phu Dong Thien Vuong, The Legend of Watermelon, The Legend of One Night Pond, and Son Tinh - Thuy Tinh (Nguyen Vu Tuan Anh, 2018).... In addition, there are many books and research works about the Hùng Vương legends, as well as numerous articles and journals such as *Historical Research Journal*, *Literature Journal*, and *Cultural Research Journal*. However, almost all of these books, articles, and research works primarily focus on collecting and analyzing the legendary stories, with very few systematically exploring the symbols within the Hung Vuong legends.

Some notable authors and works on Hung Vuong culture include Vu Kim Bien, who in his book *Introduction to the Historical Site of Den Hung* provides a detailed account of the Den Hung historical site and its tourism services (Vu Kim Bien, 2008). In 2005, the Department of Culture and Information and the Phu Tho Folk Art Association published *Traditional Festivals in the Land of Origin*, which cataloged 30 significant festivals in Phu Tho province. In 2012, the Department of Culture, Sports & Tourism (previously the Department of Culture and Information) and the Phu Tho Folk Art Association revised, supplemented, and published *On the Festivals of the Roots of the Vietnamese Nation*, which provided a comprehensive overview of festivals in the 13 districts and cities of the province, along with some summary articles (Department of Culture, Sports, and Tourism of Phu Tho Province, 2012). This can be considered the most complete collection of festival representations in Phu Tho province related to Hung Vuong culture.

Additionally, Tran Thi Tuyet Mai's study *The Hung Vuong Festival in Community Cultural Life* clarifies the evolution and transformation of the Hung Vuong festival, identifies its important role and position, and proposes ten solutions to preserve and promote the Hung Vuong festival in the contemporary community cultural life (Tran Thi Tuyet Mai, 2013). Overall, research on Hung Vuong culture is quite diverse and rich, demonstrating the strength and strong influence of Hung Vuong culture in the lives of local communities. This represents a truly valuable cultural tourism resource, making it a potential distinguishing advantage in cultural tourism compared to other provinces in the country.

The research group designs souvenir product

Developing souvenir products for tourism is a current issue, yet there are few studies creating unique and appealing local tourism products. Most tourist spots in Vietnam, including Phu Tho, lack distinctive souvenirs to meet tourist demands. For instance, the Binh Thuan provincial government commissioned the Binh Thuan Community College for a project titled "Research on Producing Distinctive Souvenirs for Tourism." Led by Pham Thi Minh Hanh, this 24-month project (from November 2012 to October 2014) focused on creating products inspired by famous local landmarks and natural landscapes, notably the Water Tower, Pô Sah Inur Tower, the Mui Ne sand dunes, Ham Tien beach, and dragon fruit.

The 2014 project at Danang University, titled "Research on Building Danang Tourism Products from Cultural Resources" (Code: DD2014-03-58), led by Tran Thi Mai An, aimed to create unique local tourism products and a distinct brand for Danang. The project not only affirmed the region's rich cultural values but also provided scientific and practical foundations to develop Danang's tourism product system from cultural resources. This initiative seeks to extend visitor stays, increase spending, and enhance the quality and profitability of the city's tourism activities

In Phu Tho, several provincial-level scientific research projects have been implemented to develop souvenir products that reflect the characteristics of the Land of Ancestors. These projects were evaluated and accepted by the Phu Tho Provincial Science Council in 2017. One notable project is titled "Research and Design of Souvenir Products Featuring Hung Vuong Culture to Support Tourism Development in the Homeland of the Ancestors" (Project Code: 12/DT-KHXH&NV.PT/2015), led by Dr. Ha Thi Lich at Hung Vuong University. The project was rated as excellent in terms of the type, quantity, volume, and quality of the products, surpassing the approval criteria and signed contract. It yielded significant economic and social benefits, resulting in the design of 16 unique souvenir models based on Hung Vuong culture, which were produced for testing. Notably, two comic series, "The Legend of Hung Vuong" and "Folktales of the Land of Ancestors," were published and well-received by the public, along with a handbook titled "Symbols of Hung Vuong Culture."

Another provincial scientific project in Phu Tho is "Experimental Production of Souvenir Products Featuring Hung Vuong Culture to Support Tourism Development in the Homeland of the Ancestors" (Project Code: 04/DA-CTUD.PT/2018), led by Dr. Trinh The Truyen at Hung Vuong University. (1) This project ran from April 2018 to August 2020 and focused on producing items using materials sourced from various pottery producers, including Hoa Nga Pottery in Bat Trang village, Gia Lam, Hanoi, and Huu Nhat Pottery in Dao Xa commune, Thanh Thuy district, Phu

Tho. (2) The jewelry products were produced from gold and silver by Minh Nghiem Gold and Silver Workshop in Nong Trang ward, Viet Tri city, Phu Tho province. (3) Additionally, the project team collected and compiled books and comics, with the comic illustrations created by artist Nguyen Quang Hung. (4) The "Warmth of Mother Au Co" silk scarves were designed by researchers Nguyen Thanh Trung and Nguyen Quang Hung, in collaboration with Dat Viet Xanh Investment and Construction Joint Stock Company (Trung Vuong, Viet Tri, Phu Tho).

These studies have generated ideas for distinctive tourism products, creating souvenirs that reflect Hung Vuong culture to support tourism development in the homeland, aligning with visitor preferences and serving educational purposes. In summary, many projects focus on designing souvenir products that embody the cultural identity of different ethnic groups and regions, including Phu Tho. However, for souvenirs featuring Hung Vuong culture to thrive in the market, it is essential to conduct research on policies and mechanisms to propose comprehensive solutions for developing these products based on traditional cultural values, contributing to the preservation and promotion of cultural heritage from the Hung Vuong era.

3. THEORETICAL BASIS AND RESEARCH METHODS

3.1. Theoretical basis

System theory approach: Cultural symbols are systemic; therefore, when studying cultural symbols from the Hung Vuong period, they should not be analyzed in isolation. Souvenirs are a component of tourism products in tourist areas, so these products must align with cultural and tourism characteristics.

Semiotic theory approach: This helps the research team analyze and assess the decorative patterns of the Hung Vuong period as a form of visual sign. It serves as a scientific basis for understanding the linguistic meanings of symbols, decorative patterns, and icons on objects from the Hung Vuong period. This enables the design of highly functional products.

Art morphology theory approach: This aids the research team in clarifying the characteristics of patterns, designs, and symbols on bronze and ceramic items from the Hung Vuong period, thereby exploring their beauty from an artistic perspective for souvenir design.

3.2. Research methods

Typological method:

In Hanoi and the surrounding provinces, especially in Phu Tho, there are many souvenir products displayed in the stalls of businesses and private vendors. These products are extremely rich and diverse, making it essential to classify souvenir products into a systematic framework and product groups. This method helps the research team categorize and select a design sample, which involves painting symbols on ceramic plates.

Comparative, analytical, and synthetic method:

The characteristics of cultural products are fundamental principles in tourism promotion, as contemporary tourism seeks uniqueness and novelty. Each cultural region has its own distinctive

features; therefore, this method helps the research team compare, analyze, and synthesize the values of souvenir products that embody the cultural symbols of the Hung Vuong period.

Field research and immersion method:

The cultural symbol of Hung Vuong has been thoroughly examined by researchers from various perspectives. Therefore, the research group has chosen this method to focus on collecting tangible heritage currently displayed in the Hung Vuong Museum, the Den Hung History Museum, the Vietnam History Museum, and others. This approach aims to comprehensively gather research materials, conduct field research and practical immersion, and then proceed to categorize and classify the findings with a holistic and systematic view of the research topic.

Sociological survey method:

This involves surveying and assessing the cultural quality of souvenir products at historical and cultural sites, particularly at the nationally significant historical site of Den Hung. The aim is to investigate tourists' preferences for souvenirs they like. This method is designed to gather feedback from visitors regarding the design products created by the research group, allowing for adjustments, additions, and improvements to the samples.

Practical method:

This is an essential method for the research group, aimed at establishing a design process, outlining the steps for creating prototypes, and classifying and identifying distinctive cultural symbols of Hung Vuong. The goal is to translate these symbols into a creative design process for souvenir products that hold high economic, cultural, and aesthetic value.

4. RESEARCH RESULTS AND DISCUSSION

4.1. Some advantages and disadvantages

About advantages

Phu Tho Province has a natural area of 3,534.6 km², with 13 administrative units and a population of approximately 1.53 million in 2023. The province has significant potential and favorable conditions for socio-economic development, supported by a rich labor force. It boasts 967 historical sites, of which 324 have been recognized by the state (including 1 special national historical site, 73 national sites, and 250 provincial sites), 30 sites related to Hat Xoan, 5 national treasures, and 650 intangible cultural heritages (311 traditional festivals, 41 exemplary intangible cultural heritages, and 14 national intangible cultural heritages).

Phu Tho has a strategic geographical location conducive to tourism development and a diverse range of tourism resources, particularly cultural tourism that is characteristic of the Land of the Ancestors. Additionally, the special national historical site of Den Hung and the development project for Viet Tri as a festival city have been approved by the Prime Minister, highlighting the focus on preserving and promoting cultural heritage. Thus, Phu Tho has the potential to build and develop a unique tourism brand, "exclusive" to the Land of the Ancestors, centered on cultural and historical tourism products.

About difficulties

The development of cultural industries still faces many shortcomings and challenges. Specifically, the content, form, and products and services within the cultural industry have not fully utilized the unique characteristics of local culture to create distinctiveness, thereby enhancing product value and establishing competitive advantages to attract both domestic and international customers.

Many businesses, companies, and individuals in Phu Tho Province have engaged in designing souvenirs; however, creating unique, attractive, and compelling product samples remains a challenge. The research group conducted a survey on the current situation and demand for souvenirs reflecting Hung Vuong culture at several tourist sites in Phu Tho Province, including the Den Hung historical site, the Green Pearl Island tourist area (Thanh Thuy District), and the Au Co Mother Temple (Ha Hoa District). Despite the diversity in designs, the tourism products lack appeal and competitiveness, failing to fully exploit advantages and potential. Additionally, some designs do not meet aesthetic standards, lack specific criteria, and show inconsistency in color, content, and size.

4.2. Some requirements in product design

Requirements for designing souvenir products

The product design process is a systematic scientific approach that encompasses key issues such as meeting customer needs, competitiveness, cost, and production capability. Therefore, designing souvenirs that reflect Hung Vuong culture must ensure diversification in essential conditions, including design, materials, and styles. In selecting products, attention should be paid to characteristics such as thickness, color, and shape, with designs suitable for materials like wood, bamboo, and ceramics. The characteristics of the product are not merely technical requirements but also represent an artistic creation. It must prioritize three main factors: artistry, convenience, and distinctiveness. All products should undergo artistic design simulations before implementation. The products should be compact and easy to transport, utilizing durable, environmentally friendly materials. The design process should follow clear and systematic steps to ensure scientific rigor. Additionally, it is important to monitor the design process at all stages to promptly adjust any technical errors in the product. Products must conform to the designs in terms of shape, size, color, and imagery that have been thoroughly researched. The designed samples should be unique souvenirs that are not available on the market, reasonably priced, and versatile for various purposes, such as display and daily use, making them appealing to a wide range of customers. When creating souvenirs, three characteristics should be emphasized: the cultural roots of a space, the sacredness of a cultural heritage of the nation, and the expression of local identity. These products should contribute to the development of tourism in Phu Tho Province

Requirements for materials used in product design and prototyping

The materials used must ensure safety, be non-toxic, convenient, easy to use, and diverse in shapes, while also being unique and aesthetically pleasing with high artistic value. Additionally, they must be environmentally friendly. After research, the group has decided to use the following primary materials: paper, ceramics, copper, and wood

4.3. Process

Defining design objectives

The research group has defined the objectives for designing souvenirs that reflect Hung Vuong culture through the goal tree method. The goal tree outlines the overall objectives to be achieved along with the main requirements, highlighting the relationships between the goals and the hierarchy of general and specific objectives. These goals establish consensus among customers, managers, and design team members. The goal tree is designed to include: preparing a list of design objectives (based on systematic studies of symbols and demand surveys), organizing the design objectives into a set of high-level and low-level objectives according to their hierarchy, and illustrating the goal tree to indicate the hierarchical relationships that will support the design process.

The process of designing souvenirs

The research group applies the language of painting to transform the symbolic ideas of the Hung Vuong period into beautiful and highly functional products. Creativity is essential in this process, and to create an attractive product, the following steps must be taken:

Step 1: Research and understand the cultural symbols of Hung Vuong as material for the design process, such as the image of King Hung teaching rice cultivation, Son Tinh and Thuy Tinh, the legend of Hat Xoan, and Thanh Giong.

Step 2: Discuss, propose, and reach a consensus on the idea of building the characters.

Step 3: Sketch the ideas.

Step 4: Design and revise (propose images, colors, and layout of the design).

Step 5: Finalize, print the files, and evaluate the products. The design process aims for beauty, uniqueness, and visual appeal that leaves a strong impression on all audiences.

Implementation process

Proposed method for designing new products

The design process is fundamentally based on the following diagram, outlining the design stages:

Step 1: Sketch the product model

Sketch on A4 paper (or one A3 sheet folded in half). Draw the product on paper, then revise according to preferences, adjusting the layout, patterns, and motifs to achieve the desired design. If necessary, further adjust colors to ensure the paper design closely resembles the actual product, facilitating the implementation for the creators.

Step 2: Create the design model

Build standard symbols and determine the horizontal and vertical proportions of the product images being designed. Propose additional decorative patterns and motifs, ensuring balance and harmony between primary and secondary elements. Depending on the size of the products, choose distinctive colors and design elements that align with aesthetic criteria.

Transfer the sketched model from paper to graphic software (such as Adobe Illustrator, Adobe Photoshop, or Canva). Edit the lines, shapes, shading, and colors of the design to create complete product samples.

Step 3: Finalization

Review the entire product set, examining the key and secondary elements, shapes, sizes, proportions, colors, patterns, and motifs to ensure they align with the sketches. Conduct checks to guarantee quality standards regarding color, content, and size, aiming to create a rich array of products with unique, innovative designs and refined craftsmanship.

Required Outcomes: The completed product must meet the following criteria:

The imagery should be aesthetically pleasing, culturally significant, and diverse in styles, combining ethnic characteristics with modernity.

Colors should be bright and true to the material used.

The production method should be meticulous and skillful (it should not be careless, rushed, or lack attention, as this can lead to product damage and require extensive corrections).

4.4. Research results

Through the research implementation process, the research team successfully designed five product sets that align with the stated objectives. The team established a creative design process, identifying strengths and weaknesses to adjust the products to meet cultural, artistic, and aesthetic requirements. The designed samples met specific standards, exhibiting consistency in color, imagery, content, and size. The design increased the value of the samples using an evaluation tool to accurately verify their alignment with consumer preferences. After completing the design stages, the products ensured technical quality, aesthetic appeal, uniqueness, and exclusivity, without duplicating any other products on the market.

These products were created by trained artists, incorporating thoughtful design, layout, and color decoration to guarantee visual beauty and high aesthetics. The five designed samples achieved high accuracy in form, meticulous execution, and clear, precise illustrations on software, ensuring high aesthetics, attractive composition, diverse styles, and alignment with cultural and tourism aspects.

The team transferred these products to the Management Board of the Hung Temple Historical Site for display, promotion, and trial sales to tourists participating in the Hung Kings' Commemoration and Hung Temple Festival in 2022 and 2023, receiving positive feedback from consumers. Among the five products, the tea box featuring Hung Kings motifs won second place in the tourism product design competition for developing tourism in Phu Tho province in 2019.

5. CONCLUSIONS

In the context of current international integration, designing souvenir products that reflect national cultural characteristics to promote tourism is both necessary and urgent. The design of souvenirs for tourism plays a vital role in the development of Phu Tho province, contributing to the dissemination of the culture and people of the Land of Origins to various regions across the country and to international friends, showcasing professionalism, comprehensiveness, and uniqueness. Facing fierce competition from souvenir products of other countries in the region, Phu Tho province has determined that enhancing its brand, promoting its image, and focusing on the reputation of culturally rich souvenirs from the Land of Origins is essential. Alongside

preservation, these heritages must be effectively utilized to create economic, cultural, and social values, motivating and providing resources for the community to join in preserving the cultural heritage of the nation.

In addition to the economic benefits that souvenir products bring, the implementation of research and design of souvenirs characteristic of the Hung Kings period by the research group has significantly contributed to introducing and promoting the sacred land and the origins of the nation to both domestic and international tourists, thus contributing to the development of tourism in Phu Tho province and the entire country.

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SOUVENIR PRODUCT SAMPLES HAVE BEEN DESIGNED



Sample disc image of Saint Giông



Tea box with rice pounding pattern



Sample image plate Nine-tusked elephant, nine-spurred chicken, nine-red-haired horse

SUSTAINABLE RURAL TOURISM DEVELOPMENT: INTERNATIONAL EXPERIENCES AND LESSONS FOR VIETNAM

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ABSTRACT

Developing sustainable rural tourism is becoming an important goal in the development strategies of many countries worldwide. Rural tourism plays a crucial role not only in boosting the local economy but also in preserving culture and protecting the environment. Vietnam, with its many beautiful natural landscapes and rich cultural and historical heritage, has great potential for developing rural tourism. This study is built on practical experiences from countries that have successfully developed sustainable rural tourism, such as Japan, Thailand, China, France, and New Zealand. The aim is to provide a comprehensive view of development strategies and draw lessons that can be applied to Vietnam. The study employs analytical and comparative methods to collect and evaluate data from documents, reports, and previous research on sustainable rural tourism models in several countries. Based on the study results, lessons learned are proposed for Vietnam to develop sustainable rural tourism and harness its inherent potential. These lessons include enhancing local community involvement, preserving traditional culture, enhancing the quality of tourism products, improving infrastructure, digital transformation, and formulating appropriate supportive policies. Applying these lessons and strategies from the research will help Vietnam not only develop rural tourism effectively but also protect the environment and ensure long-term economic and social development.

Keywords: sustainable development, rural areas, rural tourism, Vietnam.

1. INTRODUCTION

Today, tourism is increasingly developing and asserting its important role in the global economy, especially as countries strive to pursue sustainable tourism development. Among the various types of tourism, rural tourism is prioritized in the economic and social development strategies of many countries. According to the United Nations World Tourism Organization (UNWTO), rural tourism not only creates job opportunities and promotes economic development in rural areas but also significantly contributes to the protection of natural resources and the preservation of local cultural heritage (Choi & Sirakaya, 2005). The development of sustainable rural tourism not only helps protect the environment but also promotes cultural preservation, improves the lives of communities, and reduces development gaps between regions (Lane, 2009).

Sustainable rural tourism is a form of tourism in rural areas that aims to maintain and preserve natural, cultural, and social resources for future generations while bringing economic benefits to local communities. According to Smith & Richards (2013), sustainable rural

tourism provides important benefits in improving the quality of life for local residents. By developing tourism activities based on existing cultural and natural values, people in rural areas can utilize these resources to generate additional income, thereby reducing dependence on traditional economic sectors such as agriculture. Sustainable rural tourism strategies need to consider the needs of host communities, the environment, local suppliers, and tourists (Bramwell, 1994).

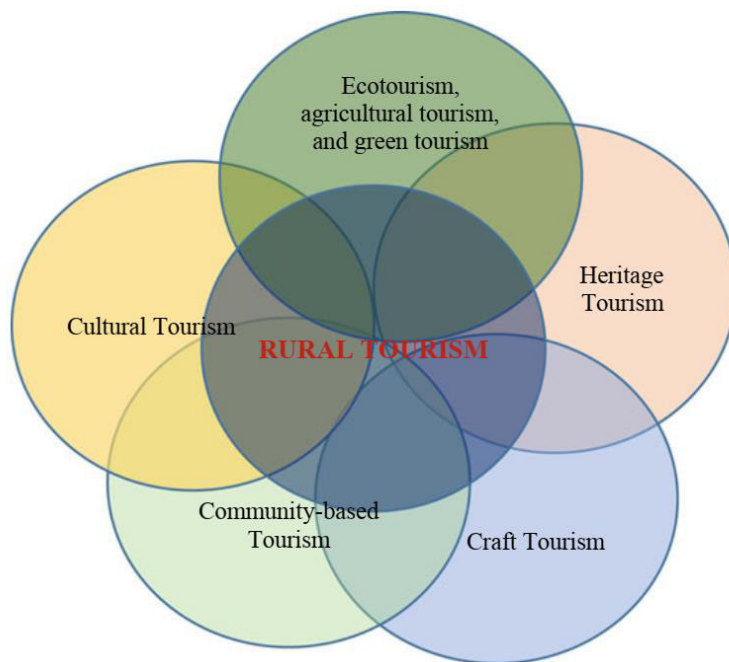
Many studies emphasize the importance of sustainable rural tourism, not only in improving the lives of residents but also in its ability to bridge the development gap between urban and rural areas. Investing in tourism infrastructure and service development in rural areas not only boosts the local economy but also provides unique tourism experiences closely tied to the natural and cultural values of each region (Lane & Kastenholz, 2015). Additionally, sustainable rural tourism plays a crucial role in environmental protection and biodiversity conservation by promoting responsible tourism activities and raising awareness about environmental protection and the preservation of local cultural values among both tourists and local communities (Bramwell & Lane, 2011; Lane & Kastenholz, 2015; Sharpley, 2009). The growing interest in this tourism trend is also noteworthy.

Vietnam, with its diverse natural and cultural resources, stands before a valuable opportunity to develop sustainable rural tourism. However, to effectively harness this potential, it is necessary to learn from successful models in other countries and develop strategies that are tailored to the local context. This paper will assess international experiences in sustainable rural tourism development, drawing valuable lessons for Vietnam to promote the sustainable development of rural tourism, thereby contributing to cultural preservation and environmental protection.

2. LITERATURE REVIEW

2.1. Principles of sustainable rural tourism development

Sharpley and Roberts (2011) and Lane (2009) define rural tourism as a form of tourism taking place in rural areas with the following characteristics and activities: (i) tourism activities taking place in the countryside; (ii) based on the exploitation of natural and human resources in rural areas; (iii) connecting with people living in rural areas; and (iv) small-scaled buildings and settlements (Figure 1). Figure 1 shows that rural tourism is like an umbrella with the intersection of different types of tourism that take place in/involve rural areas. Therefore, it, sometimes, causes confusion with other terms such as ecotourism, agritourism, or agrotourism, farm tourism, agrotourism, heritage tourism, and adventure tourism. Indeed, rural tourism is a complex and multifaceted activity (Do Thi Diep & Pham Bao Duong, 2023).



Source: Do Thi Diep & Pham Bao Duong (2023)

Figure 1. Structure and components of rural tourism

In recent years, the development of sustainable rural tourism has become a significant field of study as countries around the world seek to leverage tourism potential in rural areas to promote economic development while protecting the environment and preserving the unique cultural characteristics of each locality. Sustainable development is seen as a comprehensive, systematic process aimed at improving the quality of life by adjusting the supply and maintenance of resources in a sustainable manner. This development must also ensure social equity and environmental protection, enabling both current and future generations to meet their needs and improve their quality of life (Podovac & Jovanović Tončev, 2016).

Studies on sustainable rural tourism have expanded significantly, focusing on a holistic approach that balances environmental protection, economic development, and social sustainability. According to Lane (1994), sustainable rural tourism is a form of tourism in rural areas that aims to maintain and preserve natural, cultural, and social resources for future generations while bringing economic benefits to local communities. Sharpley (2000) pointed out that sustainability in rural tourism development is about not causing damage to the natural environment while ensuring economic and social development for the local community. Sharpley & Roberts (2004) emphasized that sustainable rural tourism must meet key criteria such as environmental protection, local economic development, and the maintenance of traditional culture.

Sustainable tourism today is recognized as an approach to managing tourism that strives to minimize harmful impacts while maximizing benefits (Bramwell, 1994). Research by Sachaleli (2023) has shown that sustainability is becoming increasingly important, especially in rural tourism, where there are many opportunities to implement smart and energy-saving technologies. Sustainability is not only becoming a trend but also a competitive advantage in rural tourism

development. Tou Noer & Helmi (2022) highlighted that sustainable rural tourism development involves the effective use of environmental resources while preserving natural heritage and biodiversity. This includes respecting the cultural and social authenticity of local communities and ensuring economic and social benefits for all stakeholders.

Research by Spenceley (2012) indicated that community-based tourism can create employment opportunities and stable income sources for rural communities while helping to preserve cultural heritage and natural resources.

Overall, researchers on sustainable tourism development focus on the sustainability or unsustainability of economic, cultural-social, and environmental aspects (Choi & Sirakaya, 2005; Gartner, 2004; Julianti Tou & Noer, 2022). This is important for identifying solutions to address unsustainable aspects in the tourism development process of each locality. Additionally, some scholars have pointed out that the attitudes and perceptions of local residents, tourists, their support, and participation are also emphasized for sustainable rural tourism development (Choi & Sirakaya, 2005), or the involvement of local residents in policy planning for sustainable rural tourism development (Blancas, Lozano-Oyola, Gonzalez, Guerrero & Caballero, 2011; Šimková, 2007). Scholars also believe that managing and developing sustainable rural tourism requires the participation of tourism partners and collaboration in tourism (Streimikiene & Bilan, 2015), as cooperation is confirmed to bring benefits to stakeholders through joint efforts (Hwang et al., 2002).

Therefore, sustainable rural tourism development for a destination focuses on three main factors:

Economic sustainability: income, number of jobs created, income generated for the community, consumption of local products, etc.

Cultural-social sustainability: reducing social problems, providing employment, restoring cultural and historical values, raising awareness about preserving and promoting cultural and heritage values, etc.

Environmental sustainability: protecting the living environment, preserving rare and precious flora and fauna, preventing deforestation, and environmental pollution, etc.

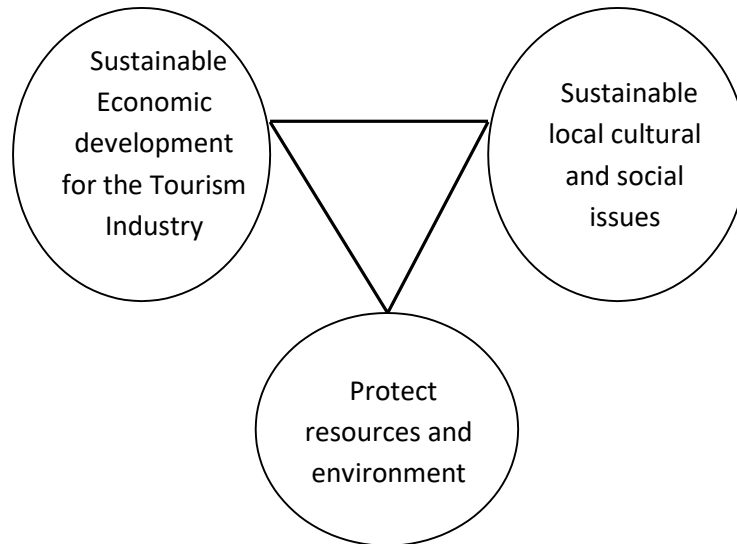
Sustainable tourism, according to Leković, Tomić, Marić & Ćurčić (2020), not only involves activities but must also maintain the satisfaction levels of tourists. Moreover, some studies have developed scales to measure residents' attitudes towards sustainable tourism, emphasizing the importance of community participation and support in sustainable tourism development (Choi & Sirakaya, 2005; Lu & Nepal, 2009).

Sustainable rural tourism development is increasingly becoming an important trend, not only exploiting the economic potential of rural areas but also protecting and promoting local cultural and environmental values.

2.2. Criteria for Assessing Sustainable Rural Tourism Development

Through the analysis of the above sustainable development studies, the work of sustainable tourism development includes three main aspects with specific goals. These three main aspects include:

1. Sustainable economic development in the tourism industry.
2. Sustainable economic development linked to promoting social progress and equity while preserving and promoting local cultural values.
3. Sustainable economic development related to the protection of natural resources, development of renewable resources, and environmental protection.



Source: Stauffer-Korte, 2014

Figure 2. Sustainable tourism development contents

There are many experts and organizations conducting research on different sustainable tourism assessment criteria, but all aim to ensure three main pillars: Economics, Social-cultural aspects, and Environment, with different measurement scales.

In general, the evaluation criteria of different authors and organizations still adhere to the three main pillars of sustainable development: Economy, Society, and Environment. Most studies emphasize the importance of creating sustainable income from tourism, supporting local businesses, and fairly distributing economic benefits from tourism. This reflects a consensus on the important role of tourism in promoting economic growth in local communities.

The analysis highlights the importance of protecting natural resources and sustainably managing the environmental impacts of tourism. Measures such as reducing pollution, sustainably using resources, and encouraging renewable energy use are strengths of these indicators.

Indicators from organizations like UNWTO (2020) and GSTC (2024) are very specific and detailed in implementing sustainability principles, particularly regarding the rights and welfare of local communities as well as environmental protection. This makes the criteria understandable and directly applicable in practice.

| Criteria | Butler & Hall (1998) | Sharpley (2009) | Lane & Kastenholz (2015) | Robinson & Carson (2016) | UNWTO (2020) | GSTC (2024) |
|-----------------|--|--|--|--|---|--|
| Economic | Developing local businesses Strengthening the market for local products Distributing economic benefits from tourism to the community | Creating sustainable income from tourism Supporting the development of small and medium-sized enterprises Encouraging investment in tourism infrastructure | Local economic growth Diversification of income sources Percentage of reinvestment from tourism into the local community | Developing community-based tourism models Creating jobs for local residents Strengthening links between economic sectors | Creating stable jobs and income Supporting the development of local businesses Fair distribution of economic benefits | Encouraging community participation and benefits Ensuring fair and safe working conditions for workers |
| Social-cultural | Preserving local culture Encouraging public participation in tourism activities Improving social infrastructure | Ensuring the rights of the local community Enhancing education and awareness of sustainable tourism Preserving cultural and historical heritage | Community participation in tourism management Preserving and promoting cultural values Creating job opportunities and training for local people | Strengthening community cohesion Preserving intangible cultural heritage Ensuring the rights and welfare of local people | Preserving and promoting local culture Local community participation Education and awareness-raising | Respecting and preserving cultural values and local heritage. Cooperating with indigenous communities and protecting their cultural rights. |
| Environmental | Reducing pollution from tourism activities Protecting natural resources Encouraging the use of renewable energy in tourism | Protecting ecosystems and natural environments Applying measures to mitigate the impact of tourism Developing green and sustainable tourism activities | Protecting natural landscapes and biodiversity Sustainable management of natural resources Minimizing negative impacts from tourism on the environment | Protecting local ecosystems Sustainable use of water resources Minimizing negative environmental impacts from tourism | Protecting natural resources Waste management and energy consumption Reducing environmental impacts from tourism | Minimize the use of energy, water, and effectively manage waste. Conserve the natural environment and biodiversity, protect ecosystems and endangered species." |

3. METHODOLOGY

This research is the result of a literature review using a qualitative descriptive approach with relevant studies on sustainable rural tourism. Gathering materials related to the research objectives and discussions, such as reports from international organizations, scientific articles, and case studies from countries closely related to issues and key factors in sustainable rural tourism were used. The focus of the research includes tourism, sustainable rural tourism development, and sustainability measurement indicators, using qualitative descriptive analysis.

4. RESULTS AND DISCUSSION

4.1. Experiences from Some Countries Around the World

Japan: Japan is considered as one of the pioneering and most successful countries in developing sustainable rural tourism with the Satoyama Initiative. This initiative was designed to restore and maintain traditional rural ecosystems where humans and nature coexist harmoniously. Satoyama represents not only an ecosystem but also a sustainable development model in which agricultural, forestry, and tourism activities are carried out in a way that protects the environment and respects local cultural values (Takeuchi, 2010). Visitors to Satoyama regions have the opportunity to experience rural life in Japan, participate in agricultural activities, and learn about the balance between humans and nature (Duraiappah, 2012). Moreover, the Japanese government has implemented various policies to support the development of sustainable rural tourism, including providing funding to preserve natural landscapes in rural areas, supporting small and medium-sized tourism businesses, and investing in modern and synchronized transportation infrastructure, which is a key factor contributing to overall success (Kadoya & Washitani, 2011). Additionally, there are policies that encourage community participation in tourism management and development. Local communities in Japan play an important role in preserving culture and protecting the environment in rural areas. Local residents not only participate directly in tourism activities but also contribute to the maintenance and protection of traditional cultural values (MacDonald & Jolliffe, 2003). Community involvement in decision-making related to tourism development is a favorable condition for environmental protection and the sustainability of rural tourism activities.

China: China focuses on implementing many national programs to promote sustainable rural tourism development as part of its poverty reduction and rural development strategy. The Chinese government has introduced policies to provide financial support to rural areas for infrastructure development, human resource training, and the promotion of tourist destinations. With a diverse range of rural tourism types, China offers many options for tourists, meeting diverse customer experiences. One successful model of rural tourism development in China is agricultural and traditional village tourism, where tourists participate in activities such as harvesting and caring for crops in agricultural villages and experiencing traditional handicraft cultures in localities. Additionally, China focuses on developing community-based tourism models and key national rural tourism villages rich in culture and tourism resources. Local communities are involved in managing and operating tourism services, thereby increasing income for the population (Xu, Zhang, & Tian, 2017). Furthermore, these tourism models contribute to the preservation of traditional customs, allowing tourists to experience local culture in an authentic and close manner (Li & Hunter, 2015).

Thailand: The government has made a long-term policy to encourage investment in rural tourism development in the model of farms or closed villages with full services for tourists. Since 1997, rural tourism has developed quite rapidly, attracting many domestic and international tourists. In its tourism development strategy, Thailand has focused on developing tourism infrastructure, products, and services. Besides, the training of human resources who are the actors

involved in the management and development of tourism activities is considered an important factor for the development of tourism in Thailand (Choibamroong et al., 2011).

Malaysia: With rich and melting pot of multicultural and biodiversity, Malaysia has great potential in rural tourism. Both Peninsular Malaysia and East Malaysia have the best ecotourism destinations in the region. Malaysia is blessed to have the UNESCO branded rural destinations such as Kinabalu Park, Gunung Mulu National Park and Archaeological Heritage of the Lenggong Valley. The rural tourism concept in Malaysia has been integrated with other tourism concepts such as sustainable tourism, indigenous tourism, ethnic tourism, agrotourism, ecotourism, farm tourism, cultural tourism and heritage tourism. Malaysian Homestay Experience Programme was launched in 1995 with the aim of encouraging the rural communities to venture into the tourism sector by offering community based tourism (CBT) products or services to the local and international tourists. The purpose of the program is to share the daily lifestyles, the festivals, the customs and the cultures owned by the rural community while maintaining and preserving the unique identity and heritage for the future generations. The key factors to success for rural tourism development in Malaysia are as: (1) good policies support from government; (2) Human capital capacity development; (3) Good partnership development – engaging with the industry players, NGO, travel agents (local and international); (4) local communities engagement; (5) Empowering rural homestay entrepreneurs.

France: France is renowned for preserving cultural heritage and developing sustainable rural tourism. The villages and rural areas of France are preserved almost intact, not only in terms of architecture but also in cultural values and customs (Daugstad & Kirchengast, 2013). Tourists visiting France can experience a wide range of cultural tourism activities, from visiting historical sites and participating in traditional festivals to enjoying local cuisine. The French government has introduced several policies to encourage local community participation in rural tourism development. These policies include providing funding for community-led tourism projects, supporting small and medium-sized enterprises, and developing training programs in sustainable tourism management. The active participation of local communities has helped preserve traditional cultural values and ensure that the benefits of tourism are fairly distributed within the community.

New Zealand: New Zealand is one of the world's leading countries in developing eco-tourism. With its stunning natural landscapes and rich ecosystems, New Zealand has developed eco-tourism as a key strategy to protect the environment and attract tourists. Eco-tourism activities in New Zealand include visiting nature reserves, experiencing indigenous cultures, and participating in environmental protection activities. Eco-tourism has become an integral part of the country's sustainable economic development strategy. A robust legal framework is one of the crucial factors that have helped New Zealand succeed in developing sustainable tourism. The New Zealand government has established strict regulations to protect the environment and ensure that tourism activities do not harm the ecosystem. In addition, the involvement of indigenous communities, especially the Maori, has played a significant role in managing and developing eco-tourism. Indigenous communities not only participate in preserving cultural values but also benefit from tourism through tourism-related business and service activities.

4.2. Empirical Evidences in Rural Tourism Development from Vietnam

Vietnam has geographical conditions with mountains, forests, natural conservation zones and 54 ethnic groups with many festivals and traditional craft villages. Tourists are mainly from urban areas, so they need to find a difference in rural areas. Seventy percent of the 1,300 tourist destinations nationwide are located in rural areas, and rural tourism has many different types (MARD, 2022).

According to the Ministry of Agriculture and Rural Development (MARD), there are three main models of rural tourism: agri-tourism with experiential tourism products in cultivation, animal husbandry, floriculture, or horticulture. Community-based tourism involves activities linked to the traditional culture, especially ethnic minorities. The eco-tourism model is developed based on forest and sea ecosystems, and if the model is developed, Vietnam's tourism industry will have new lines of ecological products (MARD, 2022).

Since 2010, the national target programme for new-style rural areas has supported localities in infrastructure construction to create beautiful landscapes and contribute to cultural conservation in rural areas. It forms the potential to develop rural tourism.

According to the MARD's statistics and the Ministry of Culture, Sports and Tourism, 365 rural tourist destinations have different models. Localities recognise 36 community-based tourist destinations with at least three-star certificates, including 18 in the North, such as Hoa Binh, Yen Bai and Tuyen Quang, and 18 locations in the Centre and the South, such as Dong Thap, Ben Tre, and Lam Dong. In the past, especially before the COVID-19 pandemic, rural tourism grew strongly, especially in localities with ecological landscapes and culture, such as Son La and Hoa Binh, with many community-based tourism models (MARD, 2022).

Currently, many localities in Vietnam exploit their strengths in traditional cultural values, agricultural production activities, local specialties, natural landscapes, festivals, traditional craft villages, cuisine... to serve visitors. Some tourism activities interwoven with other types of community, cultural, ecological, craft village tourism... are especially strongly developed in the Northern midland and mountainous region, the Mekong Delta, and the Central Highlands. A number of tourism villages are evaluated and recognized according to OCOP criteria, ASEAN standards, World's Best Tourist Villages...

Developing rural tourism is one of the solutions and key tasks of the National Target Program on New rural construction program for the period 2021–2025, on the basis of changing the mindset from agricultural production to rural economic development, contributing to supporting localities to effectively and sustainably implement the new rural construction criteria. Emphasizing the importance of tourism for sustainable development in rural areas, the Prime Minister issued Decision No. 922/QĐ-TTg approving the Rural Tourism Development Program in the New Rural Construction Phase 2021–2025 with four basic contents: (i) Building a database and a digital map of rural tourist attractions nationwide; (ii) Investing in the development of rural tourist spots in association with the implementation of new rural construction criteria; (iii) Developing rural tourism products with regional and regional characteristics; and (iv) Developing human resources in the tourism industry and local human resources in rural areas (Prime Minister of Vietnam, 2022).

4.3. Lessons for Vietnam in Sustainable Rural Tourism Development

Firstly, Improving the government's development policies

Vietnam can learn from China and other countries by creating and promulgating a system of appropriate policies that can be applied for all activities of the tourism industry in general, and rural tourism in particular. This can be done through policies that provide financial support, develop infrastructure in difficult rural areas, and invest in education and training for human resources in tourism management, protection, the management mechanism of consuming products, rights and responsibilities of enterprises, of local communities, and of the government as well. Additionally, developing community-based tourism models will help promote local community involvement in managing and benefiting from tourism activities, thereby improving living standards and preserving indigenous culture.

Secondly, balancing development and conservation in rural areas

Vietnam can develop initiatives similar to Satoyama in areas with high ecological and cultural value, such as the Northwest, Central Highlands, and Mekong Delta. This includes preserving traditional farming methods of ethnic minorities while integrating them with eco-tourism and cultural experiences. Encouraging community participation in these activities will not only help preserve culture but also create sustainable income sources for local people.

Thirdly, preserving cultural heritage in combination with tourism development

Vietnam can apply this model by promoting the preservation and development of cultural heritage in rural areas, such as traditional craft villages, historical sites, and folk festivals. The government can support by establishing policies that encourage local community participation in managing and developing tourism activities. This will not only help preserve unique cultural values but also create stable income sources for local people through tourism activities.

Fourth, diversifying tourism products

The increasing and diverse needs of tourists require to have specific and diversified tourism products to increase the attractiveness and uniqueness of their destinations. Based on the characteristics of specific tourism products and tourism resources of each locality, it is needed to build specific tourism products to attract tourists to rural areas. Thus, specific and diversified tourism products development have contributed to the success of the countries and tourism destinations in satisfying the needs of tourists and developing rural tourism.

Fifthly, training and improving the quality of human resources

The training and enhancement of human resources quality play a fundamental role in the sustainable development of rural tourism, contributing to the successful implementation of the New Rural Development Program in the countryside. The theory and experience of the world and Vietnam also show the important role of human resources involved in the process of managing and developing rural tourism activities. In particular, the National Target Program on new rural construction program for the period 2021–2025 associated with the Rural Tourism Development Program has also identified one of the four basic contents as training and developing participating human resources (Do Thi Diep & Pham Bao Duong, 2023).

Sixthly, enhancing local community engagement

The engagement of the local community in rural tourism development plays a vital role in any country or territory. Local communities have a strong influence on tourism products (Hall et al., 2005). To achieve a sustainable effect, the local community (specifically the households living in the area where the tourism activity is being carried out, who are committed to participating in the activity) is a key component of any strategy or tourism development program. Then, empowering local community involvement in rural tourism development is key issues and should be addressed in future.

Finally, enhancing digital transformation.

The pandemic has accelerated the development of services on digital platforms, so the ministry has proposed the Government support for standardising information about tourism destinations on such platforms. Vietnam also needs to build a database on community-based tourist destinations as many international visitors want to search for information about tourism in Vietnam. Digital transformation will provide complete information about tourist destinations and rural tourism products.

5. CONCLUSIONS

This paper has analyzed sustainable rural tourism development from various countries around the world, including Japan, Thailand, Malaysia, China, France, and New Zealand. These experiences highlighted the necessity of maintaining a balance between economic development, environmental protection, and the preservation of traditional social-cultural values. International experiences also emphasized the importance of active local community participation, the supportive role of government, and the establishment of policies and regulations aimed at protecting natural resources.

For Vietnam, it is essential to adopt and adapt these experiences to develop sustainable rural tourism. The goal is not only to preserve and promote cultural and natural resources but also to provide a stable income for rural communities. This will contribute to improving the quality of life for people and support the nation's sustainable development goals, especially in the context of international integration and responding to climate change. Implementing the right strategies will help Vietnam harness the potential of rural tourism, promote sustainable socio-economic development, and simultaneously protect the environment and cultural heritage for future generations.

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DEVELOPMENT OF WELLNESS TOURISM ASSOCIATED WITH HOT MINERAL SPRINGS IN HOA BINH, VIET NAM

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ABSTRACT

This article examines the potential and opportunities for developing wellness tourism associated with hot mineral springs in Hoa Binh Province in Vietnam. Hoa Binh is renowned for its abundant hot mineral springs, which are valuable for health improvement and relaxation for tourists. The article analyzes the natural, cultural, and economic factors of Hoa Binh to determine the feasibility of developing this type of tourism. The article also proposes specific solutions to effectively exploit the potential of hot mineral springs while protecting the environment and developing wellness tourism. Through this, it aims to diversify tourism types and enhance the quality of wellness tourism services in Vietnam.

Keywords: Wellness tourism, hot mineral springs, Hoa Binh.

1. INTRODUCTION

Tourism and travel are considered two leading sectors in creating jobs and making significant contributions to socio-economic and cultural development on a global scale (McCabe and Qiao, 2020). However, these two sectors are also more vulnerable to external factors and changes, such as the global financial crisis in 2008, SARS outbreak in 2003, and most recently the pandemic of COVID-19 (Ma & cs, 2020; Lee & Chen, 2021). COVID-19 started in Wuhan, China, then quickly spread out to different regions across the world, putting strict restrictions on people's mobility and ability to travel. However, the pandemic also raises people's concerns about health and safety, which leads to a growing interest in pursuing a wellbeing recovery through wellness tourism (Buckley & Cooper, 2022). Wellness tourism was already a booming niche before the pandemic, but as people explored wellness activities at home during lockdown, this sector has bounced back even stronger and continues to serve the interests of health-conscious tourists during post pandemic period (Wayne & Russell, 2020; Choe & Giovine, 2021).

To respond to the increasing demand for wellness tourism, many regions as well as tourism and hospitality institutions in Vietnam have adapted their model by leveraging Vietnam's rich natural resources that are suitable for wellness tourism development. One prominent resource is the diversity of natural mineral water with crucial benefits in healing, relaxation, and medical treatment (Vietnam National Authority of Tourism, Ministry of Culture, Sports and Tourism, 2024). Among many sources for mineral water in Vietnam, Hoa Binh province is blessed with many mineral springs located in various areas and communes, namely Thuong Sung, Kenh Ga, Kim Boi, Sao Bay Xom Denh, etc. (To & cs., 2023). Thus, wellness tourism in Hoa Binh is characterized by its massive reserves of mineral water, especially in the form of hot springs.

By gathering data from relevant studies and conducting in-depth interviews with experts in wellness tourism and ecotourism, this research seeks to explore the potential and feasibility of developing wellness tourism associated with hot springs in Hoa Binh province. The research analyzes the current development status of this tourism sector by addressing the following research questions:

1. What factors impact the development of wellness tourism associated with hot springs in Hoa Binh province?
2. How does the development of wellness tourism associated with hot springs impact the socio-economic and cultural development in Hoa Binh?

2. LITERATURE REVIEW

2.1. Wellness tourism

In the modern era, especially after Covid-19, tourists' preferences are shifting from leisure activities to tourism activities that can bring health benefits. While "healthy" refers to physical health and "spiritual" refers to mental well-being, wellness tourism encompasses both these aspects (Institute of Regional Sustainable Development, 2023). Though it is hard to have a concrete definition of what wellness tourism is and what other aspects its scope covers, wellness tourism is considered a form of tourism that integrates the improvement of both healthcare and mental well-being through physical, mental, or spiritual tourism activities (Smith & Kelly, 2006). From a broader perspective, tourists engaging in tourism activities for the purpose of entertainment, relaxation, or health improvement are considered wellness tourists. However, this definition is too general and does not support governments and businesses in promoting wellness tourism. Thus, more concrete and specific definitions of wellness tourism have been proposed to serve different purposes.

There are three ways to define wellness tourism and medical tourism, emphasizing the interconnectedness between these two forms of tourism. Medical tourism refers to tourists who visit countries rather than their own to look for intensive medical services, including surgeries and treatment, that do not require strict legal supervision. On the other hand, wellness tourism refers to noninvasive activities that help improve both physical health and mental health of tourists such as yoga, meditation, and spa. Another way to look at these two terms is to consider both of them the subsets of the umbrella term "health tourism" because medical services, indeed, include wellness services and vice versa. Thus, there is not necessarily a significant distinction between medical tourism and wellness tourism. (Nguyen Van Dinh, 2021).

2.2. Wellness tourism associated with hot springs in the world

According to the Global Wellness Institute (GWI), wellness tourism, valued at \$639 billion in 2017, is projected to reach \$919 billion by 2022, with Asia leading in both volume and revenue. This tourism sector not only enhances tourists' physical and mental well-being through natural treatments, particularly hot springs, but also provides significant health benefits such as improved circulation and stress reduction. Countries like Japan, South Korea, and Hungary exemplify

successful wellness tourism models centered around hot springs, integrating traditional therapies with modern health practices. For instance, Japan's Onsen model attracts millions annually, while Hungary combines mineral baths with medical treatments. In Vietnam, hot spring destinations like Thanh Tan and Binh Chau are emerging, combining bathing with spa therapies, showcasing the potential for developing wellness tourism through sustainable resource exploitation and a focus on holistic health services

3. METHODOLOGY

This research paper employs document analysis and in-depth interviews with experts to assess the potential and opportunities for developing health tourism related to hot springs in Hoa Binh province in Viet Nam. The study synthesizes and analyzes relevant literature on health tourism and natural, cultural, and economic characteristics of Hoa Binh to identify the factors influencing the development of this type of tourism. Through in-depth interviews with experts in the tourism field, the study identified the opportunities and challenges in developing health tourism in Hoa Binh. This approach provides a comprehensive view of the potential for exploiting hot springs and developing sustainable health tourism in the region

4. RESULT

4.1. Current status of hot mineral springs in Hoa Binh

Hoa Binh is a mountainous province located amongst other Northwest provinces of Vietnam, and is about 70 kilometers from Hanoi capital. With a total area of roughly 4,590 square kilometers and a rich culture with different minority ethnic groups, the province is also blessed with a variety of natural resources. In terms of mineral resources, there are about 124 mines, producing a variety of minerals, including coal (found in Kim Boi, Lac Thuy, Yen Thuy, Lac Son, and Da Bac) as well as iron, copper, antimony, gold, pyrite, barite, fluorite, phosphorite, kaolin, and asbestos (found in Da Bac, Kim Boi, Ky Son, and Hoa Binh). The province is also rich in construction materials, namely sand, brick clay, cement clay, limestone, tiles, quartzite, dolomite, and talc (found in Ky Son, Luong Son, Kim Boi, and Lac Thuy). Hot mineral water sources are also found in many different areas across the province, particularly in Kim Boi, Lac Son and other locations (Hoa Binh Provincial People's Committee, 2017).

With the availability of mineral water sources, the occurrence of hot springs in Hoa Binh is mainly shaped by two factors. First, tectonic movements create pathways for geothermal waters to surface. The province's topographical and geological structure with fault lines have created favorable conditions to facilitate this process (Zhou et al. 2023). Second, the province's mountainous landscape also contributes to the recharge of hot springs. As rainwater falls and seeps into the ground, it is heated by geothermal activity deep below the surface (Yongprawat, 2020).

In 2023, the Hoa Binh province welcomed over 3.95 million tourists, reaching 126.4% compared to the same period last year and achieving 113% of the annual plan. Among 3.95 million tourists, the number of domestic tourists was dominating and accounted for 3.5 million tourists, while the number of international tourists was roughly 450 thousand. The total revenue from

tourism recorded was 4,016 billion VND which achieved 111.1% compared to the same period last year and reached 103% of the annual plan. These impressive numbers have proved that tourism in Hoa Binh has fully recovered from the pandemic and is experiencing significant growth. The recovery of tourism in Hoa Binh was supported by various tourism campaigns organized at both provincial and local levels in communes such as Mai Chau, Kim Boi, Luong Son, and Tan Lac (Hoa Binh Department of Culture, Sports, and Tourism, 2024). Through these campaigns, the province presents potentials for developing different tourism models, focusing on community-based tourism as a sustainable path to preserve ethnic cultures while still promoting the brand “wellness destination” associated with hot springs (Hoang, 2022).

Wellness tourism in Hoa Binh, especially wellness tourism associated with hot springs, offers a blend of health benefits and recreational activities that cater to both physical and mental well-being. Sources of mineral water were found mostly in Mo Da village, Ha Bi commune, Kim Boi district a long time ago, and have been extracted for both drinking and hot springs bathing purposes. Besides Kim Boi, mineral water sources are also found in Lac Son with other tourism resources. More specifically, hot springs are found in Doi Thung, located over 1,000 meters above sea level with the signature beauty of terraced fields and natural landscape. Hoa Binh province aims to leverage Lac Son's resources to make this district the region's leading wellness tourism spot by 2030 (Le, 2024). With the availability of mineral water sources, several resorts have been built around these hot springs, with the most prominent examples being Kim Boi Serena Resort, V Resort, and Satoyama Village Hoa Binh. These resorts offer a variety of wellness services, including hot springs bath and onsen bath, which bring therapeutic benefits such as relaxation and rejuvenation (Erfurt-Cooper & Cooper, 2009). Other services include hydrotherapy, herbal treatments and other oriental medicinal practices aiming at enhancing overall health and wellness (Chen & cs, 2013).

Under the leadership and attention of the Provincial Party Committee, People's Council, and Provincial People's Committee, infrastructure and technical facilities for tourism development have received investments and undergone upgrades. For the period 2021-2025, Hoa Binh province has issued a decision to allocate 352.5 billion VND for tourism infrastructure projects, including upgrades in historical sites, cultural heritage sites, and tourism services in local communes. Investments have also been drawn to Ha Bi commune, Kim Boi district where mineral water sources were found, especially investments for urban and resort tourism projects. These projects mainly include golf courses, luxury eco-tourism resorts, entertainment complexes and cable cars in communes such as Binh Son, Tu Son, Vinh Tien, Du Sang, Cui Ha, Sao Bay, and Nuong Dam (Hoa Binh News, 2024).

4.2. The potential for wellness tourism development

Hoa Binh possesses valuable natural resources, most notably hot mineral springs, offering the potential for developing wellness tourism. The market demand for wellness tourism is on the rise, particularly as people become increasingly aware of the importance of maintaining physical and mental well-being. According to a report by the Global Wellness Institute (2022), the global wellness tourism industry is growing at an annual rate of 7.5%, with its value expected to surpass USD 1.2 trillion by 2025.

In Vietnam, this trend has begun to flourish, especially as tourists increasingly prefer wellness experiences combined with relaxation. The potential target audience for wellness tourism in Hòa Bình includes individuals with medium to high incomes, particularly those living in major cities such as Hanoi, where the fast-paced lifestyle and high work pressures create a demand for spaces dedicated to relaxation and energy restoration. Internationally, wellness tourism is also growing, especially in countries with advanced wellness cultures such as Japan, South Korea, and European nations. Hòa Bình can tap into this potential by developing hot spring therapy packages combined with traditional Vietnamese treatments like massages, acupuncture, and natural herbal remedies (Linh Trang, 2023).

International customers, in particular, can be attracted by promoting premium wellness tourism products aimed at travelers seeking unique experiences. Studies have shown that in the post-COVID-19 context, the demand for wellness tourism has surged as travelers are more focused on improving their overall health through wellness retreats that combine physical and mental rejuvenation (Yeoman, 2021). By targeting these customer segments, Hòa Bình can optimize its resources and develop wellness tourism in a sustainable manner.

Developing wellness tourism in Hòa Bình brings numerous positive economic and social impacts, but it also poses challenges related to environmental protection. Economically, wellness tourism has the potential to generate significant revenue for the region through increased visitor spending on related services such as accommodation, dining, and wellness activities. According to research by the Vietnam National Administration of Tourism (2020), tourists participating in wellness services at tourist destinations can spend 1.5 to 2 times more than regular tourists. Moreover, the growth of this sector contributes to job creation and improved income for local residents, particularly in service industries such as hotels, restaurants, and spas.

Socially, wellness tourism can enhance the quality of life for local communities by providing access to high-quality healthcare services. Additionally, local communities will benefit from skill development programs aimed at improving tourism services, thereby increasing their capacity and income. However, alongside these benefits, potential negative social impacts, such as lifestyle changes and the loss of cultural identity, need to be carefully considered and managed (Hall, 2008).

Environmental impacts are also a critical factor in the development of wellness tourism. Unregulated exploitation of hot mineral springs could lead to resource depletion and adverse effects on the natural environment. Research by Erfurt-Cooper & Cooper (2009) has indicated that, without proper environmental protection measures, tourism activities in hot spring areas can lead to water pollution, ecosystem disruption, and soil erosion. Therefore, developing wellness tourism in Hòa Bình must go hand in hand with conservation efforts, such as water-saving practices and wastewater treatment in resorts following international standards.

Hoa Binh has significant potential for wellness tourism development, particularly with its advantage of hot mineral springs. Kim Boi has become well-known on the national tourism map for its thousand-year-old hot mineral water rich in health benefits. The quality of tourism products has been greatly improved, and the number of visitors to these sites has increased significantly in recent times. Moreover, Kim Boi is attracting interest from many businesses and investors in developing urban, tourism, and service projects. With the construction of key transportation routes like the regional link road, the area has enormous potential to create breakthroughs in tourism (Linh

Trang, 2023). Within Vietnam, Quang Hanh (Quang Ninh) and Binh Chau (Ba Ria - Vung Tau) are two notable areas that have successfully developed wellness tourism based on hot mineral springs. Notably, the Yoko Onsen Quang Hanh Resort has become a popular destination thanks to its combination of Japanese architecture and advanced therapies, attracting both domestic and international tourists.

5. DEVELOPMENT FOR WELLNESS TOURISM IN HOA BINH

Policy and regulatory framework

To sustainably develop wellness tourism in Hoa Binh, it is essential to establish appropriate policies and regulatory frameworks. Government and international organization support plays a crucial role in the development of wellness tourism, especially in developing countries (Hall, 2008).

The local government should issue clear regulations on the management of natural resources, especially hot mineral springs, to avoid over-exploitation and ensure sustainable development. Moreover, tax incentives and financial support policies for investors in the wellness tourism sector will facilitate attracting investments into this field.

Infrastructure development

Infrastructure development is indispensable in promoting wellness tourism in Hoa Binh. Health and wellness infrastructure, including therapy centers, spas, and other wellness services, should be equipped with modern technology and a professionally trained staff to provide the best experience for visitors (Global Wellness Institute, 2022).

There needs to be significant investment in transportation systems connecting Hanoi and major cities to Hoa Binh to facilitate tourist access. In addition, resorts, hotels, and spa facilities should be constructed and upgraded to meet the growing demands of tourists.

Marketing and promotion strategies

Marketing and promotional strategies play a vital role in attracting tourists to Hoa Binh. Effective digital marketing campaigns can help boost brand recognition and attract a significant number of tourists from international markets (Daniel William & cs, 2023).

The local government and tourism businesses need to collaborate in building the brand "Hoa Binh Wellness Tourism," highlighting the advantages of hot springs and unique wellness services. Promotional activities should be carried out through various channels, including digital media, social networks, and international tourism fairs.

Community involvement and capacity building

According to the World Tourism Organization, community-based tourism not only creates job opportunities for locals but also encourages them to become protectors of the region's natural and cultural resources (UNWTO, 2020).

Local community involvement is key to the development of wellness tourism in Hoa Binh. The sustainable community-based tourism model has proven effective in generating economic benefits for local people, improving livelihoods, while preserving and promoting traditional

cultural identities. To achieve this, capacity building for the community is necessary. Training programs related to service skills, tourism management, and wellness care should be widely implemented for local groups. This will not only boost the confidence of local people in providing professional services but also ensure that wellness tourism in Hoa Binh develops sustainably and long-term. Moreover, involving locals directly in tourism development offers them access to stable income sources, thereby improving their quality of life and contributing to the overall development of the area.

Capacity building for stakeholders, including small businesses and NGOs, is also a crucial part of the development strategy. Local authorities and international organizations can support by providing training courses and workshops on sustainable tourism management, business skills, and the development of specific wellness tourism products. These activities will ensure that both the community and stakeholders are equipped with sufficient knowledge and skills to meet the growing demands of the wellness tourism sector.

Sustainability and environmental considerations

Ensuring sustainability and environmental protection is a critical factor in the development of wellness tourism in Hoa Binh. The exploitation and use of hot mineral springs must be scientifically and sustainably managed to avoid harming natural resources. Research by Erfurt-Cooper and Cooper (2009) emphasized that hot mineral resources, if not properly managed, could be depleted, leading to serious environmental issues such as water pollution, ecosystem destruction, and soil erosion.

Therefore, the development of hot spring tourism in Hoa Binh must adhere to international environmental protection standards, ensuring the efficient use of water and energy resources, and applying advanced wastewater treatment technologies. Resorts and wellness centers should be designed with eco-friendly principles, using sustainable building materials and implementing measures to minimize negative impacts on the surrounding natural environment.

Another key aspect of ensuring the sustainability of wellness tourism in Hoa Binh is the maintenance and development of natural and cultural conservation areas. Wellness tourism should not only focus on the physical aspect but also emphasize harmony with nature and local culture. Tourist sites should establish environmental protection rules and encourage visitors to participate in conservation activities, raising awareness about environmental protection and contributing to preserving natural landscapes for future generations (Hall, 2008).

Additionally, sustainable tourism development should include periodic environmental impact monitoring and evaluation. Local authorities should establish mechanisms for inspecting and evaluating the effectiveness of environmental protection measures, while encouraging tourism businesses to adopt green standards and international sustainability certifications such as Green Globe or EarthCheck. This will not only protect the environment but also enhance the reputation and quality of wellness tourism services in Hoa Binh, attracting more tourists interested in sustainable tourism from around the world (Global Wellness Institute, 2022).

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MARKETING OF TOURIST ATTRACTIONS IN PU LUONG, THANH HOA PROVINCE, VIET NAM

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ABSTRACT

Destination marketing is an essential factor in the development of sustainable tourism, not only in Vietnam but also at global tourist destinations in the context of integration. This also helps demonstrate the competitiveness among different destinations. The study proves the role of destination marketing for destinations, tourists, and travel businesses. Using theoretical research methods, expert interviews, analysis, and synthesis, the study proposed a model of destination marketing factors and assessed the current state of destination marketing in Pu Luong, Thanh Hoa through two survey points: Don Village and Hieu Village. Based on the analysis, the study proposed five main groups of solutions for destination marketing in Pu Luong, including target market, image, destination brand, promotion and tourism marketing, people, and tourism infrastructure.

Keywords: Tourist destination, marketing, destination marketing.

1. INTRODUCTION

Pu Luong Nature Reserve (Thanh Hoa) is one of the most attractive ecotourism destinations in Vietnam, famous for its diverse natural landscapes, rich ecosystems, and unique cultural identities of ethnic minorities. However, due to the impact of the COVID-19 pandemic, the tourism industry has gone through a difficult period and is currently in the process of recovery. Therefore, tourism destination marketing is an urgent task to highlight the advantages of Pu Luong, create outstanding differences compared to alternative destinations, and at the same time promote the image and update the fastest tourism information to visitors. At present, Pu Luong needs to analyze the current situation, survey the accessibility of visitors as well as propose effective destination marketing solutions to attract visitors and develop sustainable tourism.

According to statistics from the Thanh Hoa Department of Tourism, the number of tourists to Pu Luong has decreased significantly from 2020 to 2022. Hotels, restaurants, and other tourism services are facing the situation of not being able to welcome guests again and some establishments have had to close temporarily or permanently. This not only affects the local economy but also reduces the quality of services and the experience of tourists.

Despite facing enormous challenges, Pu Luong still has many opportunities to recover and develop tourism in the period. Destination marketing is not simply advertising but also the process of building and managing destination brands, and creating unique and different tourism experiences while ensuring tourist satisfaction. This study aims to assess the current status of

tourism destination marketing in Pu Luong, thereby proposing solutions to improve the effectiveness of marketing activities, attract tourists, and promote sustainable tourism development.

2. LITERATURE REVIEW

2.1. Some concepts

Tourism

There are many definitions of tourism to strengthen the source of information in this field. According to the Law on Tourism of Vietnam 2017, in Chapter I, Article 3, Clause 1, tourism is defined as activities related to human trips outside the place of permanent residence for no more than 01 consecutive year, to meet the needs of sightseeing, relaxation, entertainment, learning, exploring tourism resources or combined with other legitimate purposes (National Assembly, 2017).

According to the 2017 Law on Tourism of Vietnam, tourism is an activity related to individuals leaving their usual place of residence for no more than 01 consecutive year, for sightseeing, relaxation, entertainment, learning, exploring, or combining with other legitimate purposes. This includes trips to meet the needs of sightseeing, relaxation, entertainment, learning, exploring tourism resources, or combining with other legitimate purposes. Nguyen Hoang Dong (2020) also expressed the view that tourism is an activity in which people leave their usual place of residence, subject to the influence of cultural - social, economic, and environmental factors. Thus, tourism is not only a journey to discover new lands but also an interaction between people and the surrounding living environment, creating unique and rich experiences.

Tourist destination

A tourist destination is a distinct geographical area that is capable of attracting tourists through the provision of rich tourism services and resources. There are many different ways to define a tourist destination: Leiper (1995) emphasizes that it is a place where tourists choose to stay to satisfy their personal needs. Cooper et al. (1998) focus on the service provision aspect, considering the destination as a place with facilities and services that meet the needs of tourists. The World Tourism Organization (UNWTO) defines this as a space where tourists stay at least one night, with typical tourism products, services, and resources. Nguyen Van Manh (2007) emphasizes the factors of geographical, political, and economic borders, and the ability to attract tourists. Nguyen Thi Quynh Huong (2020) expands the definition by considering destinations as areas that depend on tourism income and have many attractions. In short, a tourist destination is an area that can attract and satisfy the needs of tourists through diverse services and resources.

Marketing

Marketing is a term that refers to activities that promote and convey the value of products to customers. According to Philip Kotler, the father of modern marketing, marketing is the process by which individuals and groups obtain what they need and want through creating, offering, and freely exchanging products and services of value with each other. Simply put, marketing is the act of conveying messages about products and services closer to customers, based on strategies and

solutions suitable to the actual situation, so that customers can access and use those products and services.

Tourism destination marketing

Destination marketing is a comprehensive management strategy that focuses on attracting tourists to a particular place through a variety of activities such as raising awareness, building an attractive image, and implementing diverse communication campaigns. The main objective of this strategy is to encourage tourists to choose the destination, spend locally, and return in the future.

There are different approaches to defining tourism destination marketing. Pham Hong Chuong (2007) defines it as a set of processes and activities aimed at attracting tourists to service providers at that destination. Pike (2004) emphasizes that destination marketing is a continuous process of creating added value for both tourists and local communities. Morrison (2013) argues that it is a strategic process of positioning and promoting destinations in a competitive market.

Destination marketing is not just about promoting an organization or business but is also an important activity to influence customers' decisions through building a positive image and effective communication.

2.2. The Role of Destination Marketing

2.2.1. For the Destination

Destination marketing not only highlights the unique characteristics of a destination, creating a competitive advantage in terms of image but also attracts tourists and encourages investment in tourism infrastructure. Pike (2016) emphasizes that destination marketing plays a crucial role in "creating differentiation and brand positioning for the destination, attracting tourists and stimulating investment."

Creating Differentiation and Attracting Tourists:

Destination marketing helps to widely promote the cultural, and historical values, and attractions, enticing tourists to explore and experience the destination.

Connecting the Destination with Tourists:

Through marketing activities, tourists can easily access information about the destination, enabling them to make informed decisions when choosing their travel destinations.

Creating Linkages and Cooperation:

Destination marketing fosters collaboration among stakeholders in the tourism industry, including both the public and private sectors, to effectively develop and promote the destination.

Attracting Investment:

A well-known destination with a positive image will attract the interest of investors, contributing to the improvement of tourism infrastructure and services.

2.2.2. For Tourists

Destination marketing acts as a bridge between the destination and tourists, providing information, stimulating the desire to explore, and helping tourists have better travel experiences. Kotler et al. (2010) suggest that destination marketing "helps tourists become aware of travel opportunities, evaluate options, and make decisions."

Providing Information:

Tourists can easily access information about the destination, services, and experiential activities through marketing efforts.

Stimulating the Desire to Explore:

Destination marketing creates appeal and a desire to explore the destination by promoting its image, values, and unique experiences.

Enhancing the Travel Experience:

By providing comprehensive and accurate information, tourists can choose suitable services and have better travel experiences.

2.2.3. For Tourism Businesses

Destination marketing not only benefits the destination and tourists but also plays a vital role in supporting the development of tourism businesses. Govers & Go (2009) point out that destination marketing "creates a favorable environment for tourism businesses to operate and grow."

Enhancing Promotion and Attracting Visitors:

When a destination is widely promoted and attracts many tourists, tourism businesses can reach and serve more customers, thereby increasing revenue and profits.

Understanding Trends and Needs:

Destination marketing helps tourism businesses better understand tourist trends and needs, allowing them to adjust their products and services to meet market demands better.

Creating a Competitive Advantage:

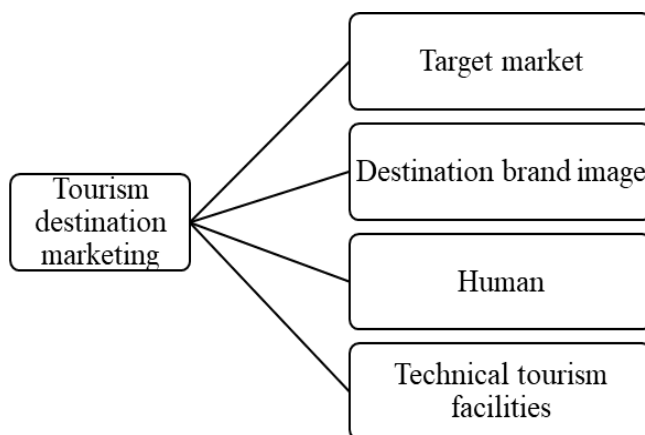
A destination with a strong brand and effective promotion will give tourism businesses in that destination a competitive edge over their rivals.

Furthermore, tourist preferences and trends are constantly evolving, requiring destinations to adapt flexibly. Destination marketing not only helps tourists stay abreast of new trends but also assists tourism businesses in better understanding market needs, enabling them to adjust their products, services, and staff training to deliver the best possible customer experience.

2.3. Elements of tourism destination marketing

After collecting statistics from interview data of 05 experts in the field of tourism and travel, combining theoretical research methods with previous studies, the group of authors proposed a

research model with the following tourism destination marketing factors: Target market, image, destination brand, Tourism promotion and advertising, People, Tourism technical facilities.



Source: Author's synthesis, 2024

Figure 1. Proposed research model

Target market: Is "A group of buyers with the same needs, demands or similar characteristics that the tourist destination is capable of meeting while creating higher comparative advantages than competitors and allowing to maximize the marketing goals set to develop the destination" (Nguyen Hoang Thuy Tien, 2014).

Destination image, brand: "A name, symbol, logo, or other graphic that identifies and distinguishes a destination has been one of the most important areas of tourism research for over four decades (Stepchenkova & Mills, 2010).

Tourism promotion and advertising: There is a very close link with the target market because it is necessary to carry out tourism promotion and advertising activities to be able to impact the target market. According to Nguyen Hoang Thuy Tien (2014), in the context of tourism destination marketing, the most suitable promotional tools that can be deployed include public relations/publicity; trade promotion; internet/interactive media, and advertising. People.

The human factor: These include tour guides, interpreters at the destination, and travel businesses serving guests, local people, and authorities.

Tourism technical facilities: Including accommodation services, food services, entertainment services, traffic infrastructure systems, and other technical facilities that can be used to serve tourists.

3. RESEARCH METHOD

This study used a combination of the following methods:

- Theoretical research method: Synthesize information from documents and research works related to tourism destination marketing.

- Field survey and sociological investigation method: Survey of tourists in Pu Luong to assess the level of satisfaction and awareness of the destination. The survey was conducted from May to July 2024.

- Expert interview method: Interview 05 experts with high knowledge, experience, and expertise in the tourism industry. From the answers received, synthesize similar factors and put them into the model of tourism destination marketing factors. Field survey and sociological investigation method: Create a survey of 181 domestic tourists and survey 02 locations: Don Village and Hieu Village in Pu Luong, Thanh Hoa.

- Data processing method: Processing the responses received from 181 domestic tourists at 02 locations: Don village and Hieu Village in Pu Luong, Thanh Hoa in the form of data to conduct analysis and draw appropriate conclusions.

- Analysis and synthesis method: Through data and documents collected from books, newspapers, research works, and related documents to analyze the marketing factors of tourist destinations. From there, synthesize and propose practical solutions suitable to the current situation of Pu Luong tourist destination.

4. RESEARCH RESULTS

4.1. Current status of tourism destination marketing in Pu Luong

4.1.1. Target market

Pu Luong's target market is mainly tourists who love nature, exploration, and cultural experiences. Domestic tourists account for a larger proportion than international tourists.

Through the survey method of 181 domestic tourists at two locations within the scope of the research topic, the results are presented in Table 1. From there, we can see that Pu Luong's target market is mainly concentrated in areas outside the province with the age under 25 years old; 25 - 35 years old. In particular, the majority are students/students coming to visit, exchange, and learn more about the cultural and historical values of the city. The rest are a few officials/workers or people with business professions coming to visit.

Age of tourists:

The majority of tourists visiting Pu Luong are young people, with 77.9% under 25 years old, while only 13.25% are in the age group of 25-35. Thus, the under-25 group dominates, being 5.88 times larger than the 25-35 age group, indicating that Pu Luong attracts young people significantly more than middle-aged individuals.

Occupation/student status:

77.9% of tourists are students, a percentage that almost coincides with the under-25 age group, confirming that Pu Luong is an ideal destination for student trips. This figure shows that the student group is much larger than other groups.

Visitors from outside the province:

59.1% of tourists come from outside the province, larger than the group of visitors from within the province. This means that more than half of Pu Luong's visitors come from other regions,

demonstrating that the locality's appeal is not limited to within the province but also has a strong impact beyond Thanh Hoa.

Education level:

75.69% of tourists have a university or college degree, indicating that the majority of visitors to Pu Luong are highly educated. This implies that this group of tourists is likely to have a deeper interest in the cultural, historical, and environmental values of the destination. Compared to other figures, this percentage shows a similarity with the student group, further emphasizing the group of young and educated tourists.

In summary, these figures all reflect the common characteristics of Pu Luong's target market: young tourists, mainly students, coming from outside the province and having a high level of education.

This is a very positive signal for Pu Luong's tourism, as well as for Vietnam's education. Young people today seem to understand better and want to improve their knowledge through tourism activities.

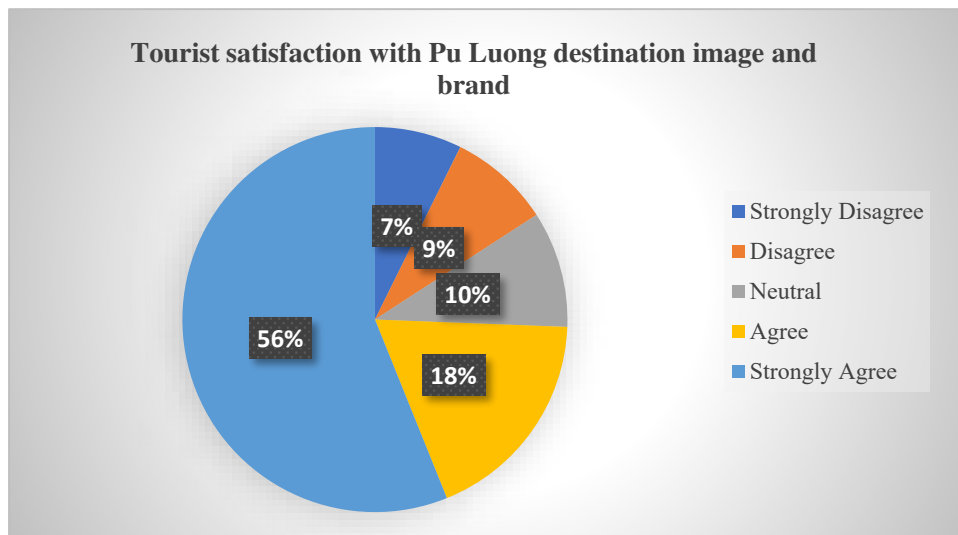
Table 1. Sample table of domestic tourist survey in Pu Luong (Thanh Hoa)

| No. | | Characteristic | Frequency | Proportion (%) |
|-----|--------------------|--------------------|-----------|----------------|
| 1 | Sex | Male | 81 | 44.75 |
| | | Female | 100 | 55.25 |
| | | Total | 181 | 100% |
| 2 | Year Old | Under 25 years old | 141 | 77.9 |
| | | 25 - 35 years old | 24 | 13.25 |
| | | 36 - 46 years old | 12 | 6.6 |
| | | Over 46 years old | 4 | 2.25 |
| | | Total | 181 | 100% |
| 3 | Education level | High School | 18 | 9.96 |
| | | University/College | 137 | 75.69 |
| | | Postgraduate | 15 | 8.28 |
| | | Other | 10 | 6.07 |
| | | Total | 181 | 100% |
| 4 | Job | Student | 141 | 77.9 |
| | | Staff | 6 | 3.34 |
| | | Business | 9 | 4.97 |
| | | Retire | 15 | 8.29 |
| | | Other | 10 | 5.5 |
| | | Total | 181 | 100 |
| 5 | Place of residence | In the province | 74 | 40.9 |
| | | Out of province | 107 | 59.1 |
| | | Total | 181 | 100% |

Source: Author, 2024

4.1.2. Brand and image of Pu Luong destination

Pu Luong has a wild, majestic, and biodiverse natural image. However, the destination brand has not been strongly built and has no clear difference compared to other ecological destinations.



Source: Author analysis group, 2024

Chart 1. Tourist satisfaction with Pu Luong's destination image and brand

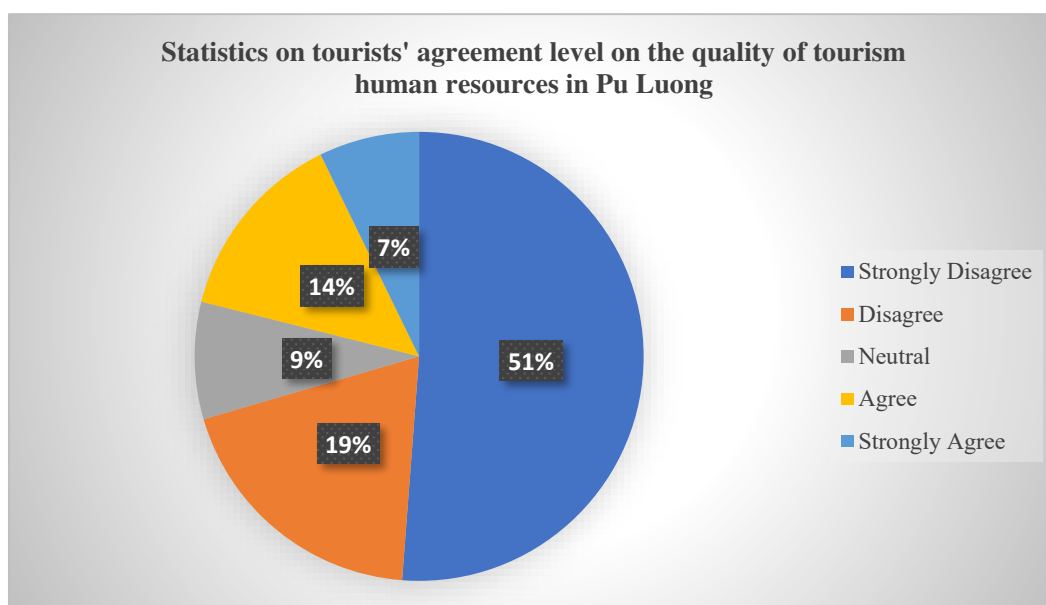
The demographic and characteristic data of domestic tourists in Pu Luong, Thanh Hoa, provides insightful information about the target market of this destination. The majority of tourists visiting Pu Luong are young people, with 77.9% under 25 years old and 13.25% between 25-35 years old. This indicates that the destination is particularly attractive to young individuals who enjoy exploring nature, culture, and adventurous experiences. Among them, students account for the largest proportion, at 77.9%, suggesting that Pu Luong is an ideal destination for educational trips, research, and practical experiences. Notably, 59.1% of tourists come from outside the province, demonstrating Pu Luong's appeal to visitors from other regions, which necessitates investment in promotion and marketing of the destination on a broader scale. It's also worth noting that 75.69% of tourists have a high level of education, with university or college degrees, reflecting the interest of this group in the cultural, historical, and environmental values of Pu Luong. In addition, improving the quality of tourism services is also an important factor for Pu Luong to attract and retain tourists.

4.1.3. Human factor

The Thai and Muong ethnic communities in Pu Luong are increasingly participating in tourism activities. According to the Department of Culture, Sports and Tourism of Thanh Hoa province (2022), there are currently about 30 households in 5 buffer zone communes of Pu Luong Nature Reserve providing homestay services, each household can welcome 15-20 guests. People have taken advantage of the natural landscape and unique culture to develop tourism products, especially homestays, giving visitors an experience of the daily life of ethnic people (Nguyen Thi

Thu Huyen, 2020). In addition, local cuisine and cultural activities such as dancing, antiphonal singing, brocade weaving, and participation in traditional festivals also contribute to attracting tourists. Community tourism has improved the economic life of people, creating more jobs and stable income. However, for sustainable development, it is necessary to address issues such as uneven service quality, lack of linkages between businesses, and environmental management (Department of Culture, Sports and Tourism of Thanh Hoa province, 2023).

Based on the survey results of tourists' satisfaction with the quality of tourism human resources in Pu Luong. The authors analyzed the data as follows:



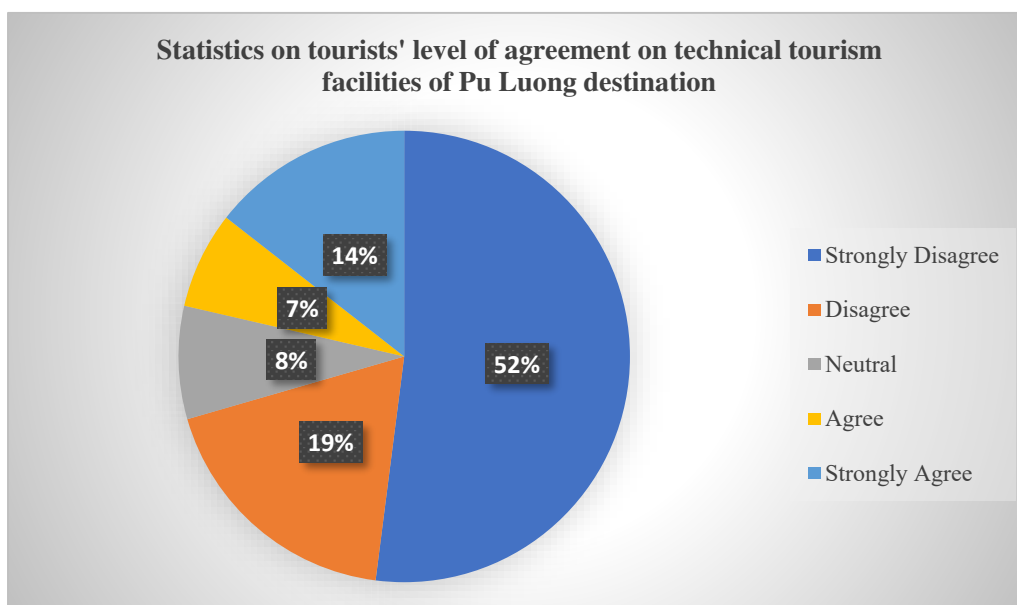
Source: Author analysis group, 2024

Chart 2. Statistics on tourists' level of agreement on the quality of tourism human resources in Pu Luong

The survey results of 181 tourists, indicating 70% dissatisfaction among 181 tourists regarding the quality of human resources in Pu Luong's tourism sector, highlight a pressing concern that demands immediate attention. This dissatisfaction underscores a gap between the current service standards and the expectations of visitors, potentially stemming from a lack of professional training, language barriers, or insufficient understanding of customer service principles. Such shortcomings can significantly impact the overall tourist experience, leading to negative reviews, reduced word-of-mouth recommendations, and a tarnished reputation for Pu Luong as a tourist destination. Moreover, the inability to consistently deliver high-quality service can deter repeat visits and hinder the long-term, sustainable growth of the tourism industry in the region. To address this, a comprehensive approach is needed, encompassing professional development programs, language training, and initiatives to foster a culture of hospitality and customer-centricity among tourism personnel. By investing in human capital and prioritizing service excellence, Pu Luong can enhance visitor satisfaction, cultivate a positive destination image, and ensure the continued prosperity of its tourism sector.

4.1.4. Technical facilities for tourism

Pu Luong Nature Reserve (Pu Luong NR), with its wild beauty, diverse ecosystems, and unique cultural identities of ethnic minorities, has become an attractive destination on the Vietnam tourism map. However, the tourism infrastructure here still has many limitations that need to be invested and upgraded. According to the Department of Culture, Sports and Tourism of Thanh Hoa province (2023), Pu Luong currently has about 75 accommodation establishments, mainly homestays of local people, providing unique cultural experiences but not meeting the needs of the high-end customer segment. Restaurants in Pu Luong serve local dishes, but the choices are limited and food safety and hygiene are not focused on. Roads to Pu Luong are difficult, especially in the rainy season, and public transportation is underdeveloped. Tourism support services such as tour guides, medical care, and tourism information are lacking. However, according to the project "Making Pu Luong Nature Reserve an eco-tourism center of the province" (Thanh Hoa Provincial People's Committee, 2022), the province is investing heavily in transport infrastructure, building high-class resorts, improving service quality and training tourism human resources, with the goal that by 2030, Pu Luong will attract 27,000 visitors and achieve revenue of 33 billion VND. Below are the results of a survey on visitors' satisfaction with the technical infrastructure of Pu Luong destination:



Source: Author analysis group, 2024

Chart 3. Statistics on tourists' level of agreement on technical tourism facilities of Pu Luong destination

The survey results show that 71% of tourists are dissatisfied with the technical facilities in Pu Luong, indicating that the destination is facing serious limitations. This may reflect the lack and poor quality of accommodation, food services, and other tourism support facilities. These limitations not only reduce the overall visitor experience but also hinder the ability to attract and

retain customers, especially those with high demands for amenities and services. In addition, poor infrastructure can negatively affect the image of Pu Luong as an attractive tourist destination and reduce its competitiveness compared to other localities. To improve, it is necessary to invest in upgrading facilities, ensuring quality, and meeting modern tourism standards.

4.2. Marketing solutions for tourist destinations in Pu Luong

4.2.1. Target market

Based on the survey results, shows that to fully exploit the tourism potential, Pu Luong needs to focus on two main markets: domestic and international visitors. For the domestic market, it is necessary to target young people and families. For young people, Pu Luong can build experiential tour programs, explore nature and adventure such as trekking, kayaking, and mountain climbing, and organize music events, camping, and local cultural festivals. These activities need to be widely promoted on online media channels and social networks popular with young people. For families, Pu Luong can design tours suitable for all ages, build all-inclusive service packages, and offer attractive promotions.

Regarding the international market, Pu Luong should prioritize countries in the Southeast Asian region, while also aiming at other potential markets such as Korea, Japan, and China. Participating in international tourism fairs, cooperating with travel agencies, and building the image of Pu Luong as a green and sustainable tourism destination will help attract international tourists. In addition, developing unique tourism products, and exploiting the natural and cultural potential of Pu Luong to the fullest is also an important factor in creating a difference and attracting tourists.

4.2.2. Destination image and brand

Based on the research results, it is shown that Pu Luong has the full potential to become an attractive destination with wild, majestic natural images and unique biodiversity. To achieve this, it is necessary to focus on brand positioning by promoting the natural beauty of mountains, forests, caves, rivers, and terraced fields, while emphasizing the richness of the flora and fauna here. In addition, linking the image of Pu Luong with the unique cultural identity of the Thai and Muong people is also an important factor.

Developing unique tourism products that are closely linked to local nature and culture is a strategic direction. Tourists can participate in nature experiences such as trekking, kayaking, cave exploration, camping in the forest, and observing rare flora and fauna. At the same time, they also have the opportunity to immerse themselves in local culture by participating in traditional festivals, learning handicrafts, enjoying unique cuisine, and experiencing homestay life.

To promote Pu Luong widely, it is necessary to build attractive brand stories, use a variety of media channels, cooperate with influencers, and organize promotional events. In addition, environmental protection and sustainable development are indispensable factors to ensure that Pu Luong will always be an attractive destination and retain its inherent pristine beauty.

4.2.3. Tourism promotion and advertising

To attract tourists and enhance Pu Luong's position on the tourism map, it is necessary to promote this destination on media and social networks. Communication campaigns need to focus on highlighting the wild, majestic, and biodiversity beauty of Pu Luong while introducing the unique cultural features of ethnic minorities. Images of primeval forests, winding rivers, mysterious caves, and lush green terraced fields need to be conveyed vividly and authentically.

In addition, organizing events and tourism fairs is also an effective way to introduce Pu Luong to a large number of tourists. Through experiential activities, folk games, art performances, and local cuisine, visitors will have the opportunity to explore and feel more deeply the beauty of this land.

Cooperation with travel agencies also plays an important role in attracting tourists. Professionally designed tours, combining nature exploration, cultural experiences, and relaxation, will meet the diverse needs of tourists, thereby attracting them to Pu Luong.

4.2.4. Tourism human resources

To fully exploit Pu Luong's tourism potential, investment in training and improving the quality of tourism human resources is extremely necessary. There should be systematic training programs on the tourism profession, communication skills, foreign languages, and knowledge of local culture and history for local people, especially those directly involved in tourism activities such as tour guides, homestay staff, restaurants, eateries...

In addition, encouraging local people to participate in tourism activities also plays an important role in the sustainable development of the tourism industry in Pu Luong. It is necessary to create favorable conditions for people to participate in activities such as working as tour guides, providing homestay services, producing and selling local products, participating in art performances, and introducing cuisine... This not only helps increase people's income but also contributes to preserving and promoting the traditional cultural values of the locality.

The combination of human resource training and encouraging local people to participate in tourism will create a professional, friendly, and culturally rich tourism environment, thereby attracting more and more tourists to Pu Luong.

4.2.5. Technical facilities for tourism

For Pu Luong to become an attractive and competitive destination, investment in upgrading tourism infrastructure is a key factor, especially in the accommodation, food, and entertainment system. The accommodation system needs to be diversified from traditional homestays to high-end resorts, to meet the needs of many customer segments. Upgrading existing homestays, and ensuring hygiene standards, safety, and service quality is very important. At the same time, attracting investment in high-end resorts and hotels will help elevate Pu Luong's tourism brand and attract customers with high spending ability. Food services also need to be developed, preserving traditional dishes of ethnic minorities, while diversifying the menu and ensuring food hygiene and safety. In addition, investment in entertainment areas such as water parks, adventure sports areas, and cultural and artistic centers will increase the attractiveness of Pu Luong, providing visitors with

a richer experience. To achieve these goals, it is important to encourage private investment in tourism, with government support in administrative procedures, tax incentives, and land. Cooperation between the public and private sectors will create strong resources to develop Pu Luong's tourism infrastructure comprehensively and sustainably.

5. CONCLUSION

Destination marketing plays a crucial role in promoting sustainable tourism development in Pu Luong. By implementing the aforementioned solutions, Pu Luong can attract more tourists, stimulate economic growth, and protect the environment. Through building a brand associated with pristine nature and unique cultural identity, Pu Luong can attract a large number of domestic and international tourists. Diversifying tourism products, from nature-based experiences to cultural exploration, will meet the increasing demands of tourists while creating more job opportunities and income for the local community.

Furthermore, investing in infrastructure, improving service quality, and training human resources are also vital factors that cannot be overlooked. A harmonious combination of nature conservation, cultural promotion, and economic development will help Pu Luong become an attractive and sustainable tourist destination. To achieve these goals, the collaboration of all stakeholders, including local authorities, tourism businesses, and the local community, is necessary. Only through close cooperation and continuous efforts can Pu Luong fully exploit its tourism potential, bring economic and social benefits to the locality, and preserve its natural and cultural values.

This study not only provides a comprehensive overview of the current state of destination marketing in Pu Luong but also contributes valuable insights to the field of tourism research and practice. The research results indicate that building a strong destination brand, combined with preserving natural resources and promoting local cultural identity, is the key to attracting tourists and developing sustainable tourism. For managers and policymakers, this study provides empirical evidence for building effective marketing strategies, while emphasizing the importance of investing in infrastructure and improving service quality. For tourism businesses, this study suggests new directions in developing products and services that meet the diverse needs of tourists.

Some new research directions that can support tourism development in Pu Luong include assessing the impact of technologies such as virtual reality, artificial intelligence, and big data in personalizing tourist experiences and optimizing marketing campaigns. In-depth analysis of target market segments, such as eco-tourism, cultural tourism, and adventure tourism, will also help build suitable approaches for each group of visitors. At the same time, developing metrics to measure marketing effectiveness, such as website traffic, online engagement, and customer feedback, is necessary to evaluate the success of promotional campaigns. Research on the role of the local community in sustainable tourism development and effective collaboration is also crucial. Additionally, comparing Pu Luong's marketing strategies with similar destinations and evaluating the impact of major events on the tourism image are valuable research directions.

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CONSUMER-BASED CAVE TRAVEL AND TOURISM MARKET CHARACTERISTICS IN LUNG KHUY CAVE, HA GIANG PROVINCE, VIETNAM

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ABSTRACT

Caves have long become attractive destinations for tourism and increasingly draw visitors' interest. Although cave tourism development in Vietnam is still in its early stages, with the rise of tourism and ecotourism, it holds great growth potential. This study aims to identify the current market conditions based on consumer data for cave tourism at Lung Khuy Cave, Ha Giang province, Vietnam, focusing on the motivations and characteristics of visitors, including geographic, socio-demographic, behavioral, and psychographic factors. The sample population consists of visitors who have previously visited Lung Khuy Cave. Visitor characteristics are categorized based on three motivations: recreation, adventure-seeking, and religious purposes. The results indicate that most visitors to Lung Khuy Cave are day-trippers. They mainly come from nearby districts and cities, are single youths or young adults with a monthly income below 250 USD, enjoy traveling with friends, and show great interest in the intellectual benefits of the cave. The cave is predominantly visited during holidays, and only adventure-seeking and cultural visitors stay for more than 3 hours. Visitors have limited knowledge about the cave, although their intellectual curiosity proves to be the main factor driving their visits.

Keywords: Cave tourism; Cave visitors; Market segmentation.

1. INTRODUCTION

Caves, with their natural beauty and unique geological value, have long been attractive destinations for geotourism and are increasingly attracting the attention of tourists. Although the potential for developing cave tourism in Vietnam is significant, especially in the context of the tourism trend shifting from mass tourism to quality and experiential tourism, the exploitation and development of this type of tourism still faces many limitations.

One of the main challenges is the lack of understanding of the cave tourism market, including the needs, motivations, and behaviors of tourists. This leads to difficulties in developing suitable tourism products and services, as well as effective marketing strategies. Furthermore, the perception of a segment of tourists about caves is still limited, with negative images such as darkness, dampness, and danger. Therefore, changing perceptions and attracting tourists to caves is also a major challenge.

This study focuses on understanding the characteristics of the cave tourism market at Lung Khuy Cave, Ha Giang province, Vietnam, based on consumer data. The main objective is to identify the characteristics of the market, including the motivations, geographic characteristics, demographics, behaviors, and psychology of tourists. Through the analysis of these variables, the

research will provide a comprehensive view of the cave tourism market at Lung Khuy Cave, thereby proposing solutions for the sustainable development of this type of tourism.

This research is important in providing detailed information about the cave tourism market, helping managers, tourism businesses, and local communities better understand the needs and desires of tourists. From there, it is possible to build suitable tourism products and services, improve the quality of tourists' experiences, and contribute to the sustainable development of the local economy. The research also contributes to changing tourists' perceptions of cave tourism, encouraging them to discover the hidden beauty and unique value of this type of tourism.

2. LITERATURE REVIEW

Geotourism, as defined by Newsome and Dowling (2010:4), is “a type of tourism that focuses on natural areas, with particular emphasis on geology and landscape. It encourages participation in geological sites and the conservation of natural diversity, as well as the enhancement of understanding of earth sciences through enjoyment and learning”. Caves are considered an integral part of the geodiversity (Gray, 2004) and were one of the first geological features to attract tourists (Forti, 2011). Some authors have even suggested that cave visiting can be considered a form of long-term geological tourism—first generation (Bourne & cs., 2008).

There is a large body of literature on cave tourism with various aspects, mainly revolving around the environmental impact of cave tourism such as Cigna (1993), Huppert & cs. (1993), Cigna; Burri (2000), and Aley (2004). However, there is still little in-depth research on cave visitor behavior. Nevertheless, the role of consumers in tourism planning and marketing is very important. The most notable study on cave tourists was conducted by Kim et al. (2008) at Hwansun Cave in Korea, where they found that cave tourism is becoming increasingly popular.

Caves are prominent features in karst landscapes. Karst sites play a specific role in human tourism and recreation, forming the basic components of tourist attractions (Kušen, 2002 in Bočič et al., 2006). Among the karst types, tropical karst is considered the most distinctive and is widespread in Southeast Asia, including Vietnam. With good development conditions in the tropics, Vietnam has great potential for developing cave tourism.

Um, and Crompton (1990) pointed out that image and attitude towards a place are important in choosing a destination. Similarly, Lancaster (1966) suggested that consumer perceptions greatly influence product choice. Emotional attachment to a place is an important factor that reflects the emotional identification and dependence of tourists on a destination (Cheng et al., 2012). Therefore, place is one of the key factors in tourism marketing.

A place of interest can be developed into a tourist attraction with specific characteristics. Therefore, understanding the needs and desires of visitors is the first step in tourism marketing. However, there are differences in consumption patterns between people living in urban, suburban, and rural areas in each market segment (Kasali, 2005). Therefore, identifying market characteristics based on visitor motivations is essential. These market characteristics will assist in promoting and marketing cave tourism, which has become one of the important issues in developing tourism in Vietnam.

Although caves in Vietnam have long been associated with spiritual activities, such as the discovery of many cave paintings and their use as places of worship, cave tourism here has not yet been developed strongly. Currently, as the tourism trend is shifting from mass tourism to quality tourism, caves have become potential destinations for both leisure and special tourism. Unfortunately, many people have negative reactions because they think that caves are dark, damp, often muddy, smelly, and inhabited by scary animals. These images make many tourists not interested in exploring caves. Attractive elements in recreational areas often reflect personal desires to avoid such areas (Mohamed; Othman, 2012).

3. RESEARCH METHOD

3.1. Data collection

The study is descriptive and exploratory. The descriptive nature of the study is a consequence of trying to gain a deeper understanding of the market demand of cave visitors based on similar characteristics. The study is also exploratory because it attempts to understand the needs and motivations of visitors to undertake cave tourism. These characteristics are represented as variables that comprise the data collected for this study (Table 1). The data were collected from April to July 2024.

3.2. Survey form

The a priori segmentation method is used to classify tourism demand groups, in which the type and number of segments are determined before data collection (Wind, 1978 in Kazbare et al., 2010). Setiadi (2003) argues that a priori segmentation is useful when launching a new product in a market where there are no similar products.

The a priori method was used in this study to classify three groups of visitors to Lung Khuy Cave: recreational, religious, and adventure. The survey used a cluster sampling method, with 50 people from each cluster, focusing on those who had visited the cave. The survey questionnaire consisted of three parts: socio-demographic characteristics, travel habits, and awareness and attitudes towards cave tourism. The caves were selected based on management criteria, infrastructure, and opinions from local communities to ensure representativeness and relevance.

Table 1. Data Collected and Methods

| No. | Parameters | Variable | Data Collection Methods/Techniques |
|-----|--|---|--|
| 1 | Socio-demographic characteristics of visitors | Origin, age, gender, education, occupation, income and marital status. | Questionnaire |
| 2 | Interests and sightseeing patterns | Purpose of the trip, benefits of exploration, activities to be performed, companions, budget, duration, length, and format of visit. | Questionnaire |
| 3 | Visitor Perceptions, satisfaction, expectations and Use of caves | Cave awareness, cave tourism, satisfaction, willingness to revisit, and expectations; Pilgrim cave, exhibition cave, cave of religious historical value | Questionnaire; Document research, interviews |

Source: Author's synthesis, 2024

3.3.. Data processing and analysis

In this study, the analysis used is descriptive qualitative analysis to highlight the characteristics of visitors. It also uses a priori segmentation to subdivide visitors according to their trip purposes. The qualitative analysis in this study aims to survey the data from the questionnaire collected. The objective of this analysis is to provide an overview of the actual demand related to cave tourism and how to manage the tourist objects in this field.

4. RESULTS AND DISCUSSION

4.1. Explanation of Lung Khuy Cave

This study focuses on Lung Khuy Cave, located in Lung Khuy Village, Quan Ba Commune, Quan Ba District, Ha Giang Province. The cave is located halfway up a limestone mountain, belonging to the Si Phai Formation, about 10km from Tam Son Town (Quan Ba District Center). Lung Khuy Cave is located near other famous tourist attractions such as Quan Ba Heaven Gate, Quan Ba Twin Mountains, Kho My Cave, and H'Mong Village Resort.

Lung Khuy Cave was formed about 400 million years ago and was discovered in March 2015. The cave is associated with the legend of the love between the Dragon God and a Mong girl, contributing to the cultural appeal of this place [6]. The cave is 517.5m long, 31m deep, and has a total area of up to 14,983 m². Inside the cave, there are many branches and small alleys connecting each other, the cave is wide with the widest point being nearly 200m. The cave dome is high and divided into three floors, two upper floors and one lower floor. The entrance to the cave is 2.5m high and 4.7m wide. The staircase system in the cave is more than 1,000m long, creating favorable conditions for visitors to visit (Bach Hong Viet, 2020).

Lung Khuy Cave stands out with its pristine, dense, and colorful stalactite system, formed over millions of years of geological formation. In the cave, there are many stalactites and stone pillars with impressive colors such as gold and white, forming a complex or standing alone with interesting shapes. In addition, holes and puddles are creating a diverse landscape. Thanks to its natural beauty and cultural and historical values, Lung Khuy Cave is also known as "The First Cave of the Stone Plateau" (Bach Hong Viet, 2020). The cave not only attracts tourists by its unique landscape but also has important significance in geological and geomorphological research.

Lung Khuy Cave is an attractive destination, attracting tourists on their journey to explore the Dong Van Stone Plateau. To facilitate tourism, some items have been renovated such as concrete roads, cave doors, steps, iron stairs, lighting systems, and other auxiliary works (Bach Hong Viet, 2020). With great tourism potential, Lung Khuy Cave can contribute to local economic development by attracting tourists and creating jobs for local people. However, tourism development needs to go hand in hand with preserving the natural and cultural values of the cave, ensuring sustainability for the future.

4.2. Consumer-based cave travel and tourism market characteristics in Lung Khuy cave

4.2.1. Market segmentation of tourism at Lung Khuy cave based on socio-demographic characteristics of visitors

Tourists can be segmented into groups according to their destination, which reflects the dominant marketing approach in the tourism industry, along with socio-demographic variables,

which determine whether a destination is likely to attract people with certain demographic characteristics (Dolnicar; Kemp, 2009). In summary, the socio-demographic characteristics of visitors to Lung Khuy Cave are presented in Table 2 below:

Table 2. Socio-demographic characteristics of visitors to Lung Khuy cave

| Variable | R N = 50 | C N = 50 | A N = 50 | Total N = 150 | R % | C % | A % | Total % |
|----------------------------|-------------|-------------|-------------|------------------|--------|--------|--------|---------|
| Age group | | | | | | | | |
| 12-18 | 0 | 3 | 17 | 20 | 0 | 6 | 34 | 13.3 |
| 19-21 | 15 | 3 | 12 | 30 | 30 | 6 | 24 | 20 |
| 22-35 | 23 | 17 | 8 | 48 | 46 | 34 | 16 | 32 |
| 36-59 | 12 | 17 | 0 | 29 | 24 | 34 | 0 | 19.3 |
| Sex | | | | | | | | |
| Female | 25 | 15 | 10 | 50 | 50 | 30 | 20 | 33.3 |
| Male | 25 | 35 | 10 | 70 | 50 | 70 | 20 | 46.7 |
| Source | | | | | | | | |
| Ha Giang | 15 | 15 | 5 | 35 | 30 | 30 | 10 | 23.3 |
| Other provinces in Vietnam | 25 | 25 | 10 | 60 | 50 | 50 | 20 | 40 |
| Foreign | 10 | 10 | 5 | 25 | 20 | 20 | 10 | 16.7 |
| Education level | | | | | | | | |
| Elementary | 3 | 3 | 0 | 6 | 6 | 6 | 0 | 4 |
| Secondary School | 2 | 5 | 0 | 7 | 4 | 10 | 0 | 4.7 |
| High School | 30 | 15 | 10 | 55 | 60 | 30 | 20 | 36.7 |
| University | 15 | 17 | 5 | 37 | 30 | 34 | 10 | 24.7 |
| Job | | | | | | | | |
| Students | 25 | 3 | 12 | 40 | 50 | 6 | 24 | 26.7 |
| Office staff | 14 | 7 | 3 | 24 | 28 | 14 | 6 | 16 |
| Self-employed | 6 | 3 | 2 | 11 | 12 | 6 | 40 | 7.3 |
| Housewife | 5 | 5 | 0 | 10 | 10 | 10 | 0 | 6.7 |
| Other | 0 | 3 | 0 | 3 | 0 | 6 | 0 | 2 |
| Monthly income | | | | | | | | |
| < 2 million | 30 | 15 | 10 | 55 | 60 | 30 | 20 | 36.7 |
| 2-4 million | 15 | 10 | 5 | 30 | 30 | 20 | 10 | 20 |
| 4-10 million | 5 | 5 | 0 | 10 | 10 | 10 | 0 | 6.7 |
| > 10 million | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Marital status | | | | | | | | |
| Unmarried | 30 | 5 | 15 | 50 | 60 | 10 | 30 | 33.3 |
| Married, no children | 5 | 5 | 0 | 10 | 10 | 10 | 0 | 6.7 |
| Married, with children | 15 | 30 | 0 | 45 | 30 | 60 | 0 | 30 |
| Single mom | 0 | 3 | 0 | 3 | 0 | 6 | 0 | 2 |

Note: R = recreation; C = cultural; A = adventure

Source: Author's survey, 2024

4.2.1.1. Geographical origin variables

Based on Table 2, it can be seen that the origin of tourists is quite diverse, reflecting the attractive potential of this destination.

Specifically, the majority of tourists come from other provinces in Vietnam (40%), showing that Lung Khuy Cave has a nationwide appeal. Next are local visitors (30%), proving that this

destination also plays an important role in developing local tourism. International visitors account for 16.7%, a significant number, showing the potential of the cave to attract foreign tourists and promote the image of Ha Giang to the world.

This diversity of tourist origins also places demand on the development of tourism products and services suitable for each target group, from providing multilingual information to designing tours that meet different needs and interests.

4.2.1.2. Demographic variables

As shown in Table 2, Lung Khuy Cave attracts a large number of visitors with diverse genders, ages, education levels, and employment status, and serves a variety of purposes and interests. In terms of gender balance, the proportion of male and female visitors is quite even, with men accounting for 46.7% and women accounting for 53.3%. This shows that the cave is attractive to both genders. However, when analyzed by the purpose of the visit, the gender difference becomes clearer. In particular, women dominate the group participating in cultural activities (70% compared to 30% of men), showing that women are often more interested and participate in cultural and spiritual activities. In contrast, men account for the majority of the group participating in adventure activities (60%), consistent with the traditional notion that men often prefer to explore and challenge themselves.

In terms of age, the younger group (19-35 and 19-21) dominated, with 32% and 20% respectively. This shows that Lung Khuy Cave is especially attractive to young, active, and adventurous people. Meanwhile, the middle-aged group (36-59) accounted for the highest proportion of visitors participating in cultural activities (67%), showing this group's interest in the cultural, historical, and spiritual values of the cave. This suggests that Lung Khuy Cave is not only a destination for adventure but also a place to learn and explore profound cultural values.

Tourists who visit Lung Khuy Cave are generally looking for three main benefits: knowledge and experience, relaxation and tranquility, and adventure and challenge. The majority of tourists come here to broaden their knowledge of geology, history, and culture (60%). In particular, cultural tourists appreciate the relaxation and tranquility that the cave offers (34%), helping them escape the noise and stress of everyday life. Meanwhile, adventure and challenges are only sought by adventurous tourists (30%), indicating that they come here to push their limits and experience new things.

In terms of employment status, students make up the largest proportion of visitors (38%), especially in the leisure and adventure segment, possibly due to their greater leisure time and lower costs. In addition, office workers and self-employed people are also significant groups of visitors, indicating that they have a stable income and seek a balance between work and leisure. The majority of visitors have an education level of high school or higher, with 63% having a high school degree and 24.7% having a university degree. This suggests that they have a good understanding and appreciation of the geological, historical, and cultural value of the cave. In terms of income, the majority of visitors have a monthly income of less than VND 4 million (36.7% below VND 2 million and 20% from VND 2-4 million), which may influence their choice of services and spending at the destination. These analyses provide an overview of visitors to Lung Khuy Cave, helping tourism managers and developers build appropriate products and services while preserving and promoting the value of the cave sustainably.

4.2.2. Market segmentation of tourism at Lung Khuy cave based on interests and visit patterns

Understanding tourism demand requires assessing consumer behavior. Behavioral segmentation divides customers into groups based on how they react to, use, or become aware of a product. The behavioral variables of tourists visiting Lung Khuy Cave are presented in Table 3 below:

Table 3. Behavioral Characteristics of Cave Visitors in Lung Khuy Cave

| No. | Variable | R N = 50 | C N = 50 | A N = 50 | Total N = 150 | R % | C % | A % | Total% |
|-----|---------------------------|-------------|-------------|-------------|------------------|--------|--------|--------|--------|
| 1 | Motivation | | | | | | | | |
| | Entertainment | 50 | 0 | 0 | 50 | 100 | 0 | 0 | 33.3 |
| | Culture | 0 | 50 | 0 | 50 | 0 | 100 | 0 | 33.3 |
| | Venture | 0 | 0 | 50 | 50 | 0 | 0 | 100 | 33.3 |
| 2 | Benefit | | | | | | | | |
| | Spiritual | 0 | 15 | 0 | 15 | 0 | 30 | 0 | 10 |
| | Physical | 12 | 5 | 5 | 22 | 24 | 10 | 10 | 14.7 |
| | Intelligence | 35 | 30 | 40 | 105 | 70 | 60 | 80 | 70 |
| | Individual | 3 | 0 | 5 | 8 | 6 | 0 | 10 | 5.3 |
| | Reputation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | Work | | | | | | | | |
| | Admire creation | 0 | 5 | 5 | 10 | 0 | 10 | 10 | 6.7 |
| | Pray | 0 | 25 | 0 | 25 | 0 | 50 | 0 | 16.7 |
| | Contemplate | 30 | 20 | 30 | 80 | 60 | 40 | 60 | 53.3 |
| | Animal observation | 5 | 0 | 5 | 10 | 10 | 0 | 10 | 6.7 |
| | Take a photo | 15 | 0 | 10 | 25 | 30 | 0 | 20 | 16.7 |
| | Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Companion | | | | | | | | |
| | Friend | 45 | 30 | 50 | 125 | 90 | 60 | 100 | 83.3 |
| | Family | 5 | 20 | 0 | 25 | 10 | 40 | 0 | 16.7 |
| 5 | Spending | | | | | | | | |
| | < 500,000 VND | 35 | 20 | 30 | 85 | 70 | 40 | 60 | 56.7 |
| | 500,000 - 1,000,000 VND | 10 | 15 | 10 | 35 | 20 | 30 | 20 | 23.3 |
| | 1,000,001 - 2,500,000 VND | 5 | 15 | 10 | 30 | 10 | 30 | 20 | 20 |
| 6 | Visiting time | | | | | | | | |
| | Holiday | 30 | 10 | 15 | 55 | 60 | 20 | 30 | 36.7 |
| | Weekend | 3 | 25 | 20 | 48 | 6 | 50 | 40 | 32 |
| | Weekday | 17 | 10 | 5 | 32 | 34 | 20 | 10 | 21.3 |
| | Other | 0 | 5 | 0 | 5 | 0 | 10 | 0 | 3.3 |
| 7 | Tour duration | | | | | | | | |
| | < 1 hour | 10 | 15 | 0 | 25 | 20 | 30 | 0 | 16.7 |
| | 1-3 hours | 40 | 10 | 15 | 65 | 80 | 20 | 30 | 43.3 |
| | > 3 hours | 0 | 25 | 35 | 60 | 0 | 50 | 70 | 40 |
| 8 | Type of tour | | | | | | | | |
| | First time | 35 | 30 | 12 | 77 | 70 | 60 | 24 | 51.3 |
| | Come back | 15 | 20 | 38 | 73 | 30 | 40 | 76 | 48.7 |

Note: R = recreation; C = cultural; A = adventure

Source: Author's survey, 2024

Based on the analysis of data in Table 3, we can see some characteristics of tourists' spending and behavior, which help to form effective tourism development strategies. First, in terms of spending, the majority of tourists (56.7%) have a spending level below 500,000 VND, showing that this destination mainly attracts people with limited budgets or who want to experience economical travel. Notably, the group of leisure visitors spends less with 70% spending less than 500,000 VND, while the group of cultural and adventure visitors has a higher spending level, with about 30% spending from 1,000,001-2,500,000 VND.

Regarding travel companions, the majority of tourists (83.3%) come to Lung Khuy Cave with friends, especially adventure tourists (100%). This reflects the trend of young groups of people who love to explore. In contrast, only 16.7% of tourists come with their families, mainly in the cultural tourism group (40%). Regarding the benefits sought, most tourists come here to broaden their knowledge, with 70% of tourists seeking intellectual benefits. This shows that Lung Khuy Cave is an ideal destination not only for entertainment but also for learning about nature, history, and culture. Recreational and adventure tourist groups tend to seek benefits corresponding to their purposes, with 100% of recreational tourists seeking relaxation and fun, while 100% of adventure tourists aim to conquer and challenge themselves.

In terms of activities, sightseeing was the most popular activity (53.3%) and was favored by all three tourist groups. Prayer was a typical activity for cultural tourists (50%), reflecting the spiritual nature of the destination. Photography and nature viewing were popular activities among all three groups, especially the adventure tourists, reflecting their interest in the natural beauty and grandeur of the cave.

In terms of visiting time, holidays are the busiest time (36.7%), especially for leisure tourists (60%), showing that Lung Khuy Cave is an ideal destination for short vacations. Weekends are also the time chosen by many tourists, especially cultural tourists (50%). Finally, in terms of tourism type, Lung Khuy Cave is still a new destination for many people, with 51.3% of visitors coming for the first time. However, the rate of returning visitors is also quite high (48.7%), especially for adventure tourists (76%), showing the attractiveness and sustainable development potential of this destination.

This result shows the diversity in the purpose of visiting, spending, activities, and visiting time of visitors to Lung Khuy Cave. However, a common point is that they all seek knowledge and experience when coming to the cave. This information will be the basis for tourism managers and developers to build suitable products and services, meeting the needs of each customer segment, while protecting and promoting the value of Lung Khuy Cave sustainably.

4.2.3. Market segmentation of tourism at Lung Khuy cave based on the perception, satisfaction, and expectation parameters of visitors

Psychographic segmentation divides the market into groups based on personality traits. It is based on the assumption that the types of products and brands an individual buys will reflect that person's characteristics and lifestyle. Psychographic segmentation of cave tourists at Lung Khuy Cave focuses on consumer attitudes, values, and beliefs.

Table 4. Psychological Characteristics of Cave Visitors in Lung Khuy Cave

| Variable | R N = 50 | C N = 50 | A N = 50 | Total N = 150 | R % | C % | A % | Total % |
|--------------------------|-------------|-------------|-------------|------------------|--------|--------|--------|------------|
| Cave Awareness | | | | | | | | |
| Don't know | 29 | 15 | 18 | 62 | 58 | 30 | 36 | 41 |
| Dark | 2 | 0 | 2 | 4 | 4 | 0 | 4 | 3 |
| Scary and mysterious | 0 | 5 | 0 | 5 | 0 | 10 | 0 | 3 |
| History and science | 1 | 3 | 2 | 6 | 2 | 6 | 4 | 4 |
| Must be protected | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 |
| Challenge | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 |
| Attractive and unique | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 |
| Place of exchange | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Landscape and nature | 4 | 2 | 3 | 9 | 8 | 4 | 6 | 6 |
| Like about caves | | | | | | | | |
| Don't know | 3 | 4 | 1 | 8 | 6 | 8 | 2 | 5 |
| Cave decorations | 30 | 4 | 7 | 41 | 60 | 8 | 14 | 27 |
| History & Mythology | 2 | 1 | 0 | 3 | 4 | 2 | 0 | 2 |
| Species of living things | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 |
| Atmosphere in the cave | 1 | 3 | 1 | 5 | 2 | 6 | 2 | 3 |
| Strengthen friendships | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 |
| Can see the light again | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 |
| Challenge | 0 | 0 | 4 | 4 | 0 | 0 | 8 | 3 |
| Dark | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 |
| Drops of water | 0 | 4 | 0 | 4 | 0 | 8 | 0 | 3 |
| Don't like about caves | | | | | | | | |
| Nothing | 5 | 2 | 5 | 12 | 10 | 4 | 10 | 8 |
| Difficult entrance | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 |
| Dark, damp and stuffy | 2 | 4 | 1 | 7 | 4 | 8 | 2 | 5 |
| Destructive | 0 | 0 | 2 | 2 | 0 | 0 | 4 | 1 |
| Smell | 0 | 0 | 4 | 4 | 0 | 0 | 8 | 3 |
| Slippery | 0 | 5 | 0 | 5 | 0 | 10 | 0 | 3 |
| Dirty and full of trash | 2 | 2 | 1 | 5 | 4 | 4 | 2 | 3 |
| Discomfort | 2 | 0 | 0 | 2 | 4 | 0 | 0 | 1 |
| Misuse of caves | 1 | 2 | 0 | 3 | 2 | 4 | 0 | 2 |
| The road is difficult | 3 | 0 | 1 | 4 | 6 | 0 | 2 | 3 |
| Other | 1 | 0 | 1 | 2 | 2 | 0 | 2 | 1 |

Note: R = recreation; C = cultural; A = adventure

Source: Author's survey, 2024)

4.2.3.1. Driving factors

Visitors have different perceptions of Lung Khuy Cave, ranging from positive to negative. Positive perceptions include its natural beauty, historical value, and source of knowledge, while negative perceptions include its fearsomeness, mystery, and darkness.

Leisure tourists perceived the cave mainly for its natural beauty (58%), and a small portion thought the cave was dark (4%). However, up to 38% of tourists did not have a clear perception, possibly because they were first-time visitors or did not have enough information about the cave.

Cultural tourists had a large number of negative perceptions of the cave, such as being scary and mysterious (10%). This may be due to the guides' explanations focusing on the mystical element without explaining the scientific process of cave formation. In addition, 30% of tourists had a neutral perception, thinking that the cave was unknown, and only a small number had positive perceptions, relating to its history and source of knowledge (6%), as well as its natural beauty (4%).

Adventurous tourists were largely (36%) positive in their perceptions of caves, mainly related to caves being a source of scientific knowledge that should be protected (2%) and natural beauty (6%).

4.2.3.2. *Attitudes towards caves: Likes and dislikes*

Impressions of Lung Khuy cave are also very diverse, from positive to negative.

Positive factors: 6% of visitors were not able to clearly identify their preferences, but the results showed that the majority of people (60%) were impressed by the beauty of the cave structures, followed by the atmosphere of the cave (6%) and the challenge of the cave (8%). Clearly, the cave's internal structure was the main attraction.

Negative factors: In terms of dislikes, the majority of visitors (10%) had nothing to complain about. Other factors that bothered visitors included the dark, damp and stuffy environment (4%), slippery conditions (10%), difficult walking paths (6%), as well as bad smells (8%).

Comparison between groups:

Only cultural tourists preferred the water drops in the cave (8%), possibly because the water in the cave is believed to bring blessings. The sound of the dripping water also provided the sense of peace they were looking for.

Only adventurous tourists enjoyed the challenges (8%) and darkness in caves (2%).

Cultural tourists were the group that complained most about cave conditions, finding the caves damp, dark, hot and stuffy (8%) and slippery (10%).

Recreational tourists were most concerned about moving around in the cave because they did not like the difficult paths (6%), while adventurous tourists did not like the bad smell (8%), and only this group was worried about vandalism in the cave (4%).

In summary: In general, visitors have a positive attitude towards Lung Khuy Cave, especially regarding the beauty of the cave structure. However, there are still some points that need to be improved such as the environmental conditions in the cave, the access roads, the hygiene and the bad smell to enhance the visitors' experience.

5. CONCLUSION

This study provides insights into consumer-based variables that influence people's choices for cave tourism in Lung Khuy Cave. The study has provided important insights into visitor characteristics and behaviors. Tourist segments, from their purpose of visit, and spending level, to

their preferred activities and duration of visit, are diverse. However, what they have in common is their desire to seek knowledge, experience, and relaxation when visiting the cave. To develop sustainable Lung Khuy Cave tourism, it is necessary to diversify tourism products and services to meet the needs of each customer segment. In addition, local authorities need to promote the image of Lung Khuy Cave on online media channels and focus on targeted marketing. Preserving the natural and cultural environment of the cave is also an important factor, in ensuring sustainable development and the participation of local communities. To improve service quality, training of tourism staff is necessary, along with practical market research to adjust appropriate strategies. The application of information and communication technology in tourism management, such as the development of mobile applications and virtual reality, is also a potential direction to attract tourists.

This research provides valuable insights into the cave tourism market at Lung Khuy Cave, helping stakeholders better understand the needs and desires of visitors. The study also identifies factors influencing visitors' decisions to visit, thereby proposing solutions to enhance the attractiveness of the destination. By changing tourists' perceptions of cave tourism, the research encourages them to discover the hidden beauty and unique value of this type of tourism. Additionally, the study proposes sustainable development solutions, ensuring the protection of the natural environment and preservation of local culture, contributing to the long-term and sustainable development of cave tourism.

Future research directions could focus on assessing the impact of cave tourism on the natural environment and local culture, with the aim of finding ways to protect and preserve these valuable resources. Additionally, it is necessary to evaluate the effectiveness of implemented cave tourism development solutions to learn from experiences and adjust strategies accordingly. Research into the application of information technology in cave tourism management and development is also a potential direction, helping to optimize management operations and enhance visitor experiences. Finally, expanding research to other caves across Vietnam will provide a more comprehensive view of the cave tourism market, supporting the development of sustainable development policies for this type of tourism nationwide.

With great potential, Lung Khuy Cave can become an attractive cave tourism destination if there is close coordination between related parties, aiming at harmonious development between economy, society, and environment.

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THE ROLE OF NATIONAL IDENTITY AND PERCEIVED VALUE IN DOMESTIC DESTINATION CHOICE: THE CASE OF MILLENNIALS IN VIETNAM

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ABSTRACT

One psychological effect of globalization is on how people self-identify themselves. This is particularly true for younger customers. Born between 1980 and 1999, the generation commonly referred to as Millennials (or Gen Y) has emerged as a particularly fascinating consumer cohort within this demographic for a variety of reasons. Despite the distinctiveness of this cohort, little is known about how their social identities—a crucial component of self-concept— influence their choices in tourism. This research addresses this gap by proposing a conceptual model help explaining the direct and indirect effects of Millennial tourists' national identity and perceived value on domestic destination choice with attitude as a mediator. Through an analysis of the contemporary literature regarding national identity, perceived value, attitude, and tourism destination choice, author proposes a conceptual model of the psychological processes underlying behaviour outcomes for Millennial tourists. We argue that this conceptual model has the potential to advance knowledge in relation to to the destination marketing theory and practice. We then outline research propositions emanating from the conceptual model and directions for future research on domestic tourism destination choice and social identity theory.

Keywords: Millennials; Generation Y; destination choice; social identity theory; national identity; perceived value.

1. INTRODUCTION

The capacity of local location to compete against innumerable overseas destinations has diminished as a result of the growth of accessible destinations brought about by affordable air travel. Domestic tourism has largely remained an understudied research area (Barbhuiya and Chatterjee, 2020; Canavan, 2013; Li et al., 2016; Tsui, 2017). In many developing nations, there is a prevailing notion that domestic tourism yields lower profits compared to international tourism (Morupisi and Mokgalo, 2017; Stone and Nyaupane, 2020).

Despite the allure of international tourism due to foreign exchange earnings, the domestic tourism market in populated countries still proliferates compared to the international tourism market in terms of revenue, arrivals and growth rate (Li et al., 2016). As developed tourism destinations such as Australia, Japan, New Zealand, and the U.K. witness a gradual decrease in domestic tourism (Gardiner et al., 2014), developing countries, especially those in the Asia Pacific region, experience the opposite due to income increases among middle-class households (Travel and Council, 2018). Studying domestic tourism is worthwhile due to its far-reaching advantages ranging from sustainability (Pegas et al., 2015), contribution to the national economy (Stylidis et

al., 2017), invigorating national sentiment (Ursache, 2015), distribution of wealth (Nair and Ramachandran, 2016), providing jobs, indemnifying the loss of international tourism and decreasing the disparity in regional development (Hosie and Pforr, 2016; Yang et al., 2011). Beside that, countries and businesses further realised the importance of the domestic tourism industry during the unprecedented COVID-19 pandemic, which placed major restrictions on international travel (Bresciani & cs., 2021). Due to the significant benefits of tourism to the host country's economy, government and destination marketers need to understand tourists' decision making and the factors leading up to destination choice. There are various factors influencing tourists' destination choice that are classified into external and internal factors. One of the internal factors is related to tourists' psychological aspect, namely self-concept.

Although research has looked into the relationship between tourists' self-concept and their choice of destination, they predominantly focus on personal self-concept. Referring to Markus and Kitayama (1991) and Triandis (1989), individuals also hold social identity based on their belonging to the group. From cultural lens, social identity can be seen from individuals' nationality, ethnicity, and religion.

A person may identify with several identities as a result of globalization and exposure to other cultures.. They may attach to the home country, and at the same time, feel connected to the world. This is especially the case for young consumers (Côté and Levine, 2016). Within this demographic group, those considered Millennials (i.e. individuals born between 1980 and 1999) have become a particularly interesting consumer cohort for a number of reasons. Thus, it is necessary to examine the role of national identity in purchase decision making. There are not many studies concerning social identity and their effect on tourism behaviour, which indicates the needs for further research. This study aims to propose a conceptual model of the psychological processes underlying behaviour outcomes for millennial tourists. The conceptual model explains the influence of national identity, perceived value and attitude on destination choice in Vietnam context.

2. CONTEXT OF THE STUDY

The COVID-19 virus has caused an unparalleled worldwide crisis with unforeseeable repercussions at every level of society. There are still a number of obstacles to overcome, especially in light of the longterm effects of the global economic downturn, even though recent reports indicate that the tourism sector will rebound favorably in the upcoming years (UNWTO, 2020), including Vietnam.

Vietnam is a developing country and one of the few countries to still operate a highly centralized Communist economy. However, in recent times, there has been a notable shift toward a more market-driven economy, as evidenced by the real Gross Domestic Product (GDP), which grew by 11.15% annually on average between 1995 and 2019 (World Bank, 2021). This growth helps improve Vietnam's per capita income, narrowing the gap with other countries in the region and increasing demand for overseas travel. Before the COVID-19 pandemic, Vietnamese tourists going abroad increased sharply. The primary constraint influencing Vietnamese tourists' decisions to travel domestically is their preference for international destinations. Given the significant

benefits of tourism to the host country's economy, governments and destination marketers need to understand the factors that lead to domestic destination choice, avoiding economic leakage from tourism.

Vietnamese Millennials are selected as the sample group in this study. Since the Doi Moi (the open door policy) was introduced in 1986 with the goal of creating a “socialist-oriented market economy,” Vietnam’s economy has grown rapidly. Vietnam, which has a population of around 100 million and an annual economic growth rate of more than 6%, is becoming more and more recognized as a consumer market and a highly linked global community across numerous fields (Dinh, 2016). It has a significant impact on the consumption behavior of consumers globally, especially among the younger generation. Young adults in particular are described as having identities that are constantly changing and adapting (Côté & Levine, 2016), as well as having more freedom to choose different lifestyles (Jeffrey Jensen Arnett, 2004) than at any other life-cycle stage. These features make this group an especially interesting population in which to how globalization shapes consumer identities. People who identify as Millennials—those who were born between 1980 and 1999—became a particularly interesting consumer subgroup within this demographic group for a variety of reasons. Members of this group grew up in a marketplace characterized by the internationalization of products and brands (Parment, 2011), and a consumer culture that emphasizes the experiential aspects of shopping (Lissitsa & Kol, 2016). Despite these idiosyncrasies, limited research concerning this group’s consumer identities exists (Thomas, 2013). This study explores the impact of one facet of Millennial tourists’ social identities, national, on their attitude and their domestic tourism destination choice.

3. LITERATURE REVIEW

3.1. Theoretical framework

The cognition-affect-behavior (C-A-B) model (Holbrook, 1986), The value- attitude - behavior (V-A-B) model (Homer and Kahle, 1988) and social identity theory (Turner and Tajfel, 1986) contributed to the theoretical foundation of this study. Drawing on these, we constructed a conceptual model to test the relationships between perceived value, national identity, attitude and domestic destination choice. The C-A-B model states that behavior (i.e., behavioral intentions or actual actions) follows cognition (i.e., personal beliefs, perceptions, and thoughts that individuals have regarding an issue or object), which is followed by affect (i.e., emotions or feelings that individuals have regarding an issue or object) (Solomon, 2011; Kuo et al., 2021). More importantly, human emotions mediate the relationship between cognition and behavior. In this research, perceived value represents cognition; attitude belongs to affect; and domestic destination choice represented behavior.

The value-attitude-behavior (VAB) hierarchy was developed by Homer and Kahle (1988) as a hierarchical progression from abstract to specific behaviors. Values are an abstract social cognition that can encourage environmental adaptation and reflect the traits of adaptation. According to Kahle (1983), assimilation, adaption, organization, and integration of environmental knowledge result in the development of values and attitudes. In the last level of the VAB hierarchy, attitudes also influence behavior. Therefore, adopting the VAB hierarchy, the present study

proposes that Vietnamese consumers' value for their social identities, such as national identity, will influence their attitudes toward domestic destination and destination choice.

Social identity theory (SIT) proposed by Tajfel (1978) was used to provide theoretical support for our model of domestic destination choice. The central philosophy of SIT is that people feel a desire and tendency to create a positive identity for themselves which can be demonstrated by their attachment to groups (Tajfel, 1981). This theory explains how social interactions influence the desire to promote one's place of residency because it suggests that the more strongly a person feels a feeling of belonging to a nation, the more favorable that nation is as a travel destination.

3.2. National identity

Rooted in an individuals' need for a positive group, self-esteem and an overall positive social identity (Verlegh, 2007), national identity is defined as "the extent to which individuals view themselves as involved with a group, here a nation, that shares an historic territory or homeland, common myths and historical memories, a common, mass public culture, common legal rights and duties for all members, and a common economy with territorial mobility for members" (Ayouby et al., 2013). Furthermore, national identity was defined by Blank and Schmidt (2003) as the positive and subjectively significant emotional tie to a nation. People with a high degree of national identity - they are most likely to experience positive emotions after choosing to follow group norms (Huddy and Khatib, 2007).

The degree to which people value their national identity as a significant component of who they are determines how strong their national identity is. Individual variations in the degree of national identification result in variations in the bias's intensity as well as in how domestic and foreign goods are rated.

3.3. Perceived value

Most marketing scholars have accepted the definition of perceived value as consumers assessments of the trade-offs between the benefits and sacrifices realized in selecting a given product from those options available at market (Chen and Dubinsky, 2003; Lapierre, 2000; McDougall and Levesque, 2000; Sánchez-Fernández and Iniesta-Bonillo, 2006). Several scholars have applied perceived value and examined its validity on tourism and hospitality contexts (Pandža Bajs, 2015; Wang et al., 2017; Rasoolimanesh et al., 2023).

Perceived value is described as the overall assessment made by tourists based on their comparison between the utility or benefits and the perceived costs or sacrifices associated with a destination. Perceived value, according to Zeithaml (1988), is tourists' perceptions of what they receive from the destination and what they are given for the attainment of that destination. Likewise, Petrick and Backman (2002a), perceived value in tourism services is based on tourists' perception of service quality, with financial and non-financial cost perceptions as the determinants.

3.4. Attitude

Attitude was defined by Fishbein and Ajzen (1975, p.10) as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object".

Accordingly, attitude refers to the psychological inclination people display through their favorable or unfavorable assessments of a thing or experience (Ajzen, 1991). To avoid confusion, Ajzen and Fishbein (2000) proposed using the term ‘attitude’ to refer to the assessment of a thing, idea, or action along a dimension of favor or disfavor, good or bad, like or dislike. This claim is consistent with research showing that a person's attitude determines how they will respond through the perceptual quality of selecting, categorizing, and interpreting experience in line with expectations (Ajzen, 2001).

In the context of tourism, one's attitude toward an object—such as a tourism destination—is determined by their beliefs about it and their implicit evaluations of it. These assessments make the assumption that people naturally and unavoidably create them while thinking about the object (Ajzen and Fishbein, 2000). Similarly, attitude towards the destination describes the psychological patterns that travelers exhibit through their favorable or unfavorable assessments of a destination experience. With deeply embedded foundations in social psychology in a seminal work by Allport in 1935 (McLeod, 1991), visitor attitude is characterized as either a favorable or unfavorable perception of a destination (Al Muala, 2011). Attitude towards a destination is formed by a consumer's positive and negative views or beliefs about that place, making it essential for travel decision-making (Al Muala, 2011).

4. HYPOTHESIS DEVELOPMENT

4.1. The national identity effect

National identity and perceived value

According to the social identity principle, a consumer's social identity will affect how they evaluate a product and determine whether they will respond favorably to it when a stimulus, like a product, is connected to their social identity (Zeugner-Roth et al., 2015). Therefore, more identified consumers are likely to have more positive and favorable opinions of a product when it is associated with a social identity (McGowan et al., 2017). In this sense, it is anticipated that consumers' value views of the nation (and its products) will be correlated with their sense of belonging to an in-group, or their home country. From these logics, it can be reasonably inferred that it can also be applicable in tourism context. For this reason, we will hypothesize the effect of national identity on perceived value in an domestic tourism context in response to this dearth of research, suggesting that having a strong sense of national identity raises the perceived value of domestic destination. Thus, the following three hypotheses are advocated based on previous literature:

H1: Vietnamese Millennial tourists's national identity positively influences perceived value

National identity and attitude

According to Social identity theory, attitudes (alongside with emotions and behavior) are shaped by membership in communities (Maldonado and Muehling, 2006; Zúñiga, 2016). It is believed that social identities are highly accessible (Deaux, 1992). This high accessibility should make the attitudes toward these social groups highly accessible as well. According to Tajfel and Turner (1986), one consequence of this type of social identification is in-group bias, which is exemplified by positive attitudes and evaluations of the in-group. It follows that the activated

attitudes would also probably be positive. This concept is also studied as national identity (e.g., (Blank and Schmidt, 2003), which refers to how a person identifies with and feels a positive link to their own country, placing significant importance on this sentiment (Maldonado and Muehling, 2006; Zúñiga, 2016). Customers with a strong sense of national identification frequently favor products made in their home country (Zeugner-Roth & cs., 2015). For instance, studies on specific products, such as local wine or cheese, indicate that customers who have a strong sense of place identity are more likely to value products made in their nation or region (Fusté-Forné, 2020, Le & cs., 2013). Based on these considerations, we put forward the following hypotheses.

H2: Vietnamese Millennial tourists's national identity positively influences their attitude toward domestic destination

National identity and domestic destination choice

National identity and related concepts, such as ethnic identity, were identified as important mechanisms through which cultural values and people's behaviors were influenced (Cleveland et al., 2015), demonstrating the direct influence of national identity on behavioral patterns with regard to the influence of national identity on consumer behaviors. People who have a strong sense of national identity often believe that their country is superior to other countries. Prejudice against other nations and a propensity to reject foreign goods are fostered by this idea.

In the context of tourism, national identity is in line with the viewpoint of the traveler, and the destination is frequently seen as a brand. There is a strong correlation between visitor intention and advocacy when the country is viewed as a brand (Stokburger-Sauer, 2011). Therefore, a strong sense of national identity will probably result in more favorable word-of-mouth from travelers, similar to the willingness to recommend their nation as a tourism destination. However, there hasn't been any investigation on the relationship between destination choice and national identity. It is anticipated that Vietnamese millennial tourists are more inclined to choose their homeland as a travel destination if they identify as more patriotic. Stated formally:

H3: Vietnamese Millennial tourists's national identity positively influences their domestic tourism destination choice.

4.2. The perceived value effect

Perceived value and attitude

An individual's value perceptions may influence his or her attitudes (Poortinga & cs., 2004; Yeon Kim and Chung, 2011). Generally, customer perceived value is defined as the trade-off between what is received from and what is given for the products or services based on perceptions (Zeithaml, 1988). However, most researchers (e.g. (Tudoran & cs., 2009; Yeon Kim and Chung, 2011; Kang & cs., 2015; Shamim & cs., 2017) have defined value, in psychological terms as an individual's belief about desirable end states, and have argued that attitude mediates the individual's values and behaviour relationship. Surprisingly, the literature on tourism has yet to demonstrate how customer attitudes are impacted by perceived value of products or services. Furthermore, visitors may be drawn toward or away from a specific behavior depending on how good their attitudes are (Lee & cs., 2005). Therefore, this paper proposes the following hypothesis:

H4: For Vietnamese Millennial tourists, perceived value positively influences their attitude toward domestic destination

Perceived value and destination choice

It is essential for service providers to comprehend how perceived value affects travelers' intentions to visit in tourism contexts (Sparks, 2007) in order to strengthen product/service features to meet the needs of travelers.

It is well accepted that a customer is more likely to make a purchase if they think a good or service is worth a comparatively high amount (Zeithaml, 1988). Similar to this, consumers' decisions to buy a product or service may be influenced by their expectations of the value they would obtain from the experience (Xu & cs., 2020). Researchers show that PV is one of the main factors influencing tourist outcomes (de Oliveira Santini & cs., 2018; Dedeoğlu & cs., 2016). Tourists will be more inclined to buy when the perceived value is high. Petrick and Backman (2002b) discovered that tourists' intentions to return are positively correlated with the perceived value. Additionally, Huang and Hsu (2009) showed that revisit intention is significantly predicted by the idea of perceived value. Perceived value plays an important role when customers consider revisiting a destination. Customers are then guided by this perceived value while deciding whether or not to go. Based on the above studies, the following has been predicted:

H5: For Vietnamese Millennial tourists, perceived value positively influences their domestic destination choice

4.3. Attitude and Destination choice

The decision of tourists to visit a particular destination can be accurately predicted by their attitude (Ragheb and Tate, 1993; Reza Jalilvand and Samiei, 2012). According to the theory of planned behavior (Ajzen, 1991), behavioral intention is affected by attitudes, subjective norms and perceived behavioral controls toward behavior. The intention behind an attitude can affect external behaviors (Ajzen, 1991; Lee, 2007). An individual's intention to perform the behavior will be stronger if they have a more positive attitude about it (Ajzen, 2001). According to Um and Crompton (1990), attitude plays a significant role in deciding whether a prospective destination is chosen as part of the evoked set and in choosing a final destination. Lee (2009) also found that tourist attitude affects future tourist behavior. Therefore, tourists are more likely to express a desire to visit a place if they develop a positive impression toward it. Hence, we propose the following hypothesis based on this finding:

H6: For Vietnamese Millennial tourists, attitude positively influences their domestic destination choice

4.4. The mediating role of attitude

Drawing from the VAB and CAB framework, this study posits that a mediation effect will arise between Vietnamese Millennial tourists' valuation of their national identities, and their selection of domestic destinations through the mechanism of attitude. Thus, the following hypotheses were formed:

H7a: Attitude mediates the relationship between Vietnamese Millennial tourists' national identity and their domestic tourism destination choice.

H7b: Attitude mediates the relationship between Vietnamese Millennial tourists' perceived value and their domestic tourism destination choice.

Based on above hypotheses, the proposed research model is as follows:

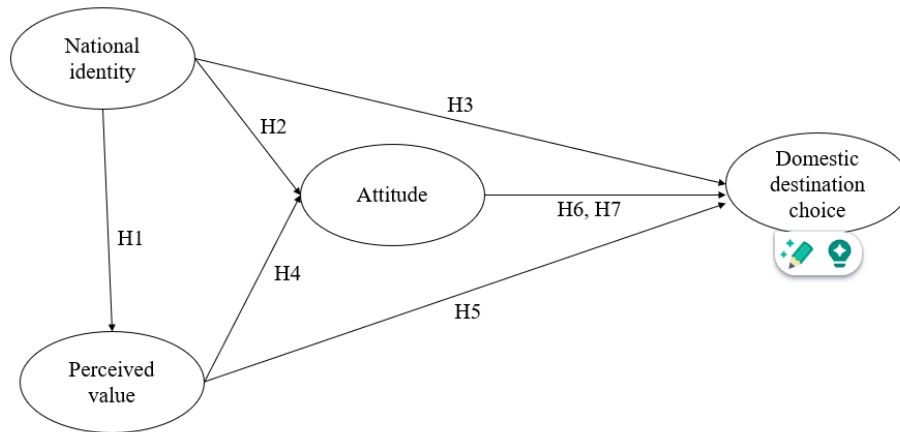


Figure 1: Proposed research model

5. RESEARCH IMPLICATIONS AND LIMITATIONS

5.1. Theoretical implications

This study makes several contributions to the literature.

First, as a key concern in the globalization phenomena, this study focuses on the national identity of consumers and how it influences globalized consumption behaviors in the context of tourism. Few empirical studies have examined the impact of people's social identities on globalized consumption patterns (Samuel Craig & Douglas, 2006), particularly in non-Western contexts and tourism (Cleveland, Papadopoulos, & Laroche, 2011).

Secondly, although a number of studies have shown how social identities affect behavioral intentions, including consumption behaviors (Cleveland et al., 2011; Cleveland et al., 2013) and purchase intentions (Chekima & cs., 2016; Ma & cs., 2021; Sreen & cs., 2018); J. Yang et al., 2018), this was shown without the use of a mediator. It is anticipated that this study will contribute to the existing body of knowledge by investigating mediating processes in the relationship between national identity and attitude. The current study addresses the requirement to look into attitude mediators by demonstrating the mediating role of attitude in the links between national identity and destination choice.

And last, the study adds to the body of knowledge regarding ethnic Millennials as a potential market for businesses in the global economy and creates new avenues for more successful marketing messages to this particular group of consumers. Constantly negotiating between their national identity, Millennials are simultaneously connected to multiple ancestral or affiliative

communities that contribute to their complex identities (Brewer, 2001; Forehand & Deshpandé, 2001)).

5.2. Managerial implications

The model proposed has several practical implications for tourism marketers and managers at tourism destinations.

Given that destinations in developing countries will have to compete in a global tourism market, it is important to identify key elements that affect domestic destination choice. By obtaining a comprehensive understanding of Vietnamese Millennials' decision-making processes, government officials and marketers can determine the significance of each element in influencing Millennials' selection of domestic destinations. This understanding enables them to devise appropriate strategies to market their services effectively.

National identity levels also provide insightful information for domestic tourism marketers to develop differentiated marketing tactics. The national identity scale, for instance, can be utilized as a segmentation variable to help marketers create and deploy strategies relating to national identity and pertinent messages to various target tourist categories. As a result, it is crucial to incorporate this signal into the market segmentation bases, particularly when employing a strategy related to national identity.

5.3. Limitations and future directions

As with any other research, the current study includes limitations. One of the limitations is that this study proposed a theoretical model based on the previous literature and existing theories, but did not test the model. The validity of those claims cannot be confirmed or refuted by the existing study without the model's empirical evaluation. This proposed model only provides the basic ideas and directions for future research. Further research effort is necessary to confirm the empirical value of this proposed model.

Another limitation is that this study do not include characteristics of Vietnamese Millennials that might moderate the relationship variables. Numerous more factors pertaining to individual differences might also have an impact on selection and ought to be investigated. The limitations of this study also offer several research implications for other investigations. Further exploration of how different configurations of cultural values determine potentially distinct formation processes for national identity could yield more understanding of the characteristics of the global citizen. Other demographic variables such as gender, education, income level or other variables related to individual differences that could influence destination choice might also be interesting moderators and should be explored as well.

The proposed model is targeted at the domestic tourism setting, in which only the influence of the predispositions of national identity and perceived value on tourists' behavior are investigated in the domestic tourism context. Extending the model further to examine the context of international tourism might be intriguing.

Future studies should also empirically examine the conceptual model in different research contexts. For example, selection airlines, hotels, car rentals and many other tourism products might generate different findings for the proposed conceptual model, which could also provide valuable practical implications for tourism marketers.

6. CONCLUSION

The factors that affect travelers' preferences or choices of holiday destination by tourists have been well researched from various perspectives from time to time. The research analysis mentioned above, however, raises the possibility that the factors may have been affected by the globalization as well as the social and economic impact of the COVID-19 global pandemic. A conceptual framework is developed to analyze the main variables that would affect domestic Millennial tourists choice of holiday destination in Vietnam. The researcher is aware of the numerous studies that were done on the various aspects before to the onset of the pandemic in late 2019. Nevertheless, there is a lack of more recent studies to confirm these factors in light of the COVID-19 pandemic's effects on Vietnamese domestic travelers' preferences. Thus, this study offers interesting implications for research aimed at promoting domestic tourism as an integral component of Vietnam's tourism recovery strategy.

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THE ISSUE OF HUMAN CAPITAL IN THE DEVELOPMENT OF TOURISM ECONOMY LINKED TO CULTURAL HERITAGE IN TUYEN QUANG PROVINCE, VIET NAM

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ABSTRACT

Developing tourism linked to promoting cultural heritage to contribute to becoming a fairly developed and sustainable province in the region is a correct policy of Tuyen Quang. Among the resources ensuring the development of this economic sector, the issue of "human capital" plays a particularly important role. This capital is not only reflected in the role of people in planning and managing tourism and serving tourists but also includes the workforce for preserving and promoting cultural heritage. Based on the published research results, relevant documents, and local practical investigations, through analysis and synthesis, the laws have been reconstructed, and judgments about the nature of these laws have been made, thereby establishing a scientific basis for Tuyen Quang to build a knowledgeable leadership and management team that can make sound decisions in a harmonious combination of economic development with preserving identity and cultural heritage; to have a team of skilled professionals in tourism product development linked to heritage; and to have a community that is responsible for the heritage and actively participates in tourism, being friendly to visitors.

Keywords: Human capital; tourism economy; cultural heritage; promoting heritage.

1. INTRODUCTION

The basic issues for developing an economic sector include: financial investment capital; production technology; product output. For the tourism economy associated with heritage, two of the three factors that create products are people, so ensuring its sustainable development is the issue of "human capital". This capital is not available but needs to go through the investment and construction process to be formed to continue investing in the tourism economy. That source of capital is a system of groups of subjects with understanding, working capacity, creativity, professional ethics, sense of responsibility,... formed through many different forms such as training at professional schools, vocational training, training, study tours, community guidance,... All aim to have a quality human resource to both gain economic value contributing to improving material life, and preserve the authenticity and inherent value of heritage contributing to improving spiritual life for the people.

With the characteristics of ethnic structure, geographical and cultural location between the East and West of the North, Tuyen Quang is also considered the "revolutionary museum" of the whole country. The whole province currently has 17 intangible cultural heritages at the national level, 03 special relics and landscapes, 182 relics and 01 treasure; At the provincial level, there are 271 relics, 34 folk festivals, 04 religious festivals, 03 cultural tourism festivals and 02 revolutionary festivals; especially, UNESCO recognized Tuyen Quang as having 01 representative intangible cultural heritage of humanity. Developing and perfecting the policies of the 15th and

16th Congresses, at the 17th Congress of the Provincial Party Committee, tourism continued to be identified as one of the 3 breakthroughs of the term. One of the solutions to implement that is: "Closely linking tourism development with the conservation and promotion of the values of natural resources, cultural heritage, history and cultural identity of ethnic groups"⁽¹⁴⁾. Preserving and promoting cultural heritage for sustainable socio-economic development is identified as an important, continuous task, and requires thorough understanding, full and serious implementation.

Along with investing in infrastructure development, developing technical facilities for the tourism industry and taking care of tourism resources, human resources are an issue that needs to be resolved for the sustainable development of Tuyen Quang's tourism industry. The issue of human resources as a type of investment capital here includes both the team of specialized cultural and tourism staff and the quality and spirit of participation of the community. Clearly identifying the issue and proposing solutions to build "human capital" to meet the needs is a requirement of both theoretical and practical nature to contribute to helping Tuyen Quang complete the proposed breakthrough task.

2. OVERVIEW OF THE LITERATURE

Researcher Dawnhee Yim in her work on the Protection of Intangible Cultural Heritage (Department of Cultural Heritage, 2007) shared Korea's experience on the role of the masses, of folk artists and their motivation to participate in the preservation and promotion of cultural heritage. In the Journal of Cultural Heritage, researcher Luu Tran Tieu in his article on Some issues on human resources in the conservation of historical and cultural relics (Tieu, 2012) expressed his views on the issue of forming "human capital" and proposed solutions to develop a team of managers, skilled workers and towards raising awareness in the community to promote the value of heritage. In the article Preserving intangible cultural heritage - from the perspective of globalization (Bai, 2007), researcher Dang Van Bai affirmed that the decisive role in the survival of cultural heritage belongs to the local community and the combination of the combined strength of managers, scientists, businessmen and each member of the village community.

In research works on cultural heritage in Tuyen Quang, the human resource factor is also mentioned. In the work Then Tay Tuyen Quang (Duc, 2002), artisan Ma Van Duc pointed out the limitations in the awareness of management subjects, the sense of responsibility of folk artisans and proposed a number of solutions to promote the role of cultural cadres at the commune and ward levels, heads of cultural houses, and artisans. Author Mai Duc Thong in the work Preserving Soong Co singing of the San Diu ethnic group in Tuyen Quang (Thong, 2004) proposed solutions to promote the value of heritage. According to this author, in the work Dao Quan Chet Rituals (Thong, 2008), the issue of human resources is mentioned in the role and responsibility of state management entities, folk artisans and proposed solutions to enhance the role of state management, create a mechanism for material and spiritual support; propagate and raise people's awareness of the value of cultural heritage. Researchers participating in the Workshop on Preserving and promoting the cultural identity of the Dao ethnic group in the context of integration and national

1 - Tuyen Quang Provincial Party Executive Committee (2020) Documents of the 17th Provincial Party Congress, Term 2020 - 2025, Tuyen Quang, p.117.

development (Ministry of Culture, Sports and Tourism, Tuyen Quang Provincial People's Committee, 2017) explained that the reasons why the traditional cultural heritages of the Dao people in Tuyen Quang have not been promoted are economic backwardness, emotional factors, lack of encouragement, and lack of preferential policies for artisans. The International Conference on Lam Binh Tourism, Tuyen Quang: Potential, Current Situation and Solutions (Tan Trao University, Sakon Nakhon Rajabhat University, Lam Binh District People's Committee, 2019) was attended by many domestic and foreign scientists and managers, discussing and sharing a number of solutions towards improving the quality of human resources, improving the lives of the community participating in preserving and promoting heritage associated with developing the tourism industry.

In the above works, the roles of each group of leaders, managers, implementers and especially the community have been identified quite specifically to preserve and promote heritage. However, up to now, there has been no scientific work that has researched and clarified the theory and practice of the content and solutions to build human capital for the implementation of linking the promotion of cultural heritage with tourism development in Tuyen Quang today.

3. METHOD

From published research works, related documents and secondary data collected from the Provincial People's Council, Department of Culture, Sports and Tourism, Department of Home Affairs, People's Committees of districts and cities, the author conducts analysis to discover and exploit different aspects of the research topic, reproduce, explain the rules, make judgments about the nature of the rules of things or phenomena, thereby building scientific arguments on the issue of human capital in linking economic development of tourism with the promotion of cultural heritage in Tuyen Quang today.

The statistical data of the current survey are processed into percentages, averaged using Microsoft Excel software.

4. RESULTS

4.1. “Human capital” in tourism economic development associated with promoting cultural heritage

Exploiting the unique value of cultural heritage as a resource to attract tourists to visit and travel - bringing heritage into service of life, serving socio-economic development - that is one of the solutions to “actively preserve” cultural heritage. Here, tourism is the means, the driving force to promote cultural heritage, and cultural heritage is the resource to ensure the sustainable development of this economic sector. To develop the tourism economic sector, in addition to resources as a comparative advantage, there must also be synchronous investment in infrastructure and human resources. A tourism service product must have 3 factors: (1) natural landscape, natural elements, cultural values; (2) technical infrastructure system such as roads, bridges, telecommunications, electricity, water, accommodation facilities, restaurants, etc.; (3) labor in tourism. Among these factors, according to the endogenous economic theory system and the

sustainable development theory, people are always identified as the most important factor. As a service economic sector, tourism requires the simultaneous participation of many groups of subjects. Moreover, in relation to cultural heritage, the requirements are even higher in terms of both quantity and quality of the capacity of the participating subjects, because visitors come into contact with not only natural factors but also with the cultural environment - an entire ecological - humanistic space.

Cultural heritage is a factor that creates tourism products, so the human issue - the human resource issue becomes more important in ensuring service quality, it is a type of investment capital for sustainable development. Human capital is made up of three main factors, which are: (1) initial capacity, talent and innate factors of the individual; (2) professional capacity and knowledge acquired through training; (3) skills and professional experience accumulated from the process of living and working. Thus, this capital is the knowledge, skills, and experience accumulated in each person through the process of learning, training, working and is demonstrated through the results and efficiency of work. Human capital is a type of intangible capital associated with people but also depletes, also requires investment costs to form and this is the most important capital for the development of each enterprise and country. The issue of "Human capital" in tourism development associated with promoting cultural heritage is to consider the role of people in preserving, managing and promoting cultural heritage to create rich and sustainable tourism experiences. Human resources here are not only in planning, managing tourism, serving tourists but also include human resources for preserving and promoting cultural heritage. In fact, human resources for tourism development associated with cultural heritage are not a means to exploit but it is the goal for the development of sustainable tourism. That goal is to develop a team of leaders and managers who are knowledgeable to make the right decisions in the harmonious combination between economic development and preserving identity, preserving cultural heritage; have a team of professional staff with good skills in exploiting and developing diverse tourism products associated with heritage; have a community of residents who are responsible for heritage and proactively participate in tourism, friendly to tourists.

4.2. Issues arising for "human capital" in linking the promotion of cultural heritage with the development of tourism economy in Tuyen Quang nowadays.

Implementing the policy of developing the tourism economy, many specialized resolutions, projects, and action programs have been issued by Party committees and authorities at all levels in Tuyen Quang. The issue of human resources for tourism is directed by the Provincial Party Committee: "Improving the quality of human resources in both state management, business administration and tourism labor; focusing on training tourism skills for local communities at tourist destinations, especially community tourism" ⁽¹⁵⁾. With many solutions implemented, Tuyen Quang tourism has had positive developments, the number of visitors in 2021 increased by 11.2%, in 2022 increased by 24.8% and in the first 6 months of 2023 increased by 44% compared to the same period

2 - Tuyen Quang Provincial Party Executive Committee (2020) Documents of the 17th Provincial Party Congress, Term 2020 - 2025, Tuyen Quang, p.118

last year; Total social revenue from tourism in the period from 2021 to June 2023 reached 6,420 billion VND, contributing 4.7% to GRDP, creating jobs for more than 20,000 workers.

Table 1. Results of tourist attraction

| Year | Tourists (number of people) | Total social revenue (billion VND) |
|------------------------|-----------------------------|------------------------------------|
| 2021 | 1.900.000 | 1.860 |
| 2022 | 2.372.000 | 2.475 |
| First 6 months of 2023 | 1.823.000 | 2.085 |

Source: Provincial People's Council (2023).

However, this result is not commensurate with the potential of Tuyen Quang tourism. There are many different reasons, but considering the factors that determine the development of tourism in Tuyen Quang, human capital has some issues that need to be solved, which are:

First, the problem of training and guiding the community to participate in tourism.

Community tourism is developed based on the cultural characteristics, landscapes, and people of the locality, so the direct entity in organizing, managing, and operating it is the community. In Tuyen Quang, the types of community tourism include: Cultural tourism; Ethnic and indigenous tourism; Village tourism; Ecotourism. However, regardless of the type, community tourism in Tuyen Quang is always associated with cultural heritage. Therefore, the community plays a special role in tourism development in Tuyen Quang and the training and guidance of this group of subjects is not simply tourism in general but that profession is associated with the exploitation and promotion of the unique cultural heritage of the locality.

Currently, Tuyen Quang has over 2,600 mass art troupes in 138/138 communes, wards and towns of the province; over 200 folk music and cultural preservation clubs; over 110 cultural heritage clubs. According to statistics, from 2021 to present, the province has supported 77 traditional art troupes; organized 09 training courses to improve capacity for preserving and promoting cultural heritage values, fostering tourism expertise; 26 training courses for over 1,000 trainees who are managers and employees of tourism businesses and households. With a workforce of 20,000 people, support, training and community guidance work still has many limitations.

Lam Binh district has trained, guided and supported the community with the motto of doing community tourism associated with preserving and promoting the traditional cultural values of ethnic groups in the area through activities such as: opening a "Community Tourism Professional Training" class for households doing homestay business, art troupes and boat crews; organizing training courses to improve capacity and skills in doing community tourism; organizing for households to visit and learn experiences in doing community tourism in some provinces; supporting the renovation of house grounds, establishing art troupes, organizing rehearsals for performances to serve tourists. Since the beginning of 2022, the district has proactively invited lecturers to villages to teach how to do community tourism for each village in some communes in the district. However, in other localities, community participation in tourism is still mainly spontaneous.

Second, the problem of promoting the role of owners of cultural heritages is tourism resources.

Folk artists play a special role in preserving and disseminating cultural heritages. They are “Living Human Treasures” who determine the survival of intangible cultural heritages. Their guidance and teaching ensure the originality and value of the performances and programs of art groups and traditional occupations. Moreover, the practice of heritage by these cultural owners has great appeal to visitors. The policy of building ethnic cultural villages at the provincial level and each district and city building a typical cultural village associated with tourism further affirms the role of these artists. However, up to now, Tuyen Quang has not had any mechanism, policy or preferential financial support for folk artists. Most of the expenses for teaching, collecting, making musical instruments, costumes, etc. are still paid by the artists themselves. Apart from the Badge, Certificate of Merit, bonus for receiving the title and enjoying the medical examination and treatment regime for A10 subjects of the health sector, folk artists have not received any financial support for their living and heritage activities.

The province currently has 02 People's Artists and 11 Meritorious Artists. Honoring artists shows the respect of the community and the State. However, it only has practical meaning when we create a good life for the artists after being honored, so that they can continue to wholeheartedly devote themselves to the work of preserving, transmitting and promoting folk cultural values. If the current support policy for folk artists does not change, Tuyen Quang will not be able to fully promote the ability and role of these "Living Human Treasures" for the cultural resources of the province's tourism.

Third, the problem in training high-quality human resources for the tourism industry.

As of June 2023, the whole province only had 11/187 cadres, civil servants and public employees working in the tourism sector trained in tourism. In the period 2020-2023, the rate of cadres, civil servants and public employees working in this field only accounted for 5.88% to 6.55%. Currently, 6/7 districts and cities in the province do not have cadres trained in tourism. Every year, only 9.1% to 28% of cadres in this sector participate in tourism training courses. In addition, although the rate of cadres meeting foreign language proficiency standards is high, the ability to use it in practice is very low.

Table 2. Qualifications of officials, civil servants and public employees working in the tourism industry

Unit: Person.

| Year | Total in the province | Education level | | | Trained in tourism |
|------|-----------------------|--|--------------|------------------|--------------------|
| | | Major in Tourism (100% in university) | Other majors | Foreign language | |
| 2020 | 183 | 12 | 171 | 157 | 26 |
| 2021 | 185 | 11 | 174 | 157 | 52 |
| 2022 | 185 | 12 | 173 | 159 | 21 |
| 2023 | 187 | 11 | 176 | 144 | 17 |

Source: Provincial People's Council (2023).

From 2017 to present, Tan Trao University is the only institution in the province that is providing undergraduate training in Tourism and Travel Services Management and Cultural Management. Due to the specific requirements of the profession, although there are many job opportunities and a very high employment rate after 1 year of graduation, every year, the number of students enrolling is quite modest and the rate of students dropping out of this major is high (over 20%). For the training program in Tourism and Travel Services Management, the courses on cultural heritage and promoting cultural heritage take up limited time. The major knowledge block has the course "Vietnamese customs, practices and religious beliefs" (03 credits) and the course "Historical relics and scenic spots of Vietnam". The specialized knowledge block in Tourism Management has the course "Architecture, traditional fine arts" (02 credits); Hotel Management major, Event Management major has the course "Vietnamese Culinary Arts and Culture" (02 credits); all 3 majors also have the course "Northwest Tourism Resources". With such a short and purely theoretical time, knowledge about linking the promotion of cultural heritage in general, and Tuyen Quang cultural heritage in particular, with tourism for students is quite difficult.

Fourth, the problem in developing and promulgating programs, plans and management documents to implement State regulations on tourism.

In the recent period, there are still localities that have developed action plans for tourism development that are not in line with the actual situation of the locality (Tan Quang ward, Tuyen Quang city; Thuong Lam commune, Lam Binh district); inspection and supervision work has not been fully implemented (Lam Binh district). There are also localities that have issued documents that are not consistent with legal documents on state management of tourism: Lam Binh district People's Committee issued regulations on determining the contribution level of business households to the common welfare fund of villages and residential groups from the accommodation revenue of tourists; Thuong Lam commune, Lam Binh district incorrectly determined the expenditure contents of the Development Support Fund for community tourism sites; Tan Trao National Special Historical Relic Site incorrectly implemented regulations on keeping visitors' vehicles. Consulting on the proposal to establish industrial property rights is still slow, there are no rich tourism products and international branded products; linking tourist routes with localities and tourism statistics are still limited.

Some party committees and authorities have not yet fully recognized the role of culture in socio-economic development, and have not paid due attention to the work of preserving and promoting the value of cultural heritage in general and in association with tourism development in particular; people's awareness of this issue is still limited; propaganda and promotion of heritage has not been regular; the staff working in cultural work in ethnic minority areas is still very lacking, not properly specialized, and not meeting the requirements of work in the new situation; education policies have not paid adequate attention and have not had effective measures in teaching and learning ethnic minority languages.

Thus, Tuyen Quang needs a team of specialized staff with the capacity to advise, propose and implement the management of tourism activities in general and simultaneously preserve and exploit local cultural heritages to serve tourism in particular effectively; needs a community whose

core is folk artisans who are both responsible for preserving cultural heritage and have tourism skills and a proactive, positive attitude in using cultural heritage to create products that attract tourists. This human resource - capital, due to the characteristics of community tourism and regional differences, on-site construction and development is the most effective solution.

4.3. Solutions to build "human capital" for linking the promotion of cultural heritage with the development of tourism economy in Tuyen Quang today

Firstly, build a team of specialized cultural and tourism staff with qualifications, capacity and enthusiasm.

The cultural sector and local authorities give priority to arranging, training, fostering and funding to effectively implement the Human Resource Development Project of Tuyen Quang province for the period 2021 - 2025, with a vision to 2030. By 2025, the goal of developing human resources in the tourism sector is to achieve 100% of full-time civil servants and officials in charge of the tourism sector with a university degree or higher and training in state management of tourism, 100% of direct workers at tourism businesses are trained in tourism and trained in professional knowledge; 100% of communes, wards and towns in the area with community tourism activities are trained, coached and guided in tourism knowledge⁽¹⁶⁾.

Issue specific policies for students majoring in culture and tourism at Tan Trao University on supporting their studies and employment after graduation. The school needs to periodically update its training program in line with new trends in tourism, and equip students with knowledge of history, traditions, conservation issues, and promotion of local cultural heritages, along with the development of soft skills. The training process integrates community engagement activities, including cooperation with localities to organize activities such as traditional festivals, sightseeing tours of scenic spots; strengthen links with tourism businesses to ensure that students have access to practical work as soon as possible. To have a team of high-quality cultural and tourism staff requires the participation of the entire political system to effectively implement the policy: "Focus on planning, training, fostering, and arranging professional and technical staff in the cultural sector; Improve the quality of the staff doing cultural work at the grassroots level to meet the requirements of tasks in the new situation; discover and nurture cultural and artistic talents"⁽¹⁷⁾.

Second, attract and train, guide the community to actively participate in tourism development.

In order for heritage tourism to develop sustainably, it is necessary to ensure the principle of encouraging the participation of local communities. It is necessary to have the participation of local communities because they are the subjects of the heritage with their own unique lifestyle and

3 - Decision No. 474/QĐ-UBND dated August 12, 2021 of the Chairman of the Provincial People's Committee promulgating the Project on human resource development in Tuyen Quang province for the period 2021-2025, with a vision to 2030.

4 - Tuyen Quang Provincial Party Executive Committee (2017) Documents of Tuyen Quang Provincial Party Committee for the period 2013 - 2015, Tuyen Quang, p.1065.

activities, which are factors that attract tourists. This participation creates opportunities for the community to gradually improve their material life. At that time, participation will be voluntary, proactive, and positive, the value of cultural heritage will be truly promoted and tourism will develop sustainably.

Tourism associated with promoting cultural heritage is community tourism, organized and implemented by the community, so training and guiding the community to do tourism is very important to improve the quality of this special capital source and local authorities need to take the initiative to implement it. The training and guidance program for the community needs to have the following basic contents: 1. Professional skills, tour guide skills, customer management skills and tourism safety; 2. Communication and interaction skills so that every local person can be a tour guide; 3. Knowledge and understanding of local history, traditions, arts, and culture to be able to create unique and quality tourism experiences; 4. Attitude of respect and preservation of cultural heritage, requiring attention to maintaining the integrity and value of cultural heritage in the process of tourism development; 5. Creative skills, developing new and diverse tourism products based on cultural heritage, combined with educational activities and cultural experiences; 6. Skills to promote and market tours associated with cultural heritage, through media channels.

Schools need to be proactive and creative in implementing the use of cultural heritage in teaching in general schools and continuing education centers. Through local mass organizations, propaganda should be carried out so that each person is aware of their role and responsibility in participating in tourism; attitudes towards tourists, behavior and continuing to create cultural heritage so that all create a cultural space, an ecological - humanistic space with local cultural characteristics to attract tourists. At the same time, localities need to continue to implement and expand the beneficiaries of Project 6 "Preserving and promoting the fine traditional cultural values of ethnic minorities associated with tourism development" under the National Target Program on socio-economic development in ethnic minority and mountainous areas.

Third, there are support policies for cultural heritage cores - "Living human treasures".

First of all, it is necessary to create opportunities and environments for folk artisans to collect, restore and preserve cultural heritages such as languages, customs, folk arts and traditional crafts. Encourage artisans to produce tourism products such as handicrafts, folk arts and unique cultural experiences. Support in accessing the tourism market through effective distribution and marketing channels, including the creation of points of sale at tourist destinations and electronic platforms; build links between artisans and tourism businesses to take advantage of cooperation opportunities and promote sustainable development.

Authorities at all levels need to promptly implement the provisions of Decree No. 109/2015/ND-CP dated October 28, 2015 of the Government on support for folk artisans and excellent artisans with low income and difficult circumstances. Accordingly, artisans with an average monthly income per capita lower than 50% of the basic salary prescribed by the Government will receive monthly living allowances with three support levels: VND 1,000,000, VND 850,000 and VND 700,000 per person; the State will pay health insurance at the same rate

as for people in poor households and when they die, these subjects will be supported with VND 7,000,000 for agencies, organizations and individuals to organize funerals.

5. CONCLUSION

Using capital effectively is the key to ensuring high and sustainable revenue and profits in business. But first of all, there must be solutions to mobilize the necessary capital for that investment. For the tourism economy in Tuyen Quang, the advantageous resources are the local traditional cultural heritage treasure and the "revolutionary museum" of the whole country. However, these resources cannot become tourism products or create surplus value by themselves. Therefore, along with solutions to invest in technical infrastructure, tourism facilities, and promotion, the issue of creating resources and improving the quality of human resources is an urgent requirement today. The issue of "human capital" for tourism development associated with promoting cultural heritage is not simply about building a quality workforce for this key economic sector, but also about investing and creating a foundation to protect and maintain tourism resources, ensuring sustainable tourism development in order to successfully implement the breakthrough solution in socio-economic development that the Tuyen Quang Provincial Party Committee has proposed.

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APPLICATION OF AESTHETICS IN TOURISM EXPERIENCE

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ABSTRACT

Applying fine arts in tourism experiences is an increasingly popular trend, aiming to create unique and attractive experiences for tourists. Fine arts are not simply works of art but also include elements of design, decoration and space arrangement, helping to create special highlights for tourist destinations.

The application of fine arts to tourism can be expressed through many forms such as murals, sculptures, public art exhibitions, and public space design. These elements not only add aesthetic value but also help convey local culture, history and stories to visitors in a more vivid and memorable way.

By creating art spaces and organizing art events, tourist attractions can attract more visitors, especially art and culture lovers. In addition, the combination of fine arts and tourism also contributes to sustainable development, creates job opportunities for local artists and boosts the regional economy.

Especially, in the context of Tuyen Quang, a province rich in tradition and culture, applying fine arts in tourism experiences can bring many benefits. It not only helps honor and preserve local cultural values but also opens up new opportunities for the province's tourism industry, contributing to enhancing Tuyen Quang's position on the Vietnamese and international tourism map.

Keywords: Art, Experience, Design, Conserve, Culture, Tourism.

1. INTRODUCTION

Human society from ancient times to the present has always been covered by “Applied Fine Arts”. The activities of Applied Fine Arts in general are a process that demonstrates the unified and harmonious combination of economic - social - scientific - technical - cultural - artistic and organizational - management knowledge. People who do Applied Fine Arts must have deep specialized knowledge and a broad knowledge base [4].

Fine arts play an important role in life, creating beauty, inspiration and cultural values for the community. In the field of tourism, fine arts not only enrich the experience of tourists through architectural works, museums and handicrafts, but also contribute to preserving and promoting local cultural heritage, specifically Tuyen Quang Province with traditional craft villages. Fine arts contribute to enhancing cultural values, helping tourists understand more deeply about local culture, creating special spiritual experiences, making them feel more connected to the places they visit, thereby increasing the overall value of the trip, promoting the sustainable development of the tourism industry.

Pursuant to Conclusion No. 28 KL/TU dated May 18, 2016 of the Standing Committee of the Provincial Party Committee on tasks and solutions for tourism development in the period 2016-2020 [14] Plan No. 51/KH-UBND dated June 23, 2016 of the Provincial People's Committee on tourism development in the period 2016 - 2020, Tuyen Quang has planned 4 main tourist areas

[14] (i) Tan Trao historical - cultural and ecological tourist area [2]. (ii) Tuyen Quang city center tourist area and surrounding areas; (iii) My Lam mineral spring tourist area and surrounding areas; (iv) Na Hang and Lam Binh ecological tourist areas [2].

The specific objective of the study is to explore how fine art can be used to enhance the tourist experience, thereby creating more attractive tourist destinations and enhancing the cultural value of the area. At the same time, the study also examines how fine art can serve as an important tool in preserving and promoting cultural heritage, contributing to raising tourist awareness and attachment to the destination.

Art helps society become more poetic and livable, helps people love beauty and have aesthetic taste. Therefore, art discovery tourism (artcation) always has a special attraction for tourists who want to broaden their outlook on life by experiencing works of art at the destination, not just simply relaxing [8].

2. LITERATURE REVIEW

2.1 Some studies related to tourism development and fine arts training

Bringing traditional handicraft products into tourism is not a new trend in the world, but in Vietnam this model is still not popular or there are localities that do tourism through fine arts but it is too small, not spreading in society. To refer to and learn the model of doing fine arts, specifically fine arts applied to tourism in the locality is very difficult, there are some craft villages doing tourism but it is due to the actual needs of people visiting the profession, getting research materials and asking to learn the profession. Villages with tourism ideas following the trend of social development such as: Bat Trang pottery village, Ha Thai lacquer, Van Phuc silk, Phu Vinh bamboo and rattan weaving...Therefore, searching for documents in books, magazines, theses, dissertations and studies does not clearly show the direction of fine arts in tourism experiences, but only topics on exploiting traditional cultural values to develop tourism, solutions to develop tourism through communication, developing ecotourism... and fine arts documents that mention craft villages and the direction of tourism with advantages and disadvantages...Based on the articles, we will research to create documents for implementing applied fine arts in tourism experiences such as the following documents:

Plan No. 51/KH-UBND of the People's Committee of Tuyen Quang Province (2016) aims to develop tourism in Tuyen Quang Province in the period of 2016-2020. The plan focuses on improving tourism infrastructure, preserving and promoting the cultural and historical values of the province. In addition, the plan also proposes to strengthen tourism promotion, develop specific tourism products, train human resources and cooperate with other provinces and cities to improve the effectiveness of tourism development. The goal is to create a foundation for tourism to become a key economic sector of the province [16].

Department of Culture, Sports and Tourism of Tuyen Quang (2017). The report highlighted a number of important achievements in tourism development of the province according to the Resolution of the 16th Party Congress. In particular, the province has focused on investing in tourism infrastructure, preserving and promoting national cultural values. Tourism products have

been diversified, creating favorable conditions to attract domestic and foreign tourists. Tourism promotion and advertising activities have been promoted, along with building the image of Tuyen Quang tourism brand. The province also focuses on developing community tourism, creating jobs and increasing income for local people [15].

Nguyen Quyet Thang 2017 “Exploiting traditional cultural values to develop sustainable tourism in Vietnam”. The article studies the experiences of countries in the region and the world in preserving and exploiting traditional cultural values, assessing the current situation, proposing solutions for sustainable tourism development in Vietnam Exploiting traditional cultural values to develop sustainable tourism in Vietnam...Having potential for cultural resources does not mean that there are cultural tourism products, if cultural resources are not exploited to serve tourism, they will not become tourism products [11].

The article "Developing Ecotourism in Tuyen Quang: A Case Study of Lam Binh District" by Nguyen Khai Hoan, Nguyen Phuong Thao and Nguyen Van Hien (2018) focuses on developing ecotourism in Lam Binh District, Tuyen Quang. The author analyzes the local natural and cultural potential, evaluates the favorable and difficult factors in developing ecotourism. The article proposes sustainable development solutions to protect the environment and honor indigenous culture, while promoting the local economy and improving community life [2].

Nguyen Lan Huong (2019), That vision and strategy lie in areas related to training such as programs, training links, teachers, learners, facilities, etc. Facing barriers and challenges to find directions, overcome difficulties, move forward, create development changes, help improve the position of MTUD training... is the official key, contributing to opening the door to the development of the economy and the nation [5].

Trinh Sinh (2019), an article in the journal of Tan Trao University of Science, focuses on analyzing the tourism potential of Binh Lam, Tuyen Quang, through the values of prehistoric, historical and religious relics. The author emphasizes the richness of relics, including caves, temples and archaeological artifacts, and points out that the conservation and development of sustainable tourism will bring economic and cultural benefits to the locality. The article also makes some recommendations to effectively exploit these potentials in the future [10].

Giang Tu (2019), an article in VCCI Newspaper “Investing in culture and arts to promote tourism development” highlights the important role of investment in culture and arts in promoting tourism development. The article analyzes that the combination of culture and arts and tourism not only creates diverse and unique tourism products but also enhances the value of Vietnam's tourism brand. To attract investment in this field, there needs to be support and incentive policies from the government, along with the participation of private enterprises. In addition, training high-quality human resources in the fields of culture, arts and tourism is also a key factor for sustainable development [13].

Nguyen Thi Quynh Huong (editor) et al (2020). Lam Binh district, Tuyen Quang province is considered a destination that fully converges the necessary and sufficient conditions to develop community tourism. Accordingly, determining the factors affecting the decision to participate in community tourism of local people in Lam Binh... (1) Personal factors, (2) Attractiveness and image of tourist destinations; (3) Support and investment from the State, local authorities,

organizations, businesses; (4) Influence of surrounding people; thereby proposing solutions to attract local people to participate in community tourism and strongly develop community tourism in Lam Binh district, Tuyen Quang province in the coming time [7].

Nguyen Mai Chinh (2022). Some communication solutions to promote tourism development in Tuyen Quang in the current period [1]. The article presents communication solutions to promote tourism development in Tuyen Quang. The author emphasizes the use of communication to promote tourist destinations, raise public awareness and improve the quality of tourism services. At the same time, the article proposes communication strategies suitable to local characteristics and current tourism development trends.

Thuong Nguyen (2022) “Applied Fine Arts: Great Potential for Developing the Cultural Industry” [9]. Applied Fine Arts is a broad field that has been and is touching every aspect of social life. In the current period of integration, the development of applied fine arts, with good products and designs, will contribute to building and promoting the Vietnamese cultural industry.

Le Ngoc Huynh (2023) “Preserving and developing the blacksmithing profession in Pac Rang associated with tourism - opportunities and challenges” Traditional handicrafts contain profound cultural values and economic roles for households, but they are being lost and lost in the market economy. To preserve and optimally exploit the above values, authorities at all levels in Vietnam have built a program to develop handicrafts associated with tourism after consulting the experiences of many countries in the world [3].

Le Than (2024), “Cooperation with businesses in training bachelors of applied fine arts - current situation and solutions”, Applied Fine Arts (MTUD) is a scientific field with a very broad social practical nature. As one of the key fields of the cultural industry in our country today, it also clearly demonstrates the economic nature of culture in contemporary society. As a special art field with high applicability, cooperation and association with businesses in training is extremely necessary and important [12].

Through some documents, we see that the documents have directed the development of local tourism. Tuyen Quang province has been implementing many tourism development plans, focusing on preserving and promoting local cultural and historical values. These plans include improving tourism infrastructure, promoting tourism brand image, and developing specific tourism products, especially eco-tourism in Lam Binh district. The articles also emphasize the importance of exploiting traditional cultural values and investing in culture and arts to promote sustainable tourism development.

However, the document has not specifically mentioned the application of fine arts in tourism development in Tuyen Quang, but focuses more on preserving cultural heritage and developing ecotourism.

2.2. Benefits of applying fine arts in tourism

The application of fine arts in tourism brings many important benefits, from enhancing cultural values to boosting the local economy. Here are some key points.

First, enhancing local cultural and heritage values: Fine arts can help preserve and honor local cultural heritage. By introducing works of art, traditional and modern product creations, visitors can gain a deeper understanding of the history, culture and customs of the land they visit.

Second, creating unique travel experiences: Fine art brings visitors new and rich experiences. Public art works, exhibitions or art museums provide different spaces, helping visitors not only visit but also feel and interact with art.

Third, attracting high-end tourists: High-income tourists often seek travel experiences with artistic and cultural values. Developing unique events, art festivals or art spaces will attract this group of visitors, contributing to increasing revenue for the tourism industry.

Fourth, promoting local economic development: Art can become part of tourism products, thereby creating employment and income opportunities for local people. Handicrafts, paintings, or art performances can be sold or presented as part of the tourism experience.

Fifth, strengthening tourism brand: Cities and localities famous for their unique art often become attractive destinations. Using fine arts to build and strengthen tourism brands helps create a unique mark, making that locality stand out on the tourism map.

Sixth, encouraging creativity and artistic development: Tourism is a driving force for local artists and artisans to develop and create many new works. This not only enriches the local art scene but also contributes to enriching the experience of tourists.

Seventh, strengthening Community Connections: Community art projects can create connections between locals and visitors. Activities such as art workshops, or interactive art projects help people participate, share and understand each other better.

Eighth, creating local jobs: The elderly can participate in handicraft activities, share experiences, earn extra income, and preserve traditional cultural values. Children have the opportunity to learn through extracurricular art programs, both entertaining and developing creative skills during the summer vacation. Young people can take advantage of career opportunities in the tourism and art sectors, thereby contributing to local development, preserving cultural heritage, and building a sustainable future for the community.

The application of fine arts in tourism brings many important benefits, contributing to promoting economic development, preserving culture, and creating jobs for many people in the community. These benefits not only enhance the tourism experience but also contribute to the sustainable development of both the tourism industry and the local community.

3. METHODOLOGY

The article collects, synthesizes and analyzes scientific articles and published research works to establish a theoretical basis related to the topic. In addition, the analysis and synthesis method is used to clarify the benefits and challenges of the development of craft villages in the direction of applied arts in tourism experiences, contributing to the development of the local economy, preserving cultural heritage, and building a sustainable future for the community.

4. RESULTS AND DISCUSSION

4.1. Research results

Potential for tourism development associated with applied arts. There are contents that have been researched and developed in traditional craft village tourism, current status and development prospects.

4.1.1. *Dum weaving village*

Location and economic role: Dum weaving village is located in Tu Quan commune, Yen Son district, about 20 km southeast of Tuyen Quang city, famous for its rattan and bamboo weaving products. The dum weaving profession here is maintained and developed, making an important contribution to the local economy, becoming the main source of livelihood for many households in the village.

Export potential and market development; The weaving products of the craft village not only serve domestic consumption needs but also have export potential, contributing to increasing people's income. In particular, the combination of traditional values and modern technology has opened up many new directions of development, meeting the needs of the contemporary market.

Support from local policies: Craft villages are receiving support from local and provincial policies such as capital support programs, vocational training and product promotion. These efforts aim to maintain and expand markets, helping craft villages adapt to current changes and challenges.

Challenges in conservation and development: Although craft villages still maintain their traditional occupations, they are facing challenges in competition and changing market tastes. Currently, craft villages do not have tourism development projects or do not cooperate with art schools and the Department of Culture to regularly organize study and tour programs, limiting development potential.

Craft village tourism development strategy: Linking with businesses to develop craft village tourism is a potential strategy. Visitors not only experience the production process but also have the opportunity to learn about the culture and history of the craft village. This is not only an opportunity for economic development but also a means to preserve and promote the traditional cultural values of Dum weaving village.

4.1.2. *Lam Binh Brocade Weaving Village*

Location and economic role: Lam Binh Village is located in Lam Binh District, Tuyen Quang Province, about 120 km north of Tuyen Quang City, bordering Ha Giang Province. This place is famous for the traditional brocade weaving of the Tay and Dao people: a place with a long tradition of brocade weaving. Brocade weaving is not only an important part of the culture of local people but also contributes to the income of households. Developing village tourism here can create a stable source of income, contributing to improving the economic life of the people.

Export potential and market development: Lam Binh Brocade has great potential to develop both domestic and foreign markets. With unique handicraft products, the village can export products to foreign markets, especially markets that love traditional handicraft products. In addition, developing souvenir products to serve tourists is also a potential direction.

Support from local policies: Local authorities play an important role in supporting and promoting the development of craft villages. Preferential policies on capital, vocational training, product promotion, and trade promotion are necessary factors for the sustainable development of craft villages. In addition, it is necessary to encourage cooperation with schools and research institutes to bring students to practice in craft villages.

Challenges in preservation and development: Besides the potential, Lam Binh craft village is also facing many challenges such as: the risk of losing traditional crafts due to competition from industrial products, lack of young labor force and limited investment capital. Preserving the traditional brocade weaving profession requires efforts from both the community and the government.

Craft village tourism development strategy: To develop sustainable craft village tourism, it is necessary to develop a community tourism development strategy, focusing on combining cultural tourism with practical experiences such as learning brocade weaving and participating in traditional festivals. In addition, it is necessary to build infrastructure, develop diverse tourism products, and promote the image of craft villages to domestic and foreign tourists. Lam Binh has a favorable opportunity to exploit traditional craft tourism because the traditional brocade weaving craft is well developed, the location is adjacent to Ha Giang, Tuyen Quang province has many orientations for Lam Binh, many researchers and development investors have been interested such as: "Developing eco-tourism in Lam Binh is one of the important solutions to exploit the potential and strengths of Tuyen Quang tourism according to the Master Plan for tourism development in Tuyen Quang province to 2020, orientation to 2030 and implementing Resolution No. 08-NQ/TW dated January 16, 2017 of the Politburo on developing tourism into a spearhead economic sector" [2]. Previously, tourism was quite new to Lam Binh people, but by 2019 there was a clear change, Lam Binh tourism has had significant development, mainly focusing on expanding the homestay DLCĐ model, developing more diverse tourism products and services. Thanks to that, the total number of visitors in 2019 reached 120,000, an increase of 300% compared to 2018 and tourism revenue reached 72 billion VND. It can be seen that the tourism industry, especially the community-based tourism in Lam Binh, Tuyen Quang, is showing many signs of improvement and has much potential for development in the coming time [7].

Tuyen Quang is a land where people have lived since the Hoa Binh Neolithic culture with Phia Vai cave (Lam Binh) with Chiem Hoa bronze drums and some pre-Dong Son and Dong Son cultural relics. This is the place with famous religious relics such as Phuc Lam pagoda (Lam Binh) and many other pagodas [10]. Tourism exploitation in Lam Binh - Tuyen Quang is progressing well, however, Lam Binh exploits tourism focusing on natural landscapes and festivals, not fully exploiting the strengths and potentials of the locality in the relic area, traditional crafts are still overlooked and not linked to the tourism chain of Tuyen Quang province.

Lam Binh brocade weaving village has the potential to develop craft village tourism, especially community tourism combined with cultural exploration and experiencing the traditional brocade weaving process. Fine arts schools bring students to craft villages, or the Department of Culture, Sports and Tourism of Tuyen Quang brings tourists to craft villages like Lam Binh to study and experience, but this is not a popular activity.

4.1.3. Minh Quang Wood Carving Village

Minh Quang Wood Carving Village, Minh Quang Commune, Chiem Hoa District, is about 70km northwest of Tuyen Quang City, bordering Ha Giang Province. From 2002-2024, this profession has developed strongly, especially famous for its worship products. The craft village has attracted many tourists and investors, thanks to the support of policies to encourage the development of craft villages by the local government. In the future, Minh Quang Wood Carving Village is expected to become an attractive cultural destination, combining tourism and preserving traditions.

4.1.4. Go Muong Pottery Village

Go Muong Pottery Village, Yen Son District, is about 20km southwest of Tuyen Quang City, bordering Son Duong District. From 2002-2024, the pottery profession has developed slowly but still maintains the profession, the products are imbued with regional traditions. This is one of the oldest and most famous pottery villages in the Northeast. The village's pottery products are made from a special type of clay, have high durability, natural colors, and are often used in daily life and in traditional ceremonies. Pottery here is not only a means of livelihood but also a symbol of the creativity and ingenuity of local people. Go Muong pottery products are diverse, from jars, pots, to sophisticated decorations, bearing the imprint of local culture. In the modern context, the craft village has received support from the province's development policies, contributing to the preservation and development of traditional pottery. The plan to develop tourism combined with the craft village is being promoted, promising to bring a stable source of income to the people and enhance the cultural value of the craft village.

My Hoa Traditional Brocade Weaving Village, Ninh Lai Commune, Son Duong District, Tuyen Quang Province is famous for its traditional brocade weaving, especially products bearing the cultural imprint of the Tay people. During this time, the brocade weaving profession in Son Duong has undergone important changes. The colorful brocades woven by the skillful hands of local people are not only clothing products but also contain profound cultural and spiritual values. The brocade weaving profession in My Hoa has existed for hundreds of years, passed down from generation to generation. My Hoa brocade products are diverse, from scarves, skirts, shirts to decorative items, all of which are unique and sophisticated. Recently, with the support of policies to encourage the development of craft villages, the brocade weaving profession in My Hoa has developed strongly, attracting many tourists and investors. In the future, My Hoa craft village has the potential to become a prominent cultural tourism destination, combining the experience of brocade weaving and exploring local culture.

Five traditional craft villages including Dum weaving village, Lam Binh brocade weaving village, Minh Quang wood carving village, Go Muong pottery village and My Hoa traditional brocade weaving village, are all villages with great potential in developing local tourism through applied arts.

4.2. Compare traditional craft villages in Tuyen Quang with some successful art tourism villages in the country

With rich and diverse tourism resources in Tuyen Quang, it is required that Tuyen Quang tourism must have forms of tourism development suitable to the tourism potential of the province.

According to the tourism development orientation, Tuyen Quang determines to develop tourism in 3 main types: Cultural - historical tourism, ecological and resort tourism, spiritual tourism. Create tours and interconnected tourist routes connecting historical and cultural relics, clusters, and scenic spots in the area to attract tourists in order to make Tuyen Quang tourism an important economic sector of the province [17]. Thoroughly implementing the above orientation, we have conducted a study of 5 craft villages in Tuyen Quang: “Dum weaving village, Lam Binh brocade weaving village, Minh Quang wood carving village, Go Muong pottery village, My Hoa traditional brocade weaving village”. With many art tourism models across the country, we hope to guide Tuyen Quang traditional craft villages to learn and compare with previous successful models such as traditional craft villages: Dum weaving village, Yen Son, Tuyen Quang with Van Phuc silk weaving village, Ha Dong, Hanoi; Lam Binh brocade weaving village, Tuyen Quang with Lung Tam village, Ha Giang; My Hoa traditional brocade weaving village, Son Duong, Tuyen Quang with Thai Hai cultural village, Thai Nguyen; Go Muong pottery village with Bat Trang pottery village, Hanoi...

Go Muong pottery village with Bat Trang pottery village, Hanoi

| No. | Bat Trang Pottery Village, Hanoi | Go Muong Pottery Village, Tuyen Quang |
|--|---|---|
| Introduction | <p>Bat Trang, a famous pottery village, has successfully applied fine arts to tourism to attract tourists.</p> <p>Bat Trang pottery village, a famous traditional craft village of Vietnam, has great potential to apply aesthetics to develop tourism products, cultural experiences, and art events.</p> | <p>Tuyen Quang is a province rich in potential natural tourism resources and human tourism to develop diverse, rich and attractive types of tourism such as: Cultural tourism, historical tourism, eco-tourism, resort tourism, tourism combined with conferences, seminars, visiting relatives... Recognizing that advantage, Tuyen Quang has identified "Tourism development as one of the four breakthroughs" to gradually turn tourism into an important economic sector of the province [17]</p> |
| Analyzing the application of aesthetics in tourism experiences | <p><u>Opening pottery workshops: Bat Trang artisans invite visitors to visit the production workshop, witness the traditional pottery making process, creating opportunities for direct interaction and trying pottery making.</u></p> <ul style="list-style-type: none"> - Bat Trang pottery market: The market sells many unique artistic pottery products, where visitors can buy handmade pottery products, experience the culture of the craft village. - Building a pottery museum: The museum displays ceramic works from classic to modern, helping visitors better understand the history of the development of Bat Trang ceramic art. - Pottery making classes: Visitors can register for short-term classes, learn how to shape and decorate pottery, bring home homemade products, create a unique experience and connect with the traditional craft (Figure 1) - Pottery village festival: Bat Trang organizes traditional festivals combined with pottery art performances, attracting a large number of domestic and foreign tourists to participate, creating a vibrant atmosphere and promoting culture. | <p>In Tuyen Quang: Potential for development such as integrating fine arts into tourism products, cultural experiences, craft villages, community art events (Pottery Workshop).</p> |
| Compare strengths and challenges | <p>Bat Trang: Advantageous location in Hanoi, strong ceramic brand, stable tourism model, linking with artists and designers to develop unique products.</p> | <p>Tuyen Quang: In the early stages of developing applied art tourism, has great potential but needs to invest in development strategy, combining artists and handicraft products to attract tourists</p> |



Figure 1. Field trip to Bat Trang craft village by the author and students of Hanoi Open University

Proposed solutions for Tuyen Quang

- Learn from Bat Trang's model in building craft village brands, organizing art events and promoting culture.
- Develop experiential tours in traditional craft villages, using art elements to create unique tourism products and attract international visitors.

In summary:

- The application of art not only brings aesthetic value but is also a tool for sustainable development of Tuyen Quang tourism.
- Suggest great potential if Tuyen Quang can pursue Bat Trang's model in combining culture and art into tourism.

4.3. Applying Fine Arts to Tourism in Tuyen Quang.

4.3.1. Challenges

The following are five key challenges for applied arts in the tourism experience in Tuyen Quang:

Cultural authenticity and modernization: Balancing the need to preserve traditional cultural values and the need to modernize to attract contemporary tourists. There is a risk of losing the authenticity of local arts and crafts in an effort to meet tourist expectations, which may result in the loss of cultural heritage.

Sustainability: Ensuring that the integration of applied arts into tourism is sustainable. This includes managing the environmental impact of tourism, preventing over-commercialization, and maintaining the quality and authenticity of local crafts.

Market access and promotion: Overcoming the challenges of promoting and marketing Tuyen Quang's applied arts to a wider audience. This includes improving infrastructure, leveraging digital platforms, and creating engaging stories that celebrate the unique cultural aspects of the region.

Skills and Craft Development: Address the decline of traditional skills among the younger generation. Programmers should encourage young people to learn and continue traditional crafts, ensuring the continuity of these art forms.

Economic Efficiency: Ensure that applied arts contribute meaningfully to the local economy. This includes ensuring fair income for artisans, creating employment opportunities, and establishing a pricing structure that reflects the value of culturally significant crafts.

4.3.2. Solutions for applying art in Tuyen Quang tourism experiences

Developing applied art products based on local culture: Developing art products inspired by the cultural traditions of Tuyen Quang's ethnic minorities. For example, souvenirs, jewelry, clothing, paintings showing local patterns and motifs.

Organizing cultural festivals and art exhibitions: Creating cultural events, traditional festivals combined with art activities to introduce and promote the beauty of Tuyen Quang culture, while creating opportunities for tourists to experience and participate in creative activities.

Developing public art spaces: Creating public art spaces such as sculpture parks, mural streets, outdoor art exhibition spaces. This not only beautifies the urban landscape but also creates a highlight to attract tourists.

Training and capacity building for local people: Organizing courses, seminars, and training programs on applied arts for local people so that they can participate in art projects and activities, thereby increasing income and improving the quality of life.

Public-private partnerships to mobilize resources: Combining public and private resources to invest in applied art projects, including seeking support funds and sponsorship from businesses and international organizations.

Enhance digital outreach and promotion: Use digital platforms, social media and augmented reality (AR) to promote art products and experiences, thereby reaching a wider range of tourists.

Applying fine arts to Tuyen Quang tourism requires close coordination between management agencies, artists, businesses and local communities to exploit cultural potential in a sustainable and creative way.

5. CONCLUSION

The application of fine arts to Tuyen Quang tourism contributes to enriching the experience of tourists and preserving and promoting local traditional cultural values.

The creative combination of art elements and local identity helps Tuyen Quang create unique tourism products, increase economic value and create jobs for many groups in the community.

Art training and cooperation between tourism units and art schools create career development opportunities, contribute to building the local economy and providing quality human resources for the tourism industry, thereby increasing sustainable value for both tourism and local culture.

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BEHAVIOR WITH THE NATURAL ENVIRONMENT IN TOURISM DEVELOPMENT AT CON HO, TRA VINH PROVINCE

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ABSTRACT

To date, the relationship between ethnic groups and the natural environment has been a subject of extensive research across various fields in the humanities and social sciences, including ethnology, anthropology, cultural studies, psychology, and literature. In the current context of climate change adaptation, the study of human interaction with nature has gained even greater significance. The research presented in this paper approaches the topic of interaction with the natural environment from a cultural perspective, specifically analyzing tourism development through the lens of cultural ecology. The research methods employed include document analysis and participant observation, with the observation conducted within the Vietnamese community involved in tourism at Ca Ho Island, Tra Vinh province.

Keywords: behavior, natural environment, cultural ecology theory, Tra Vinh tourism

1. INTRODUCTION

To date, the response to the natural environment has been a subject of extensive research within the social sciences and humanities. In the context of today's climate change adaptation, the study of human responses to nature has become even more critical. Research on environmental response examines human behavior in interacting with nature to generate values that meet human needs. Depending on the circumstances, people either adapt and leverage beneficial aspects of nature or contend with its challenges and changes. This article focuses on exploring and analyzing human responses to nature in the context of ecotourism development in Con Ho, Tra Vinh province. Con Ho, also known as Con Ca Ho, is an islet located in the middle of the Co Chien River in My Hiep A Hamlet, Duc My Commune, Cang Long District, Tra Vinh Province. Faced with environmental changes such as climate change and high tides, farmers must find ways to change their livelihoods by doing tourism to improve their lives. Furthermore, the adverse impacts of nature have compelled individuals to adapt and transform in order to sustain their livelihoods and meet essential needs.

2. LITERATURE REVIEW

2.1. Rational Choice Theory

Rational Choice Theory has been studied and applied by economists, psychologists, and anthropologists. The theory holds that individuals often act with purpose, making choices based on rational consideration of the resources available to them in order to achieve a desired outcome. When deciding on a course of action, individuals weigh the costs against the potential benefits. If

the perceived costs outweigh the expected benefits, they are unlikely to proceed, and vice versa. Additionally, Rational Choice Theory asserts that all complex social phenomena are ultimately driven by individual human actions. A common misconception equates rational choice with selfishness or egoism, but this is inaccurate. Rational choices can be driven by altruism and selflessness as well. The outcomes of rational decisions are not limited to material or financial gain; the theory also encompasses the social and humanistic benefits, such as trust, social recognition, pride, or other values that contribute to human fulfillment. (Barth, 2024)

We believe that applying Rational Choice Theory to study the cultural behavior of ethnic groups towards the natural environment is highly appropriate. This approach aims to demonstrate that the environmental behaviors of the ethnic group are rational choices that hold significance within their historical and cultural context.

2.2. Cultural Ecology

According to Julian Steward, human survival is deeply dependent on nature. In more primitive societies, this dependence is even greater, as these societies rely heavily on the natural environment. In contrast, societies with advanced science and technology have, to some extent, mastered nature, compelling it to serve human needs. Within this ecological context, humans develop, create culture, and cultivate survival skills that are rooted in the psychology and cultural identity of their community. By studying cultural ecology, one gains an understanding of how humans use culture to adapt to specific environmental conditions. (R.Jon MC.Gee - Richard L.Warms, 2010)

Cultural ecology refers to the ways in which humans employ culture to adapt to the natural environment in which they live. According to the theory of cultural ecology, humans possess the knowledge necessary for survival, and this knowledge forms a core part of their cultural identity. It can be passed down through generations and exchanged between different ethnic groups living in a particular geographical area.

Steward's ecological theory is valuable as a reference when studying ethnic behavior in relation to the natural environment for two key reasons:

Firstly, the cultural ecological approach he proposed is not confined by rigid economic determinism. Instead, he viewed it as a method for analyzing society and understanding cultural data.

Secondly, the theory asserts that cultures are shaped by multiple factors, beyond just environmental and technological conditions. This perspective is more progressive and rational compared to theories that view the environment as the sole determinant of cultural development.

Currently, various perspectives on cultural ecological research exist within the scientific community. The recognition that humans are part of the natural world, living and interacting with nature, has sparked significant discussion among anthropologists and cultural researchers regarding the influence of nature on both material and spiritual aspects of human culture. While there may be differing research approaches, scholars generally agree that environmental conditions significantly impact the cultural life of the ethnic groups residing in those areas.

3. RESEARCH METHODOLOGY

This study was conducted using qualitative research methods. The research findings were obtained through participant observation and in-depth interviews. The author visited the research site on three occasions, each time observing and experiencing the local provision of tourism products in Con Ho. The in-depth interview method used is a semi-structured interview method. This method creates friendliness and comfort for the interviewee. The interview took place naturally, the farmer talked about the transition from agriculture to a new type of livelihood, tourism, in a natural and comfortable way. In addition, each occasion was conducted with five households engaged in community-based tourism in the area.

4. RESEARCH RESULTS

4.1. Research Area Background

Con Ho, also known as Con Ca Ho, is an islet located in the middle of the Co Chien River in My Hiep A Hamlet, Duc My Commune, Cang Long District, Tra Vinh Province. Situated approximately 20 kilometers from Tra Vinh City, Con Ho lies at the intersection of three provinces: Tra Vinh, Vinh Long, and Ben Tre. The islet spans an area of about 25 hectares.

Con Ho was formed through alluvial sedimentation over approximately 300 years. Initially, its vegetation consisted primarily of water coconut and mangrove trees. When settlers arrived, they reclaimed the land and developed fruit gardens, cultivating crops such as green-skinned grapefruit, oranges, and wax bananas.

The population on the islet remains sparse. In 2020, 24 households engaged in farming on the islet, but only 14 households resided there. According to statistics from early 2024, the population now consists of 21 households with a total of 66 inhabitants.

4.2. Taking advantage of the available natural values - a favorable tourist destination in Con Ho

Natural tourism has become a popular trend in recent years. In the context of the challenges of climate change and rising environmental pollution, urban dwellers increasingly seek destinations where they can relax, unwind, and reconnect with nature. As a result, natural tourism is becoming an increasingly attractive option for many travellers.

So, what exactly is natural tourism?

Natural tourism refers to a form of tourism developed with the aim of protecting the environment and fostering community development. It encourages tourists to engage in environmentally friendly activities, such as:

- **Using eco-friendly transportation:** Tourists can walk, cycle, travel by boat, or use public transportation to get around.

- **Choosing eco-friendly accommodations:** Tourists can stay in hotels, homestays, or guesthouses that utilize renewable energy, conserve water, and minimize waste.

- **Participating in eco-conscious activities:** Visitors can engage in activities such as tree planting, gardening, environmental cleanups, and learning Vietnamese traditional recipe sessions.

- **Shopping for local products:** Visitors are encouraged to purchase locally made, eco-friendly handicrafts and products.

- **Respecting local culture:** Tourists should respect the local culture and avoid behaviors that harm the environment or disrupt the community.

Natural tourism offers numerous benefits to both the environment and local communities, including:

- **Minimizing negative environmental impacts:** It helps reduce carbon emissions, waste, and pollution.

- **Protecting natural resources:** Natural tourism aids in the conservation of resources such as water, forests, and wildlife.

- **Supporting the local economy:** It creates jobs and generates income for local residents.

- **Raising environmental awareness:** Natural tourism fosters a greater understanding of the importance of environmental conservation among tourists. (tour, 2024)

At Con Ho, a unique natural tourism destination, there are several distinctive "NO"s, which are rare in modern tourist areas. These "NO"s enable visitors to fully immerse themselves in nature and experience "self-sufficient" tourism without harming the ecological environment.

First, there is "no electricity." Residents use oil lamps and solar-powered lights. The energy stored during the day is typically sufficient for lighting and fans at night.

Second, there are "no motorbikes." People travel to the islet by boat, and once there, they primarily move on foot. Households and tourists alike walk from one place to another, enjoying the clean air, free from dust and motorbike noise.

In a place with so many "NO"s, how do the local people develop tourism?

What products do they offer to visitors?

Their tourism model represents a unique example of natural tourism, where locals sell what they have readily available in their gardens and homes. This includes butterfly pea flowers, grapefruits, home-grown water spinach, or fish and shrimp from their ponds—all natural products cultivated or caught locally.

The dishes served to tourists are also made from entirely natural ingredients. When visiting Con Ho, must-try dishes include butterfly pea flower tea, special boiled chicken eggs, straw-grilled snakehead fish, West-styled Vietnamese pancakes, steamed river prawns, garden chicken porridge with banana flower salad, grapefruit jam, grapefruit spring rolls, grapefruit sweet desserts, and more. The primary livelihood of the residents is grapefruit farming, and they incorporate grapefruit into many dishes served to tourists, such as grapefruit jam, grapefruit sweet desserts, and grapefruit spring rolls. This approach exemplifies tourism in harmony with nature, utilizing available resources to create an authentic experience. Tourists can pick fresh fruits, enjoy the clean, crisp air, and interact with the kind-hearted and hospitable farmers.

Although they face natural challenges, such as storms, erosion, and landslides, the people of Con Ho have united to overcome these obstacles. Their determination to pursue tourism based on nature has allowed them to adapt their livelihoods while maintaining the ecological balance of the islet. Rather than being constrained by natural adversities, they remain flexible and innovative in seeking sustainable sources of income. This form of livelihood adaptation not only preserves the islet's ecosystem but also leverages its natural resources in a responsible and harmonious way.

4.3. Coping with natural changes – a transformation of farmers' livelihoods

Con Ho is situated along the Co Chien River, bordering the provinces of Vinh Long and Ben Tre. Due to the deposition of alluvial silt, the area is conducive to the growth of various fruit trees, with green-skinned grapefruit comprising approximately 85% of the cultivated varieties. Con Ho has experienced significant erosion over the years, with the most recent landslide occurring on February 10, 2024. This event, driven by high tides, strong winds, and large waves, resulted in a 10-meter-long section of the dike collapsing in the hamlet 2 within the Con Ho area. Consequently, 19 houses were flooded, and around 25 hectares of fruit gardens were inundated with saltwater. Previously, Con Ho had an area of 29 hectares, but due to ongoing landslides, it now covers only about 25 hectares.

The residents of Con Ho primarily sustain themselves by cultivating fruit trees, with green-skinned grapefruit being the dominant crop. Occasionally, they interplant oranges, mandarins, coconuts, and various herbs. In times of reduced agricultural activity, they supplement their income through fishing in the river. As tourism developed, the local community had to invest their own resources and efforts to create a "self-made" tourism model. When discussing the challenges of transitioning to tourism, Ms. Loan (also known as Ms. Ba Khai, the deputy team leader) remarked, *"Initially, I was surprised because I was only accustomed to gardening and growing grapefruit. I had no ideas of tourism and needed to learn many new skills. Thanks to the guidance of teachers, I gradually adapted."*

Previously, residents of Con Ho primarily interacted with family and neighbors within their gardens. Now, they must learn to engage with numerous tourists from diverse backgrounds. When asked if they felt shy interacting with unfamiliar visitors, most residents expressed that while they were initially embarrassed, they eventually grew accustomed to it, viewing the tourists as friends or family returning from afar.

This sentiment allows the people of Con Ho to offer tourists a familiar and welcoming experience during their visits. Upon the arrival of tourist groups, residents wear traditional Ao Ba Ba attire and Non La – Vietnamese traditional hat - to greet them as their boats approach the shore. Tourists often forget their fatigue and the length of their journey upon receiving warm smiles and affectionate handshakes as they disembark. As tourists visit each household, they encounter an atmosphere reminiscent of childhood memories. Upon departure, all households involved in tourism gather to bid farewell at the ferry. The sight of residents waving goodbye with regret, accompanied by warm smiles in the glow of oil lamps, leaves a lasting impression on tourists. This heartfelt farewell contributes to Con Ho's success, encouraging many visitors to return frequently.

This sustainable approach to tourism, characterized by a low number of visitors who return repeatedly, has proven effective. Although the initial transition for the residents of Con Ho

involved considerable difficulties and challenges—such as altering their economic practices and acquiring new skills—they have successfully adopted a friendly and environmentally conscious approach to tourism. They have consciously avoided mass tourism; instead, they focus on fostering a sustainable relationship with their natural surroundings. This model allows them to adapt to environmental changes while ensuring their livelihoods and maintaining a harmonious coexistence with nature.

4.4. Discussion

Cultural ecology refers to the manner in which people utilize culture to adapt to the natural environment in which they reside. Within the framework of cultural ecology, individuals possess the capacity to adapt and survive using their inherent knowledge. Examining the behaviors of the people of Con Ho towards their natural environment—particularly in relation to their livelihoods and tourism—demonstrates that they have applied this theory effectively and harmoniously in their interactions with nature.

When the natural environment is favorable, the residents engage in agricultural practices, cultivating crops such as grapefruit and bananas to sustain their livelihoods. Conversely, when faced with adverse conditions—such as landslides and increased salinity—that threaten their means of subsistence, they adapt by shifting towards tourism. This transition reflects their ability to respond flexibly to environmental changes rather than attempting to modify or conquer nature. Their approach to tourism fosters a harmonious balance with the natural world.

The decision to diversify their livelihoods through ecotourism underscores the reasonableness of this choice. According to rational choice theory, cultural agents encounter both opportunities and challenges within the natural environment. They benefit from a variety of flora and fauna, which serve as food sources, while simultaneously confronting threats posed by dangerous animals, toxic plants, and unpredictable weather patterns.

Thus, the adaptations made by the people of Con Ho represent a rational choice informed by specific circumstances and contextual factors. This choice not only enhances their quality of life but also promotes sustainable development within the natural ecosystem.

5. CONCLUSION

Resolution No. 82/NQ-CP, issued by the Government, outlines key tasks and solutions aimed at accelerating the recovery and fostering effective and sustainable development in the tourism sector. The resolution includes the development and implementation of a green tourism action program for the period 2023-2025, which emphasizes the protection of both the natural and social environments at key tourist destinations. This initiative advocates for the creation of "green, clean, beautiful, civilized, and friendly tourist destinations" (2023)

In alignment with these objectives, the residents of Con Ho in Tra Vinh are committed to establishing an eco-tourism community that prioritizes hospitality and friendliness towards visitors. The model of community tourism in Con Ho serves as both an adaptation to the natural environment and a means of utilizing local resources for livelihood, while also providing a response to the challenges posed by natural disasters.

In the face of increasing environmental impacts and pollution, eco-tourism is gaining popularity as it allows individuals to experience and immerse themselves in nature while ensuring its sustainable preservation. This dual benefit reinforces the community's dedication to environmental stewardship while fostering a welcoming atmosphere for tourists.

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SOUVENIR PRODUCTS' DEVELOPMENT POTENTIAL BASED ON 3D SCANNING AND 3D PRINTING TECHNOLOGY AT THE HERITAGE ASSEMBLY HALL

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ABSTRACT

This research examines the integration of 3D scanning and printing technologies for souvenir production at Hanoi's Heritage Assembly Hall. Using a mixed-methods approach, including SWOT analysis and visitor surveys, the study explores the potential of technologically advanced souvenirs in preserving and promoting cultural heritage. Findings reveal positive visitor reception towards 3D-produced souvenirs, particularly valuing customization options. The study proposes strategic interventions such as technological investments, staff training, and targeted marketing to enhance visitor experiences and create new revenue streams. This approach contributes to the theoretical understanding of integrating advanced technologies in cultural heritage preservation, offering a model for institutions balancing tradition with innovation. The research highlights the potential of 3D technologies in sustainable tourism development and provides insights into the intersection of technology, cultural heritage, and tourism in the digital age.

Keywords: souvenir products, 3D scanning and 3D printing, Heritage Assembly Hall

1. INTRODUCTION

The development of unique souvenirs plays a crucial role in cultural preservation and promotion, serving as tangible links between tourists and local culture. These products not only offer memorable experiences but also raise awareness of cultural heritage while creating economic opportunities for local artisans and businesses. This approach fosters sustainable tourism and enhances Vietnam's cultural brand internationally. 3D scanning and printing technologies present innovative possibilities for souvenir production. 3D scanning captures real-world objects' shapes and appearances, creating accurate digital models for various applications. 3D printing, or additive manufacturing, produces three-dimensional objects based on these digital designs, layer by layer.

The Heritage Assembly Hall, established in 2012, is dedicated to preserving and promoting Vietnamese culture through applied fine arts. Operating under the principle of honoring Vietnamese identity, the organization focuses on preserving traditional cultural heritage and raising community awareness through events, research, and conservation efforts.

This study aims to explore the potential of 3D technologies in souvenir development at the Heritage Assembly Hall and propose implementation solutions. The research significance lies in its contribution to cultural heritage preservation while integrating modern technology with traditions. By leveraging 3D technologies, the Assembly Hall can create innovative souvenirs that have both economic value and cultural significance.

This approach to souvenir production has the potential to create aesthetically pleasing products that encapsulate cultural narratives, strengthening the connection between tourists and Vietnam's cultural heritage. It demonstrates the synergy between traditional values and cutting-edge technology in preserving and promoting cultural identity.

2. LITERATURE REVIEW

2.1. 3D Technologies in Cultural Heritage Preservation

The application of 3D technologies in preserving cultural heritage has gained significant attention from researchers. Jung and tom Dieck (2017) conducted a comprehensive study exploring the potential of 3D scanning, augmented reality, and virtual reality in enhancing visitor experiences at cultural heritage sites. Their research emphasized how these technologies can foster engagement and education, providing immersive and interactive experiences that transcend traditional museum displays. However, their research concentrates on the potential of these technologies rather than their actual application in many circumstances.

The effectiveness of 3D scanning in creating high-resolution digital models of cultural artifacts has been demonstrated through various collaborations. For instance, SHINING 3D's partnership with Cloud Bud Culture Media showcased the technology's ability to capture intricate details of artifacts without physical contact. This non-invasive approach is particularly valuable for preserving fragile historical objects, as noted by Balletti et al. (2017) in their study on 3D survey and modeling techniques for cultural heritage documentation. Although they highlight technology's possibilities, they don't investigate how these developments affect tourists' comprehension or their emotional links to cultural heritage. Our study fills this vacuum by investigating the potential of 3D-printed mementos as teaching aids that improve tourists' understanding of other cultures.

Xingyang Lv et al. (2024) investigate how personalization improves tourists' emotional connections to souvenirs, which aligns with our findings on 3D-printed souvenirs that develop meaningful relationships to Vietnam's cultural heritage. However, while this study focuses on emotional investment, it does not examine how the customisation process can improve cultural understanding. Our findings add to this by indicating that the act of customizing at the Heritage Assembly Hall can increase tourists' engagement with local culture, increasing both emotional and cultural investment.

2.2. Souvenir Production And Customization

3D printing technology has revolutionized the concept of souvenir production, offering new possibilities for personalization and visitor engagement. Anastasiadou and Vettese (2019) explored this transformation in their study "From souvenirs to 3D printed souvenirs." Their research highlighted how additive manufacturing enables the creation of customized souvenirs that resonate more deeply with visitors' experiences. The practical application of 3D printing in museum settings has been demonstrated by institutions like the Manacor Museum in Mallorca. As reported by MuseumNext, the museum created an exhibition featuring 3D printed models of

artifacts from their collection, allowing visitors to physically interact with replicas. This approach not only enhances the overall museum experience but also makes exhibits more accessible to a wider audience, including those with visual impairments. Nevertheless, their emphasis is predominantly on the technological features, neglecting to assess the impact of these objects on visitors' comprehension of the culture they embody. Our study directly addresses this gap by examining how 3D technologies may make objects that not only serve as souvenirs but also teach travelers about Vietnam's cultural history, increasing their overall experience.

Annika Wiecek, Daniel Wentzel and Aras Erkin (2020) also investigates how the act of self-printing effects consumer views in their study "Just print it! The effects of self-printing a product on consumers' product evaluations and perceived ownership". According to the study, self-involvement in the creative process might increase sentiments of ownership and fulfillment. In our case, this concept can be expanded to seminars at Heritage Assembly Hall, where visitors can participate in the 3D printing process, deepening their connection to the souvenirs and, by extension, the cultural legacy they symbolize.

2.3. Sustainability In Tourism And Souvenir Production

Sustainability in tourism and souvenir production has become an increasingly important consideration. Berjozkina and Karami (2021) examined the potential of 3D printing as a sustainable tool in various sectors of tourism and hospitality in Cyprus. Their research highlighted how 3D printing could address sustainability challenges in the industry, particularly in souvenir production, by enabling on-demand production and reducing waste. They mention on-demand production as a way to cut waste, but they do not examine consumer attitudes towards sustainable products.

Firtkiadis et al. (2022) further explored this theme, focusing on the use of 3D printing to create customized souvenir products that promote a circular economy model. Their study underscored the growing importance of sustainability considerations in souvenir production and demonstrated how 3D printing can contribute to reducing environmental impact in the tourism industry. However, their study doesn't explore how these materials affect what customers decide to buy. Our study fills this gap by examining how tourists' willingness to support local craftspeople and the use of sustainable materials in souvenir production relate to each other, tying environmental concerns to cultural organizations' financial sustainability.

Mieow Kee Chan et al. (2024) with their study " Starch/Wood Powder/Glycerol/Lemongrass Essential Oil Composite as Hydro-Degradable Materials for 3D Printing" look at the development of sustainable 3D printing materials, with a focus on eco-friendly composites. This study is significant to our study because it underlines the need of employing biodegradable materials in souvenir creation, which aligns with rising customer desire for sustainable products. While this study focuses on material attributes, it does not address consumer perceptions and how they influence purchasing decisions. Our study addresses this gap by looking into how using sustainable materials in souvenir production can increase visitors' propensity to buy from and support local craftspeople, so combining material sustainability with economic benefits for cultural institutions.

2.4. Integration Of Technology In Cultural Institutions

The integration of 3D technologies into cultural institutions has become increasingly prevalent. The Smithsonian Institution's extensive use of 3D scanning to digitize parts of its vast collection serves as a prime example of how museums are leveraging these technologies to make their artifacts more accessible to a global audience. This initiative not only preserves cultural heritage but also democratizes access to it, allowing researchers and enthusiasts worldwide to study and appreciate these artifacts in unprecedented detail. This project democratizes access, but it does not consider the relationship between visitor engagement with digital content and actual interactions with cultural assets. According to our research, incorporating 3D technologies into the Heritage Assembly Hall may open up chances for significant interaction and strengthen visitors' relationships to Vietnam's rich cultural legacy.

3. MATERIALS AND METHODS

This research employs a mixed-method approach, combining secondary data analysis, a sociological survey, and SWOT analysis to comprehensively examine the development potential of souvenir products using 3D scanning and 3D printing technology at the Heritage Assembly Hall.

Secondary Data Analysis

The study utilizes secondary data sources, including research publications, books, domestic and international newspapers, and the official website of the Heritage Assembly Hall. This analysis provides a foundational understanding of current trends, technologies, and practices in 3D-based souvenir production within cultural heritage contexts.

Sociological Survey

An online sociological survey was conducted using Google Forms to gather primary data on visitor perceptions and reception of 3D-printed souvenir products. The survey, administered in October 2023, was open to a broad demographic with no restrictions on participation. A total of 92 responses were collected, providing valuable insights into consumer attitudes towards technologically advanced souvenirs. This data contributes to a more nuanced understanding of the market potential for 3D-printed souvenirs at the Heritage Assembly Hall.

SWOT Analysis

A SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis is performed to evaluate the internal and external factors influencing the development of 3D-printed souvenir products at the Heritage Assembly Hall. This strategic assessment tool helps identify:

Strengths: Internal advantages and unique selling points of 3D-printed souvenirs.

Weaknesses: Areas for improvement or potential limitations in implementing this technology.

Opportunities: External factors that could be leveraged for successful product development.

Threats: Potential challenges or obstacles in the market or broader environment.

The SWOT analysis provides a structured framework for assessing the viability and potential success of implementing 3D-printed souvenir products at the Heritage Assembly Hall.

4. RESULTS AND DISCUSSIONS

4.1. Potential For Developing 3D-Enabled Souvenir Products

Opportunities To Create Unique And Culturally Meaningful Products.

The integration of 3D scanning and printing technologies at the Heritage Assembly Hall offers a promising approach for developing culturally significant souvenir products. 3D scanning technology enables the creation of highly accurate digital models of cultural artifacts, capturing intricate details and preserving their cultural essence. Subsequently, 3D printing transforms these digital models into tangible objects, utilizing various materials to enhance authenticity and appeal. This synergy between advanced technologies and traditional cultural elements results in souvenirs that are both visually compelling and culturally meaningful. The process allows us to produce high-quality replicas of historical relics and artworks, providing visitors with tangible connections to the heritage they represent. This innovative approach not only enhances the visitor experience but also contributes to the preservation and dissemination of cultural heritage in a modern context.

Customization And Personalization Capabilities.

The integration of 3D technologies in souvenir production at the Heritage Assembly Hall presents significant opportunities for product customization and personalization, aligning with contemporary consumer preferences for unique items. These advanced technologies enable a high degree of customization throughout the manufacturing process, allowing visitors to modify various product attributes such as names, dates, images, materials, colors, and designs. This capability not only satisfies individual customer preferences but also serves as an effective marketing strategy. Personalized souvenirs can enhance brand recognition and create lasting impressions, potentially leading to increased word-of-mouth promotion and customer loyalty. By leveraging 3D technologies to offer bespoke products, the Heritage Assembly Hall can differentiate its offerings, strengthen visitor connections, and potentially boost both immediate sales and long-term engagement. This approach represents a strategic fusion of technological innovation and cultural heritage preservation, catering to modern consumer demands while promoting the institution's cultural significance.

Increased Revenue And Enhanced Visitor Experience.

The integration of 3D-enabled souvenir products at the Heritage Assembly Hall presents a multifaceted opportunity to enhance revenue generation and visitor engagement. These innovative offerings can increase sales by providing unique, culturally significant items that serve as tangible mementos. The customization options foster interactive experiences, deepening visitors' connections with local culture and the institution. Furthermore, the implementation of 3D technology-focused workshops could generate additional revenue streams while simultaneously enriching the visitor experience through hands-on participation. This approach not only has the potential to boost immediate sales but also to expand the Assembly Hall's reach through increased social sharing and word-of-mouth promotion. By leveraging 3D technologies in souvenir

production and visitor engagement, the Heritage Assembly Hall can create a more immersive, educational, and economically beneficial experience that aligns with its cultural preservation mission.

4.2. Challenges And Limitations

Initial Investment Requirements.

The implementation of 3D scanning and printing technologies at the Heritage Assembly Hall presents significant financial challenges. Primary cost factors include the acquisition of high-quality equipment and premium-grade materials, which are essential for accurate reproduction but often expensive. Initial costs can escalate due to project-specific requirements and the need for specialized materials. Beyond these upfront expenses, the Assembly Hall must consider ongoing costs such as comprehensive staff training, regular equipment maintenance, and periodic software updates. These recurring expenses are crucial for the long-term success of the 3D-enabled souvenir production program but can strain the organization's budget. Balancing these financial considerations with the potential benefits of implementing advanced 3D technologies is essential for the Heritage Assembly Hall's strategic planning and resource allocation.

Staff Training Needs.

The integration of 3D technologies necessitates a comprehensive staff training program, which presents its own set of challenges. The financial burden of training can be significant, particularly for institutions with limited resources. Moreover, the time allocated to training may temporarily disrupt daily operations, leading to short-term productivity losses. The Heritage Assembly Hall must carefully balance the need for thorough training with the maintenance of regular activities.

Another challenge lies in the variability of the learning curve among employees. Differences in individual adaptability to new technologies can lead to skill and knowledge disparities within the team, potentially affecting overall work performance and product quality. Additionally, the rapid evolution of 3D technologies may create pressure on employees to continuously update their skills, which can lead to stress and anxiety if not managed properly.

Potential Technical And Legal Issues.

The adoption of 3D scanning and printing technologies introduces both technical and legal challenges that the Heritage Assembly Hall must navigate carefully. From a technical standpoint, ensuring data accuracy during the 3D scanning process is crucial. Improper scanning techniques can result in information loss, distortion, or omission of crucial details, leading to inaccurate 3D models. Similarly, maintaining print quality is essential, as suboptimal printing materials or inadequate process control may cause product defects such as cracking, diminishing both aesthetic appeal and functionality.

Legal challenges primarily revolve around intellectual property rights and cultural heritage protection. The reproduction of historical and cultural artifacts as souvenirs raises significant copyright concerns. Unauthorized use of protected designs or images can lead to serious legal repercussions. Many countries have implemented stringent policies to safeguard their cultural and

historical heritage, and failure to comply with these regulations can result in severe consequences for the Heritage Assembly Hall.

4.3. Evaluation Of Visitor Reception To Souvenir Products Using 3D Scanning And 3D Printing Technology

Demographic Analysis.

The survey gathered information on respondents' gender, age, nationality, and income levels. This data allowed for a nuanced understanding of how different demographic groups perceive and value 3D-printed souvenirs, enabling the identification of target customer segments and informing both marketing strategies and product development processes.

Environmental Awareness And Sustainable Souvenirs.

A significant finding was that 88% of respondents expressed interest in souvenirs made from recycled materials. This high percentage indicates a growing environmental consciousness among consumers and a shift towards valuing products with reduced environmental impact. The trend suggests that visitors are increasingly considering the ecological footprint of their purchases, even in the context of tourism souvenirs.

Personalization And Waste Reduction.

Respondents showed enthusiasm for personalized, sustainable souvenirs that contribute to waste reduction. Qualitative responses highlighted the appeal of souvenirs that are not only unique but also environmentally responsible. However, some concerns were raised regarding production time, labor intensity, and potential cost implications of such personalized items.

Familiarity with 3D-Printed Souvenirs.

7. Have you purchased any souvenir products created by using 3D scanning and 3D printing technology?
92 câu trả lời

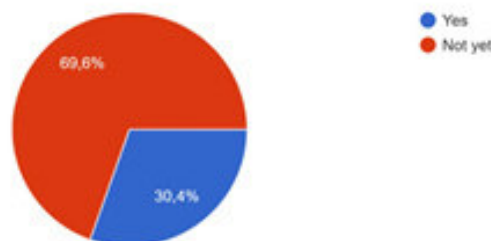
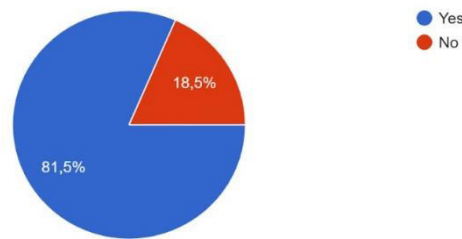


Figure 4.1. Percentage of visitors who have owned souvenir products using 3D scanning and 3D printing technology

This figure illustrates the percentage of visitors who have previously owned souvenir products made using 3D scanning and printing technology. 69.6% of respondents to the survey said they had never acquired a product like that, which suggests there is a sizable market for cutting-edge 3D-printed mementos. The poor familiarity indicates both a sizable untapped consumer base and possible difficulties in consumer education.

9. Do you find that souvenir products created by using 3D scanning and 3D printing technology retain the authenticity and historical value of the monument or work?
92 câu trả lời



Perceived Value Of 3D-Printed Souvenirs.

Figure 4.2. Percentage of visitors who believe that souvenir products using 3D scanning and 3D printing technology maintain the authenticity and historical value of relics and monuments

This figure shows the proportion of tourists who think that souvenirs made via 3D printing preserve the historical significance and authenticity of artifacts and sites. More than 80% of respondents thought that these souvenirs were more distinctive and detailed than traditional ones, which supports the idea that 3D printing might raise the cultural value of travel mementos. Developing marketing tactics that prioritize authenticity and excellence need a good perception.

Brand Recognition And Willingness To Purchase

Despite low brand recognition (only 25% were familiar with the Heritage Assembly Hall), an overwhelming 91.3% of respondents expressed willingness to pay for 3D-printed souvenirs from the venue. This disparity between brand awareness and purchase intent suggests strong potential for growth through improved marketing and brand visibility.

Price Sensitivity

The survey revealed varied price sensitivities among respondents. The majority were willing to pay under \$20 for a 3D-printed souvenir, aligning with the income demographics of the sample. However, 32.6% were willing to consider prices between \$20-\$40, and 10.9% were open to paying over \$40. This distribution suggests opportunities for tiered pricing strategies to cater to different market segments.

Conclusion

The survey results indicate a generally positive reception and potential demand for 3D-printed souvenirs at the Heritage Assembly Hall. Visitors show interest in the unique qualities offered by 3D-printing technology, including personalization, detail, and perceived authenticity. The strong environmental consciousness among respondents also suggests that emphasizing the sustainability aspects of 3D-printed souvenirs could be a key selling point. However, challenges remain in terms of educating consumers about the technology, addressing concerns about production processes, and balancing price points with perceived value. The Heritage Assembly Hall has an opportunity to capitalize on the novelty and appeal of 3D-printed souvenirs while also addressing the growing demand for sustainable and personalized tourist memorabilia. These findings provide a foundation for developing targeted marketing strategies, refining product

offerings, and positioning the Heritage Assembly Hall as an innovative leader in the cultural souvenir market.

Practical Intervention Proposals

Technology infrastructure investment is crucial for enhancing souvenir production using 3D scanning and printing technologies. This involves acquiring state-of-the-art 3D scanners and printers to ensure high-quality, accurate model production. A robust 3D database management system is essential for efficient storage, access, and management of digital models, with stringent cybersecurity measures to protect valuable cultural and historical data. Furthermore, the selection of premium materials is vital to ensure product durability and quality retention over time, minimizing waste and meeting high-quality standards.

Specialized training programs are necessary to equip staff with the requisite skills and knowledge for operating 3D technologies. These programs should cover technical aspects of 3D scanning and printing, as well as the historical and cultural significance of the heritage represented by the souvenirs. Comprehensive training in equipment operation, data processing, 3D modeling, printing techniques, and machine maintenance is essential. Additionally, educating staff on cultural values enables them to effectively communicate product significance to customers, thereby enhancing the Heritage Assembly Hall's reputation and appeal.

A marketing strategy emphasizing uniqueness and cultural value is imperative for promoting 3D-produced souvenirs. This approach should incorporate engaging multimedia content that highlights the production process and cultural significance of each item. Utilizing social media platforms to share visual content and cultural narratives can raise awareness of the products' uniqueness and traditional value. Organizing product showcases and interactive experiences can deepen customer appreciation for the souvenirs, fostering stronger connections between consumers and the Heritage Assembly Hall brand. This multifaceted strategy aims to captivate visitors' interest and solidify the institution's market position.

5. CONCLUSIONS

5.1. Summary Of Key Findings

The implementation of 3D scanning and printing technologies in souvenir production at the Heritage Assembly Hall has yielded significant positive outcomes. This technological integration has enhanced product quality, enabling the creation of highly detailed and unique designs that captivate tourists' interest. The 3D-produced souvenirs, including replicas of historical artifacts and artworks, transcend mere mementos, embodying profound cultural values that facilitate visitors' connection with Vietnam's heritage. Empirical data from customer surveys indicate a high level of satisfaction, with respondents consistently highlighting the products' distinctiveness and quality. These findings underscore the substantial potential for further development and expansion of this innovative approach to souvenir production. The convergence of advanced technology and cultural representation in these products not only meets consumer demands but also serves as a vehicle for cultural dissemination and preservation.

This study sheds light on the revolutionary role that contemporary technology plays in the conservation of cultural heritage, opening up new opportunities for organizations to innovate in the promotion and preservation of historical sites. Our critical analysis, however, reveals important gaps in the body of literature that need to be filled. These gaps include the need for research that links technological advancements to cultural and emotional engagement, the significance of consumer perceptions in sustainability initiatives, and the effects of 3D technologies on educational outcomes in cultural contexts. Our goal is to offer a comprehensive framework that incorporates all of these components and informs visitor experience techniques that simultaneously support sustainable practices and cultural preservation.

5.2. Contributions To Theory On Technology Integration In Heritage Preservation

This study illuminates the transformative role of modern technology in cultural heritage conservation, demonstrating that advanced technologies like 3D scanning and printing are not merely supportive tools but critical factors in preserving and developing cultural values. The research highlights how these technologies enable the creation of precise digital models, enhancing research, conservation, and educational efforts in the cultural heritage domain. These findings reveal new avenues for cultural organizations to innovate in heritage preservation and promotion, fostering engaging methodologies that connect historical contexts with contemporary audiences. By leveraging these technologies, institutions can revolutionize traditional approaches to cultural heritage management, ensuring both the physical preservation and digital archiving of cultural knowledge for future generations.

5.3. Implications For Sustainable Tourism Development And Economic Growth

The development of 3D souvenir products at the Heritage Assembly Hall serves a dual purpose: generating revenue and enhancing local cultural tourism. These innovative products cater to tourist demands while providing a platform for artisans and local communities to showcase their cultural heritage. This synergy between heritage conservation and economic development through sustainable tourism creates long-term benefits, enabling communities to preserve cultural values while simultaneously improving local living standards. By fostering job creation and stable income opportunities, this approach demonstrates how technological innovation in the cultural sector can contribute to both economic growth and the preservation of cultural identity, offering a model for sustainable development in heritage tourism.

5.4. Directions For Future Research

Future studies should concentrate on a number of important topics to improve our knowledge of and efficacy with 3D technology in the tourist and cultural heritage industries. First and foremost, streamlining 3D production procedures to increase effectiveness and cut expenses is crucial since it will promote the wider adoption and long-term viability of these methods. Furthermore, assessing the commercial viability of 3D-printed mementos would reveal customer trends and preferences, enabling customized marketing tactics. The impact of these mementos on tourists' cultural awareness should also be investigated, with any changes in their

appreciation and comprehension of regional history to be measured. Moreover, examining how consumers view sustainability can help companies make more responsible materials and procedures by providing insight into how eco-friendly practices affect consumer purchasing decisions. Finally, identifying frameworks that encourage technological integration in cultural institutions can be aided by looking through supportive policies from governmental and non-governmental groups. Future research can greatly improve cultural preservation efforts, encourage sustainable behaviors, and greatly improve the visitor experience by addressing these areas.

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TAN HOA TOURISM VILLAGE - A SUSTAINABLE APPROACH TO COMMUNITY-BASED TOURISM DEVELOPMENT IN QUANG BINH PROVINCE

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ABSTRACT

Tan Hoa, a village located in the “flood-prone” area of Quang Binh, has emerged on the global community-based tourism map, being honored by UNWTO in the list of 260 tourism villages from 60 countries. With its rich tourism potential and majestic natural landscapes, Tan Hoa is establishing itself as a bright spot in community-based tourism development in Vietnam. However, to ensure sustainable development, Tan Hoa is facing many challenges, including weak infrastructure, a lack of professional human resources, spontaneous and unregulated development, and a lack of specific standards or criteria. To overcome these challenges, essential solutions need to be implemented, such as improving infrastructure to meet the increasing demands of tourists and investing in human resource training to enhance service quality. Additionally, building and strengthening linkages between tourist attractions and services will create a seamless and enriching tourism experience. Establishing and adhering to a set of community-based tourism standards will ensure service quality, environmental protection, and the preservation of local culture, thereby promoting sustainable development for Tan Hoa.

Keywords: Tourism village; Tan Hoa; Community; Quang Binh.

1. INTRODUCTION

Community-based tourism is a form of tourism that involves the active participation of local communities in the supply chain and management of tourism activities, increasingly asserting its essential role in sustainable development. This model not only promotes community involvement in economic activities but also significantly contributes to the preservation of cultural values and the protection of the natural environment. Community-based tourism is particularly important for rural and remote areas, where it not only provides a stable source of income but also helps improve infrastructure and enhance the quality of life for local residents. In Quang Binh Province, Tan Hoa village has emerged as a prime example and a highlight on the community-based tourism map. However, the development of community-based tourism in Tan Hoa Village faces several challenges, including a lack of skilled human resources, a spontaneous development approach, and the absence of specific regulations, standards, or criteria. The provision of day-tour experiences and services remains quite simple, with insufficient linkage chains. Therefore, studying community-based tourism in Tan Hoa Village to identify current challenges and determine the core elements needed for sustainable development of this tourism model is essential. This paper proposes solutions to improve the community-based tourism model in Tan Hoa, thereby promoting the sustainable development of the area. The research findings will provide valuable information for managers, businesses, and local communities in developing tourism strategies, while also

preserving cultural values and protecting the natural environment. To address this issue, the study will answer the following research questions:

Research question 1: What is the current status of community-based tourism in Tan Hoa Tourism Village, and what challenges are being faced?

Research question 2: What are the main obstacles hindering the implementation of solutions and improvements in community-based tourism development in Tan Hoa Village?

Research question 3: What solutions can be applied to address the challenges and promote the sustainable development of community-based tourism in Tan Hoa Village?

These research questions play a crucial role in providing a foundation for the investigation and guiding practical recommendations to enhance the development of community-based tourism in Tan Hoa Village. If the community-based tourism model in Tan Hoa is effectively implemented, it will not only become an attractive destination for both domestic and international tourists but also contribute to improving the quality of life for the mountainous community in Minh Hoa District, Quang Binh Province. Additionally, this model will contribute to preserving local cultural and ecological values, creating a development model that can be replicated and applied in many other areas.

2. LITERATURE REVIEW

Community-based tourism has attracted significant research interest, resulting in numerous studies examining various aspects of this subject:

For instance, Tran Thi Hoang Anh's research, titled "Community-Based Tourism Development in the Mekong Delta Region of Vietnam: The Role of Education and Scientific Innovation" [1], presented at the 10th Mardin Artuklu International Scientific Research Conference, May 19-21, 2023, in Mardin, Turkey, asserts the role of community-based tourism in contributing to sustainable socio-economic development and poverty reduction. However, the study also highlights challenges such as a lack of skilled human resources, insufficient application of scientific innovation, and limited awareness of sustainable tourism practices. The research emphasizes the role of education and scientific innovation in promoting community-based tourism in the Mekong Delta region.

In her article "Community-Based Tourism - Developing Rural Areas in Developing Countries", published in the SHS Web of Conferences Journal, Issue 92, 2021 [5], Monika Nova argues that community-based tourism has become a widely recognized form of sustainable tourism globally. This form of tourism not only benefits local communities but also enhances their living standards and stimulates local trade. The core of the article is the importance of community involvement in tourism development, as they are the primary beneficiaries. Nova's research aims to assess the prerequisites for community-based tourism development and bridge the technology gap for community-based tourism projects in Cambodia.

Most. Habiba and Farhana Yeasmin Lin's work, "Community-Based Tourism (CBT): A Community Development To", published in the European Journal of Business and Management,

Volume 15, Issue 17, 2023 [4], discusses how community-based tourism first emerged in the 1970s and gained attention in the 1990s. In this model, local communities own and manage tourism businesses, providing financial benefits to the local economy. The article offers an overview of community-based tourism, outlining the driving factors, challenges, and its role in community development. The study indicates that community-based tourism helps create jobs, increase income, improve knowledge and skills, and elevate the living standards of the local population.

Phạm Thị Lam's research, "Research on the Development of Community-Based Tourism in Cam Thanh Commune, Hoi An City, Quang Nam Province," presented in a Master's thesis in Tourism [2], reveals that Cam Thanh has favorable conditions for community-based tourism development, and initial efforts have shown promising results, attracting significant local participation. However, tourism development in the area still faces several issues, primarily weak management and a lack of unique tourism products. In response to these conditions, the thesis proposes practical solutions aimed at making tourism a strength of Cam Thanh Commune.

Nguyen Thi Quynh Phuong's Master's thesis on Management with a Research Orientation at the University of Hue in 2018 [6] investigates the development of community-based tourism in Le Thuy District, Quang Binh Province. This study focuses on the theoretical and practical aspects of community-based tourism, analyzing the current state of its development in the area. Based on these analyses, the study proposes solutions to promote the development of community-based tourism in Le Thuy District, Quang Binh Province.

From the existing literature, it is clear that while there has been substantial research on community-based tourism, there are still gaps that need to be addressed, particularly in the context of developing community-based tourism in Tan Hoa Village, Quang Binh Province. Specific studies on the community-based tourism model in Tan Hoa are still limited, lacking detailed analysis of the current state, potential, and unique challenges of this model. Additionally, the lack of skilled human resources and the spontaneous nature of community-based tourism development in Tan Hoa have not been fully explored. Addressing these issues is crucial to enhancing service quality and tourism management. The absence of specific regulations and standards in managing and establishing necessary criteria to improve the community-based tourism model in Tan Hoa also needs to be addressed. Furthermore, the provision of tourism experiences is still quite basic, and there is a lack of value chains. This calls for further research to expand and improve the quality of tourism experiences. In particular, there is a need for studies to propose practical solutions for Tan Hoa, helping to refine the community-based tourism model and promote sustainable development. The findings from these studies will provide valuable information for shaping tourism development strategies, improving infrastructure, enhancing local living standards, and preserving cultural values.

3. RESEARCH METHODOLOGY

This article employs a mixed-methods approach to evaluate the community-based tourism model in Tan Hoa Village, Quang Binh Province. The research methodology is carried out through the following key steps:

Literature review and Gap Analysis: The research begins by exploring and evaluating existing studies on community-based tourism, both domestically and internationally. This involves analyzing academic literature, government reports, and industry documents to identify research gaps and develop hypotheses.

Qualitative research: In-depth qualitative interviews are conducted to gather detailed data on the current state and specific challenges faced by the local community in Tan Hoa. Semi-structured interviews are carried out with various stakeholders, including representatives of the local community, tourism businesses, government agencies, and residents. This qualitative data helps to gain insights into the unique dynamics and issues of community-based tourism in the area.

Quantitative Data Collection and Analysis: Quantitative data is collected and analyzed using descriptive and inferential statistical methods through SPSS software. This involves processing the data to identify patterns, correlations, and key factors influencing the success or challenges of the community-based tourism model in Tan Hoa.

Practical Solutions Development: Based on the analysis results, the research proposes practical solutions to address the challenges and enhance the success of the community-based tourism model in Tan Hoa. These solutions are aimed at improving management practices, enhancing service quality, and fostering sustainable development in the community.

This comprehensive approach ensures a thorough understanding of the context and challenges of community-based tourism in Tan Hoa, providing a solid foundation for actionable recommendations.

4. RESEARCH RESULTS AND DISCUSSION

4.1. Current Status of Community-Based Tourism Development in Tan Hoa Village

Tan Hoa, a village located in the “flood-prone” region of Quang Binh Province, has achieved certain milestones in the development of community-based tourism. To accurately assess the current state of development, it is essential to examine several key aspects such as infrastructure, human resources, tourism business activities, and socio-economic impacts.

Infrastructure for Community-Based Tourism

Infrastructure is a critical factor in determining the sustainable development of community-based tourism in Tan Hoa. In recent years, under provincial leadership, the local area has implemented various infrastructure development plans to support community-based tourism. Specifically:

Table 1. Infrastructure Status in Tan Hoa Village (2023)

| Type of Infrastructure | Completion Rate (%) | Notes |
|--------------------------|---------------------|---|
| Transportation | 50% | Concrete and asphalt roads |
| Water Supply | 50% | Tap water |
| Accommodation Facilities | 40% | Lacking modern amenities |
| Electricity | 80% | Basic provision, unstable during the rainy season |

Source: End-of-Year Summary Report 2023, Minh Hoa District, Quang Binh

According to the latest report, as of June 2024, the transportation system in Tan Hoa has undergone significant improvements due to the development of community-based tourism. Specifically, approximately 50% of the inter-commune and internal roads in Tan Hoa have been upgraded to either concrete or asphalt standards, compared to only 30% previously. The main road leading into Tan Hoa has been upgraded from a dirt road to a 7-meter-wide concrete road, improving connectivity with neighboring areas and reducing the risk of flooding during the rainy season. Additionally, the internal roads have been upgraded from narrow dirt paths to concrete roads ranging from 4 to 5 meters wide, facilitating movement within the area and access to tourist attractions.

To meet the needs of tourists, bus and taxi services have also been significantly developed. Bus routes from major city centers such as Dong Hoi and Hue have been expanded to cover Tan Hoa, with a frequency of one trip every two hours. Moreover, new taxi companies have been established, and online ride-hailing services have been improved to serve both tourists and locals.

The local government has also paved over 3 km of pedestrian pathways with stone and installed lighting, along with placing directional signs and tourism information boards along the main tourist routes. These improvements have not only enhanced the quality of tourism services but have also contributed to the economic and social development of the area, creating favorable conditions for better connectivity and exploration of Tan Hoa.

In Tan Hoa, there are several accommodations available for tourists, such as Oxalis Homestay, Phong Nha Farmstay, Chay Lap Farmstay, Tan Hoa Guesthouse, Hoang Ha Homestay, Tu Lan Lodge, Rural Homestay, Ho Khanh Homestay, and Mountain River Homestay. These establishments are meeting the basic needs of tourists, leveraging the unique natural and cultural tourism potential of the area. However, this development is constrained by several significant challenges. Most of the accommodations in Tan Hoa are built and managed by local residents. While this helps retain a large portion of the economic value within the community, it also poses challenges regarding service quality and infrastructure. According to a survey by the Quang Binh Department of Tourism (2023), there are about 10 accommodations in Tan Hoa, but only 2 of them meet the standards for serving international tourists. This reflects a shortage of modern amenities and professional management capabilities. Although the homestays and guesthouses provide an authentic and close experience with the local culture, they are often limited by the small number of rooms and lack of essential facilities for international guests. This shortfall not only impacts the tourists' experience but also limits Tan Hoa's competitiveness on the global tourism map.

The electricity and telecommunications systems in Tan Hoa have seen significant improvements to meet the needs of community-based tourism development. Previously, while the basic electricity system met the daily needs of residents, frequent power outages, especially during the rainy season, had a major impact on tourism business activities. However, with investment and infrastructure upgrades, the current electricity system has become more stable. The transformer stations and wiring have been improved, ensuring a continuous and safe power supply even under harsh weather conditions. Additionally, the telecommunications system in Tan Hoa has also been substantially upgraded. Tourists previously faced difficulties due to unstable phone and internet signals, but now, telecommunications services have been expanded to cover most areas of the

village. This upgrade not only facilitates tourists in maintaining communication and sharing their experiences but also contributes to promoting Tan Hoa's tourism image internationally. These improvements have enhanced the quality of tourism services in the area and positively contributed to the region's socio-economic development.

About Human Resources for Community-Based Tourism

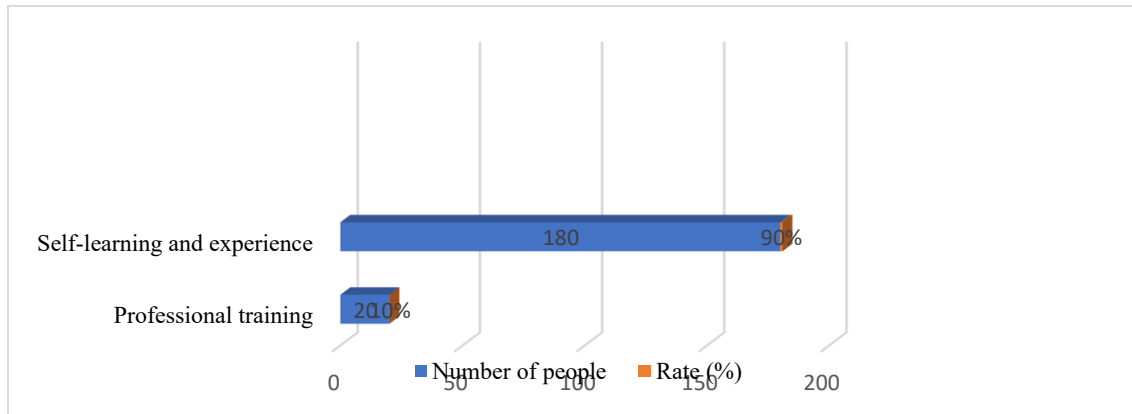


Figure 1. Professional Qualifications of Tourism Human Resources in Tan Hoa Village (2023)

(Source: End-of-Year Summary Report 2023, Minh Hoa District, Quang Binh)

Human resources are a crucial factor in determining the quality and sustainable development of community-based tourism in Tan Hoa. Currently, the workforce in the tourism sector in Tan Hoa mainly consists of local residents with relatively low levels of professional qualifications. According to statistics from the Quang Binh Department of Tourism (2023), Tan Hoa has 7 hamlets with 600 households and a population of 3,000, of which approximately 200 people are directly involved in tourism activities. However, only 10% of them have received professional tourism training.

Specifically, out of the 200 people, only 20 have received formal training, accounting for 10%, while the remaining 180 (90%) rely on self-learning and personal experience. The lack of qualified human resources not only affects the tourist experience but also reduces Tan Hoa's competitiveness compared to other tourist destinations in the region.

Types of community-based tourism in Tan Hoa

Tan Hoa has developed a diverse and rich community-based tourism ecosystem. The types of tourism here not only provide unique experiences that are close to nature and local culture for visitors but also contribute positively to the economic development of the local area.

According to reports from relevant authorities, community-based tourism activities in Tan Hoa are currently implemented through three main types, each providing unique experiences and contributing to the local economic development.

Firstly, ecotourism is the predominant type in Tan Hoa, accounting for about 45% of the tours. Tan Hoa leverages its rich ecosystem and magnificent natural landscapes. Visitors engage in activities such as exploring mysterious cave systems, trekking through pristine forests and

visiting unique natural landmarks. Each trip not only offers an opportunity to explore nature but also a deeper understanding of biodiversity and the way people live in harmony with nature.

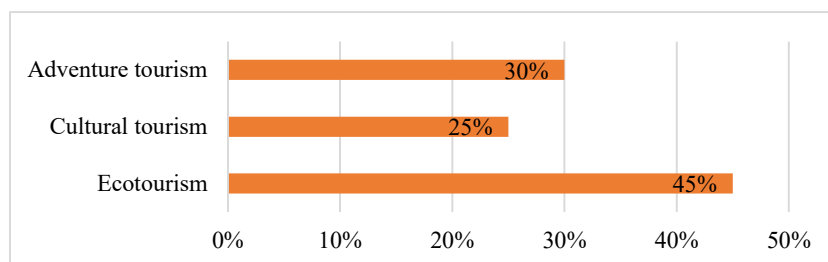


Figure 2. Types of community-based tourism in Tan Hoa

Source: End-of-Year Summary Report 2023, Minh Hoa District, Quang Binh

Secondly, cultural tourism represents about 25% of the tourism activities in Tan Hoa. This type provides visitors with the chance to explore and experience traditional local cultures, such as eating traditional dishes like Rice pot, thau lang, snail, eggplant, and participating in folk festivals and visiting local traditional craft villages.

Thirdly, adventure tourism is becoming increasingly popular, especially among young people, accounting for about 30% of the tourism market in Tan Hoa. This type of tourism is divided into three levels: mild, moderate, and high-risk adventures. With activities such as mountain climbing, cave exploration, and zip-lining, Tan Hoa has become an attractive destination for thrill-seekers and adventure enthusiasts. Notably, the Tu Lan cave system and ecological conservation area has become a highlight with its fascinating caves and large waterfalls hidden deep underground. Experiences like swimming in dark caves and exploring remote valleys not only provide excitement but also offer visitors a chance to experience the wilderness and mystery of nature.

In the past two years, the People's Committee of Tan Hoa has closely collaborated with Oxalis Travel Company to develop the community-based tourism model in the area. This partnership has not only diversified the types of tourism available but also created additional income sources for local residents, beyond traditional agricultural work. This has not only improved the livelihoods of the locals but also contributed to the sustainable development of Tan Hoa, making it an attractive and valuable destination in the eyes of tourists.

Overall, community-based tourism in Tan Hoa is on the rise with various types of tourism enhancing the area's appeal to both domestic and international visitors. However, to fully capitalize on its potential, Tan Hoa needs to continue investing in infrastructure, improving the skill level of its human resources and developing new tourism products to meet the growing demands of the market.

Regarding the effectiveness of tourism business operations

According to statistics from the People's Committee of Tan Hoa (2023), the number of tourists visiting Tan Hoa has shown steady growth in recent years, with an average annual increase of 15%.

In the past three years, Tan Hoa has witnessed significant growth in the number of tourists and revenue from community-based tourism. From 2021 to 2022, the number of tourists increased by 40.7% and continued to rise by 24.9% from 2022 to 2023. This steady growth highlights the sustainable development potential of tourism in Tan Hoa. Notably, international visitors increased by 76.8% from 1,842 in 2021 to 3,264 in 2023, while domestic visitors rose by 73.5% from 1,401 to 2,431 over the same period. Tourism revenue also grew by 53.3%, from 7.5 billion VND in 2021 to 11.5 billion VND in 2023, indicating that both the number of visitors and their spending have increased.

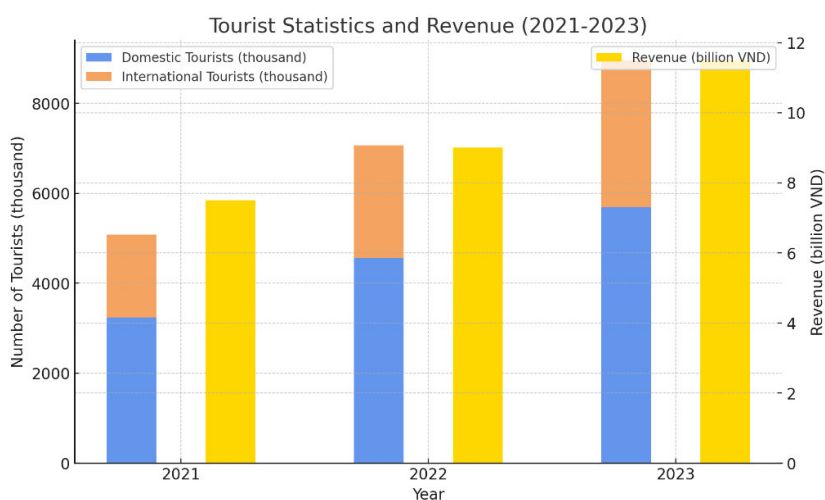


Figure 3. Number of tourists and tourism revenue in Tan Hoa village (2018-2023)

Source: End-of-Year Summary Reports 2018, 2019, 2020, 2021, 2022, 2023, Minh Hoa District, Quang Binh

In December 2023, Tan Hoa welcomed 782 tourists, generating significant income for the local community, including 82 porters, 10 households operating homestays with an average monthly income of nearly 7.2 million VND, and 10 households providing home dining services with an average monthly income of over 12.3 million VND. It is projected that during peak tourist seasons, the number of visitors could reach 1,000-1,500 per month, with total revenue for 2024 expected to be around 10-12 billion VND.

The increase in visitors not only drives economic development but also changes local perceptions. From exploiting and relying on forests, locals have now become aware of forest conservation as a sustainable livelihood. They have also been trained to become cooks and porters for tourists on Tu Lan exploration tours.

Despite the rise in tourist numbers and revenue, revenue per visitor remains low compared to other regions due to simple services, lack of variety, and connectivity. To optimize potential, it is necessary to improve service quality, develop unique tourism products, and build a linkage strategy to enhance value and revenue per visitor.

Regarding the economic and social impacts of community-based tourism in Tan Hoa

The development of community-based tourism in Tan Hoa has brought about positive changes to the income of local residents. Before community-based tourism became an official

economic activity, people in Tan Hoa primarily relied on agriculture and other traditional livelihoods, with low and unstable average incomes. However, from 2018 to 2023, the average income of those involved in tourism activities increased from 30 million VND per year to 50 million VND per year. This increase not only reflects the economic effectiveness of shifting to tourism services but also highlights the potential of the tourism industry in improving the quality of life for the local population.

Reducing poverty is one of the notable successes of community-based tourism in Tan Hoa, as evidenced by a significant decrease in the poverty rate. From 2018 to 2023, the poverty rate in the commune decreased from 15% to 7%. This reduction demonstrates the positive impact of community-based tourism on improving the economic conditions of low-income households. Tourism not only generates direct income but also stimulates other economic activities within the community, thus contributing to effective poverty reduction. Households that previously relied on agriculture now have additional income from tourism-related services such as accommodation, dining services and tour guiding.

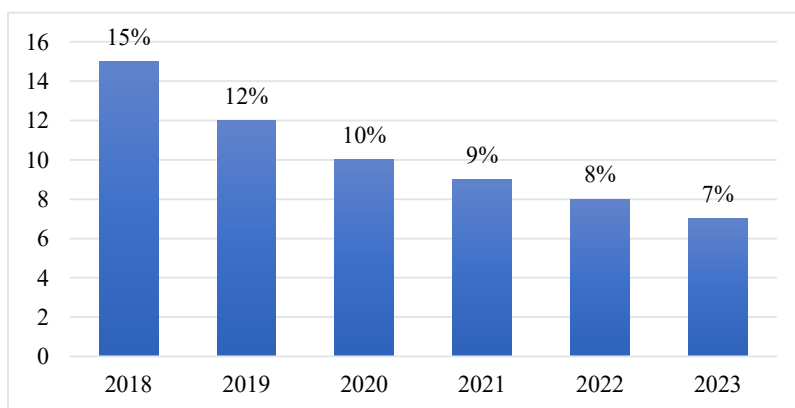


Figure 4. Poverty rate in Tan Hoa village (2018-2023)

Source: End-of-Year Summary Reports 2018, 2019, 2020, 2021, 2022, 2023, Minh Hoa District, Quang Binh

Community-based tourism has created numerous new job opportunities for people in Tan Hoa, diversifying livelihoods and reducing dependence on agriculture. These job opportunities include roles such as porters, tour guides, homestay owners, and providers of various tourism-related services. Tourism activities not only generate direct employment but also stimulate the development of related service sectors such as food and beverage supply, transportation, and handicraft production. The growth in tourist numbers has led to a significant increase in revenue from community-based tourism in Tan Hoa. From 2021 to 2023, revenue rose from 7.5 billion VND to 11.5 billion VND, reflecting the robust development of the local tourism industry.

In addition to the economic impacts, community-based tourism has also brought about significant social changes. The development of community-based tourism in Tan Hoa has not only provided economic benefits but also contributed to improving the living conditions of residents. Tourism activities have spurred investment in social infrastructure such as transportation, healthcare, and education. Roads, bridges, and healthcare facilities have been improved to meet the needs of tourists, enhancing the quality of life for local residents. Schools and other educational

institutions have also been prioritized for development, raising educational standards and awareness among local children.

Furthermore, community-based tourism has led to changes in the attitudes and behaviors of the local population. It has shifted the awareness of Tan Hoa residents regarding environmental protection and traditional culture. Previously, exploiting natural resources and forests for short-term economic activities was common. However, with the growth of tourism, residents have recognized the importance of environmental and cultural conservation as a sustainable livelihood. Training programs and awareness-raising activities organized by non-governmental organizations and local authorities have helped residents better understand the importance of nature conservation and sustainable development.

4.2. Challenges and Obstacles in Developing Community-Based Tourism in Tan Hoa

Although Tan Hoa has achieved many successes in developing community-based tourism, it still faces challenges that significantly affect its sustainable development. Specifically:

Firstly, the lack of skilled human resources: One of the major limitations in the development of community-based tourism in Tan Hoa is the shortage of skilled professionals. Many local residents involved in tourism activities have not received formal training and lack knowledge about service standards and basic requirements for serving tourists. This leads to a lower quality of service that does not meet tourists' expectations, negatively impacting the local image.

Secondly, infrastructure limitations: The infrastructure supporting tourism in Tan Hoa is still inadequate and does not meet the requirements for developing high-quality services such as accommodation, shopping, and entertainment. This directly affects the ability to attract tourists, especially in terms of retaining them overnight, thereby limiting the potential revenue from tourism activities. This also means that Tan Hoa has not fully utilized its tourism development potential.

Thirdly, spontaneous development and lack of standards: Tourism services in Tan Hoa have largely developed in a spontaneous manner, primarily meeting short-term market demands without a long-term strategic direction. Tourist attractions are unevenly distributed, with investment concentrated mainly in town areas, while potential tourist sites have not received significant attention from investors. Low service quality, unstable business operations and higher service prices compared to local average incomes reduce Tan Hoa's appeal to tourists.

Fourthly, simple and unconnected experience services: Experience and sightseeing services in Tan Hoa are still relatively simple, lacking professionalism and tight integration between service chains. Tourists find it difficult to discover novelty and are not motivated to stay longer, which diminishes the attractiveness and overall value of the community-based tourism product.

These shortcomings and limitations in the development of community-based tourism in Tan Hoa are not merely short-term difficulties but represent significant challenges to the sustainable development of local tourism. To overcome these challenges, a coordinated effort between local authorities, community residents, and tourism experts is needed to develop and implement comprehensive solutions, aiming to create a valuable and sustainable community-based tourism model that meets tourists' needs while preserving local cultural values.

4.3. Some Solutions for Developing Sustainable Community-Based Tourism in Tan Hoa

First, Develop Infrastructure

Infrastructure includes physical facilities such as roads, bridges, accommodation (hotels, resorts), entertainment areas, and other essential amenities to meet the needs of tourists. These elements play a crucial role as the foundation necessary for tourism development, facilitating travel, accommodation and visitor experiences. Well-developed infrastructure not only enhances service quality but also helps promote the local image, attract investment, and improve transportation, thereby increasing tourist satisfaction and experience.

Currently, Tan Hoa transportation system, accommodation, and public amenities face many limitations, directly affecting its ability to attract and retain tourists. Upgrading the transportation system, especially the connecting roads between Tan Hoa and nearby tourist attractions such as Hang Ruc Mon, Thac Mo, Kong - Skull Island film studio, Yen Phu Lake and Vua Ham Nghi Resistance Area, will significantly improve visitor accessibility and create opportunities for local residents to participate in and benefit from tourism activities. Additionally, investing in accommodation facilities like homestays, guesthouses, and hotels will not only meet the lodging needs of tourists but also contribute significantly to creating unique and appealing experiences, thereby promoting the growth of community-based tourism. This investment should not only focus on improving infrastructure but also open up economic development opportunities for local residents, enhancing Tan Hoa competitiveness in the tourism market and attracting the interest of both domestic and international visitors. Consequently, Tan Hoa can establish itself as a sustainable community-based tourism destination, contributing to economic and social development while preserving the valuable cultural and natural heritage of the Minh Hoa region.

Second, Train Skilled Human Resources

Training human resources for community-based tourism is not only an important factor but also a core foundation for ensuring the sustainable and effective development of this model. In Tan Hoa, local residents have traditionally been engaged in agriculture and lack specialized skills to serve tourists. Therefore, equipping them with knowledge and skills is a strategic investment for the future of community-based tourism. This requires the development of comprehensive training programs, which should include not only basic skills such as tourism management and communication but also a deep understanding of local culture and history. A thorough knowledge of one's own culture and history helps locals feel more confident in sharing with tourists and contributes to the preservation and promotion of traditional cultural values, creating unique and meaningful tourism experiences.

However, a significant challenge in training human resources in Tan Hoa is the language barrier. With the increasing number of international tourists, the lack of English skills is becoming a major limitation for locals in interacting with and providing services to visitors. Proficiency in English not only helps overcome language barriers but also opens up more opportunities for locals to develop high-quality tourism services, attract and retain international tourists. Therefore, the Minh Hoa District People's Committee and Oxalis Travel Company need to plan and collaborate with educational institutions both within and outside the province to offer English communication training for locals. This will equip them with the necessary tools to break down language barriers.

This is a crucial step, helping locals not only enhance their communication skills but also gain more confidence in participating in community-based tourism activities, thereby improving the quality of tourism services in the area. Thus, training human resources is the “key” to the sustainable development of community-based tourism in Tan Hoa, ensuring that every tourist experience is rich in cultural significance and professionalism, thereby creating differentiation and enhancing Tan Hoa's competitive position in the tourism market.

Third, Develop and Strengthen Linkages Between Tourist Attractions and Services.

Currently, the tourist attractions and services in Tan Hoa operate relatively independently, lacking the necessary connections and synchronization to create an attractive tourism system. As a result, the area's potential has not been fully exploited, affecting both the tourist experience and local community revenue. By connecting tourist attractions and services, visitors will have the opportunity to engage in various activities in a seamless journey, such as linking Tan Hoa with nearby tourist spots like Mo Waterfall, Yen Phu Lake, and the Vua Ham Nghi Historical Site. Developing interconnected tours in ecological exploration, cultural visits, culinary experiences, agricultural activities, and relaxation will allow tourists to delve deeper into local life and culture. As the length of stay increases, tourists will have the chance to experience additional services and activities, thereby boosting local community revenue. At the same time, creating connected sightseeing routes will enhance the effectiveness of tourism promotion strategies and establish a comprehensive, synchronized tourism system. This will also encourage collaboration between communities and tourism businesses in the region. Developing interconnected tourism product chains will contribute to enhancing Tan Hoa's brand, transforming it into an attractive and sustainable tourism destination. This linkage will also facilitate the implementation of larger-scale tourism development projects with the coordinated involvement of stakeholders, ensuring that tourism in Tan Hoa develops sustainably and effectively.

Fourth, Develop and Adhere to Community Tourism Standards

To ensure the sustainable and effective development of community tourism in Tan Hoa, establishing and adhering to a set of community tourism standards based on the National Standard (TCVN 13259:2020) is essential. This is a critical solution for shaping and developing a tourism model that not only meets quality service requirements but also protects the environment and preserves local cultural values.

This set of standards will serve as the benchmark, guiding all community tourism activities, from clean and safe food services to professional tour guides, comfortable and hygienic accommodation, and high-quality cultural performances and recreational activities. Additionally, environmental protection, cleanliness, security, and fire prevention must be given serious attention and strictly implemented.

Developing a code of conduct for stakeholders such as local communities, food and accommodation providers, and community tourism businesses is crucial. This code not only guides the equitable distribution of economic benefits from tourism but also ensures the maintenance of quality standards and the protection of cultural and environmental resources. This is a solid foundation for the sustainable and responsible development of community tourism in Tan Hoa in the current context.

5. CONCLUSION

The sustainable development of community tourism in Tan Hoa represents a journey filled with challenges but also immense potential. Through the proposed solutions-including investing in infrastructure, training skilled personnel, building service linkages, and establishing and adhering to community tourism standards-Tan Hoa not only has the opportunity to enhance service quality but also to preserve its valuable cultural, historical, and natural heritage.

The success of these solutions will be measured not only by improved visitor experiences but also by the creation of sustainable economic and social development for the local community. Tan Hoa has the potential to become a compelling destination, standing out on the tourism map, and establishing itself as a model of exemplary and sustainable community tourism. This will not only bring tangible benefits to its residents but also significantly contribute to the long-term development of the Minh Hóa region, creating a proud tourism legacy for future generations.

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FACTORS INFLUENCING THE ECOTOURISM ENTREPRENEURIAL INTENTIONS OF TOURISM STUDENTS AT UNIVERSITIES IN NHA TRANG CITY

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ABSTRACT

Ecotourism has been a prominent trend in the tourism industry, attracting the interest of travellers with diverse experiences in nature and culture. This brings economic benefits and is vital in addressing social and environmental issues. Therefore, entrepreneurship in ecotourism holds promise for bringing economic benefits while also playing a crucial role in environmental protection and addressing social issues. Determining the factors influencing students' entrepreneurial intentions will provide a scientific foundation for developing effective educational programs and support policies to promote innovative entrepreneurship in ecotourism. However, entrepreneurship in general, particularly in ecotourism, still faces many challenges, affecting young people's implementation of business ideas. This study aims to identify the factors influencing the ecotourism entrepreneurial intention among students majoring in Tourism at universities in Nha Trang City. Based on the theory of planned behaviour (TPB) of Ajzen (1991), Previous studies have built models of factors affecting students' entrepreneurial intentions. Since then, the research team has developed and expanded this theory. Through expert interviews and questionnaire surveys with a sample size of 500 students, six factors were proposed and investigated, including (1) Attitude toward Ecotourism entrepreneurship, (2) Impacts from closed relationships, (3) Self-risk assessment, (4) Entrepreneurship education, (5) Personality traits, and (6) Personal capability. The results from data analysis using SPSS 23.0 software show that all six factors impact the intention to start an ecotourism business among Tourism students from universities in Nha Trang City. Based on the findings, practical recommendations for educational programs, mentoring and funding schemes are proposed to encourage and support the entrepreneurial intention of ecotourism among students in higher education.

Keywords: Entrepreneurial intention, Ecotourism, Higher education, Ecotourism entrepreneurship, Tourism Students

1. INTRODUCTION

Ecotourism is increasingly recognized as a vital part of the global tourism industry, fostering sustainable travel that benefits local communities and conserves natural environments. Nha Trang, Vietnam, with its rich biodiversity and expanding tourism sector, presents a unique opportunity for ecotourism development. This study aims to explore the factors influencing the ecotourism entrepreneurial intentions of tourism students at universities in Nha Trang, as these intentions are crucial for actual entrepreneurial behavior and local tourism sustainability.

International research has identified several factors affecting entrepreneurial intentions in ecotourism, including attitudes toward entrepreneurship, social norms, self-efficacy, ecotourism knowledge, family support, and the importance of education. For instance, studies from Indonesia, Malaysia, Greece, and Kenya have shown how these elements shape students' intentions to engage in ecotourism entrepreneurship.

Building on these findings, this study will investigate similar factors in the context of Nha Trang, focusing on ecotourism knowledge, sustainability orientation, educational impact, and social environment. The results will contribute to the understanding of ecotourism and entrepreneurship, providing practical insights for promoting sustainable tourism development in the region.

2. LITERATURE REVIEW

2.1. Entrepreneurship

Entrepreneurship is an innovative and creative process where there is potential to add value to products, create job opportunities, raise productivity, revitalise and diversify markets, improve social welfare, and more broadly to develop the economy (Guerrero, Rialp, & Urbano, 2008). According to Oviatt & McDougall (2005), Entrepreneurship is the discovery, implementation, evaluation, and exploitation of opportunities to create future products and services.

Entrepreneurship is the creative pursuit of opportunities to add value, generate jobs, and foster economic growth. It involves designing, testing, and managing a business, often on a small scale, with a readiness to take risks for profit.

2.2. Entrepreneurial Intention

This theory links entrepreneurship to business risks and the motivation arising from necessity. Entrepreneurial intention is defined as an individual's motivation and decision to start a business, driven by self-awareness and adaptability—the ability to adjust to new situations. For students, entrepreneurial intention originates from their ideas, guided by educational programs and mentors, and involves recognizing opportunities and utilizing resources to create a business.

2.3. Ecotourism Entrepreneurship

According to the Vietnam Tourism Law (2017), ecotourism is nature-based travel that incorporates local culture and aims for sustainable development. It involves activities like traditional games and educational events, promoting environmental conservation and community growth. Economically, ecotourism is a growing sector, attracting young people, especially students interested in entrepreneurship, as they play a crucial role in the green economy and national sustainable development. However, ecotourism entrepreneurs face challenges such as complex procedures, financial constraints, and limited support, which hinder innovation. Addressing these obstacles is essential to foster a supportive environment for young ecotourism entrepreneurs.

2.4. Attitude towards ecotourism entrepreneurship

Based on Ajzen's (1991) Theory of Planned Behavior (TPB), studies have modeled factors influencing students' entrepreneurial intentions. Research by Wu & Wu (2008) shows that "attitude towards entrepreneurship" and "behavioral control" positively impact "entrepreneurial intention," while "subjective norms" lack statistical evidence of influence. Boissin et al. (2009) confirmed

these findings, showing similar results across U.S. and French student samples. Trait theory, combined with Maslow's motivation theory (1970) and Ajzen's TPB, suggests that individual personality differences impact entrepreneurial intention by shaping attitudes and intentions toward entrepreneurship.

2.5. Subjective Norm

Social norms, or perceived pressure from others to engage in a behavior, are a key component of the Theory of Planned Behavior (TPB). Research by Zainuddin, Ahmad, and Abdullah (2017) in Malaysia found that family and friend support significantly shapes students' entrepreneurial intentions, particularly in ecotourism. When students feel strong social support, they are more inclined toward entrepreneurship. Additionally, self-efficacy—the belief in one's ability to succeed—also predicts entrepreneurial intentions. According to Bandura's (1997) Social Cognitive Theory, high self-efficacy increases the likelihood of entrepreneurial action, as shown in studies in Indonesia and Malaysia (Astuti & Martdianty, 2012; Zainuddin et al., 2017).

2.6. Perceived Behavioral Control

According to Ajzen (1991), perceived behavioral control refers to an individual's perception of how easy or difficult it is to perform a behavior, influenced by past experiences and anticipated future obstacles. A meta-analysis by Armitage and Conner (2001) found that perceived behavioral control effectively promotes both intention and individual entrepreneurial behavior. In a study on the relationship between the Theory of Planned Behavior, environmental factors, and demographic influences on students' entrepreneurial intentions in Kenya, Amos and Alex (2014) identified perceived behavioral control as a significant and positive factor affecting entrepreneurial intentions. Similarly, Gird and Bagraim (2008) confirmed the positive impact of perceived behavioral control on students' entrepreneurial intentions.

2.7. Entrepreneurship Education

Education significantly shapes entrepreneurial intentions, especially in fields like ecotourism. Kamau and Wario (2015) found that in Kenya, targeted educational programs, including practical training, exposure to ecotourism projects, and mentorship, greatly enhance students' entrepreneurial intentions. Similarly, Zainuddin et al. (2017) emphasized the importance of academic programs that provide ecotourism knowledge and hands-on experiences for skill development. Research by Ni Nyoman Kerti Yasa et al. (2023) shows that stronger entrepreneurship education boosts students' entrepreneurial intentions, attitudes, and orientation, fostering a desire to become entrepreneurs, pursue personal growth, and embrace challenges.

2.8. Personality Traits

Personality traits play a crucial role in shaping entrepreneurial intentions. The Big Five model by Costa and McCrae (1992) identifies traits like openness, conscientiousness, and emotional stability as linked to entrepreneurial potential. Additionally, Rauch and Frese (2007) highlight the importance of self-efficacy and a propensity for risk-taking, while McClelland (1961)

notes that a high need for achievement draws individuals to entrepreneurship for challenge and success. Zhao, Seibert, and Lumpkin (2010) confirm that these traits predict entrepreneurial intentions and success, providing a strong foundation for understanding how personality influences entrepreneurial behavior, especially in ecotourism.

2.9. Personal Capacity

According to Nga and Shamuganathan (2010), personality traits are defined as consistent patterns of behavior, thoughts, or feelings that account for individual differences in similar situations. Kickul and Gundry (2002) measured personality traits through observed variables such as the ability to face and overcome obstacles, identify opportunities, and challenge the status quo. In this context, personality traits will focus on proactive personality, as described by Kickul and Gundry. Research by Suan et al. (2011) confirms a strong positive influence of personality traits on entrepreneurial intention, while Karabulut (2016) also indicates a positive relationship between personal personality traits and entrepreneurial intention.

So, the proposed model is expected to be as follows:

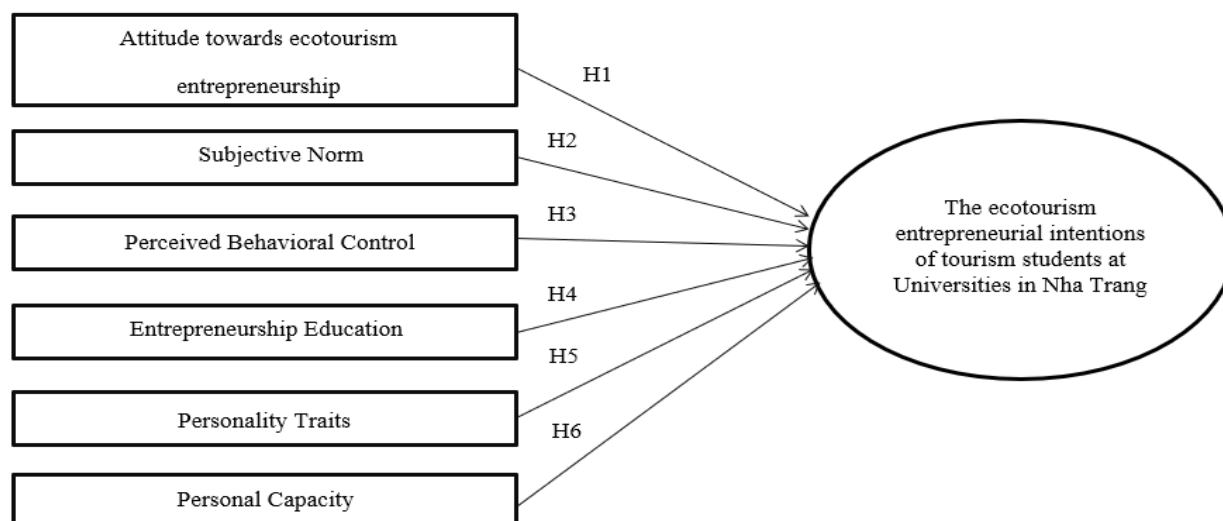


Figure 2 - Proposed author team model

- Hypothesis H1: Attitude towards ecotourism entrepreneurship influences the ecotourism entrepreneurial intentions of Tourism students from universities in Nha Trang City.
- Hypothesis H2: Subjective Norm influences the ecotourism entrepreneurial intentions of Tourism students from universities in Nha Trang City.
- Hypothesis H3: Perceived Behavioral Control influences the ecotourism entrepreneurial intentions of Tourism students from universities in Nha Trang City.
- Hypothesis H4: Entrepreneurship Education influences the ecotourism entrepreneurial intentions of Tourism students from universities in Nha Trang City.

- Hypothesis H5: Personality Traits influences the ecotourism entrepreneurial intentions of Tourism students from universities in Nha Trang City.

- Hypothesis H6: Personal Capacity influences the ecotourism entrepreneurial intentions of Tourism students from universities in Nha Trang City.

3. METHODOLOGY

According to Suwanan et al. (2023), ecotourism is an emerging field that entrepreneurial-minded youth, particularly students, should focus on. This study targets Tourism students aged 18 to 22 at universities in Nha Trang City, representing Generation Z, who are well-suited for the digital entrepreneurial landscape. These students are being educated in ecotourism and entrepreneurship, which can positively impact the development of ecotourism businesses.

The research aims to investigate the factors influencing these students' intentions to start ecotourism businesses, serving as a reference for assessing their interest and contributing to the sector's sustainable growth.

Data collection involved a questionnaire with 49 questions distributed to 500 Tourism students through surveys. The data processing included checking the reliability of the scale (KMO value of 0.5 to 1.0 and Bartlett's test significance below 5%) and applying Cronbach's Alpha to evaluate measurement scale reliability (acceptable range of 0.7 to 1.0). Exploratory factor analysis (EFA) and multivariate regression analysis were performed to establish relationships between the variables.

4. RESULTS

4.1. Research results

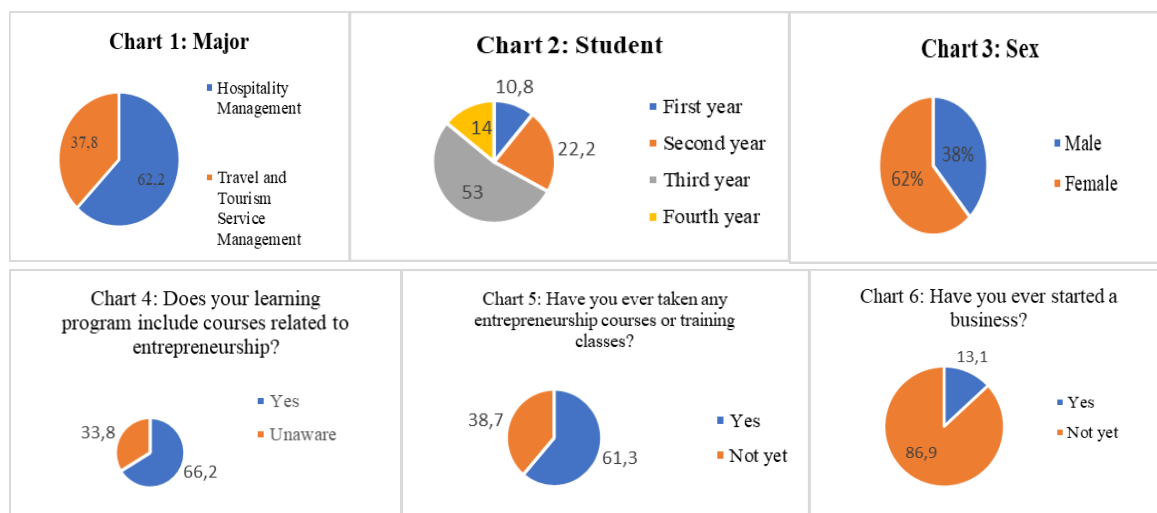


Figure 3 - Characteristics of the research sample

Source: Authors, 2024

4.2. Assessment of Suitability of Data for Factor Analysis

The results of the Barlett and KMO tests confirm the suitability of the data for conducting exploratory factor analysis on both the independent and dependent variables in the model. Specifically, the Barlett value of 18932,156 with a significance level of 0.000 indicates the presence of a correlation between variables (non-zero correlation exists). The KMO value of 0,905 further confirms the suitability of the data for exploratory factor analysis.

The factors extraction method uses the principal axis factoring method with Promax rotation, and factors are extracted until the eigenvalue is greater than or equal to 1. Variables with factor loadings greater than 0.40 are retained in the Exploratory Factor Analysis (EFA), indicating a good relationship between the scales and factors (Hair et al., 1998). To test reliability and distinguish between each factor, factors with Cronbach's alpha coefficient greater than 0.65 are kept. These results demonstrate that the statistical coefficients satisfy the criteria for regression analysis (Table 2).

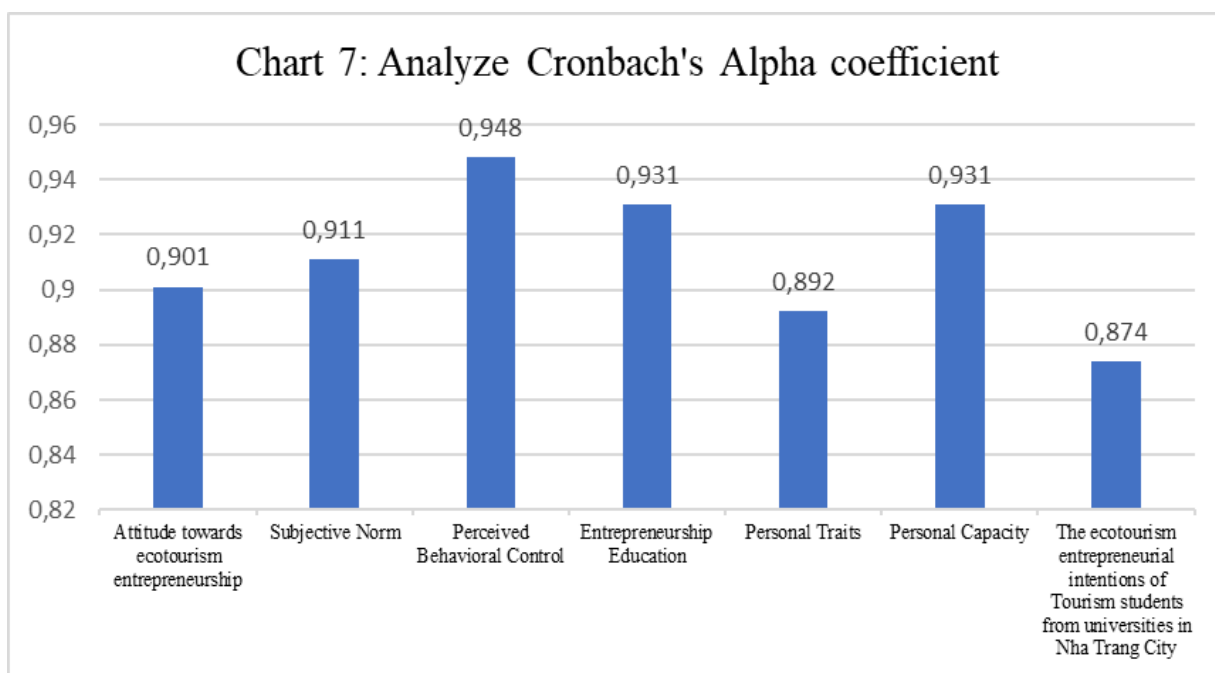


Figure 4 - Analyze Cronbach's Alpha coefficient

Source: Authors, 2024

Chart 7 presents the outcomes of the EFA, indicating that the total extracted variance is 67,483%, demonstrating that the six extracted factors accounted for 67,483% of the data's variability. Thus, the resulting scales are satisfactory.

Table 2. The results of EFA on the scale of factors affecting the decision to the ecotourism entrepreneurial intentions of Tourism students from universities in Nha Trang City

| Observed variables | Factors affecting the decision | | | | | |
|----------------------------|--------------------------------|------------------|------------------|------------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| <i>BE1</i> → <i>BE9</i> | 0,849 → 0,869 | | | | | |
| <i>PC1</i> → <i>PC9</i> | | 0,792 → 0,836 | | | | |
| <i>EE1</i> → <i>EE8</i> | | | 0,789 → 0,809 | | | |
| <i>SU1</i> → <i>SU6</i> | | | | 0,803 → 0,848 | | |
| <i>AT1</i> → <i>AT6</i> | | | | | 0,782 → 0,811 | |
| <i>PT1</i> → <i>PT6</i> | | | | | | 0,738 → 0,755 |
| Eigenvalue | 9,768 | 6,031 | 5,228 | 3,314 | 2,948 | 2,403 |
| Average variance extracted | 22,200 | 13,706 | 11,881 | 7,533 | 6,700 | 5,461 |
| Total variance | 22,200 | 35,907 | 47,788 | 55,321 | 62,021 | 67,483 |

Source: Authors, 2024

4.3. Estimation results of the regression model

Table 3. Regression results using the Enter method of the model

| Model | R coefficient | R ² | Adjusted R ² | The standard error of the estimate | Durbin–Watson statistic |
|-------|--------------------|----------------|-------------------------|------------------------------------|-------------------------|
| 1 | 0,636 ^a | 0,404 | 0,398 | 0,73037 | 1,665 |

The regression analysis results demonstrate the suitability of the regression model for the dataset ($R^2 = 0.404$; Sig = $0.000 < 0.05$) (Table ...). The regression coefficient indicates the degree of a positive influence of various factors on the decision. Among five factors, Attitude towards ecotourism entrepreneurship (AT) factor has the most significant impact on the choice decision with $\beta = 0.279$, followed by Personal Traits (PT) with $\beta = 0.211$, Entrepreneurship Education (EE) with $\beta = 0.189$, Subjective Norm (SU) with $\beta = 0.169$ and Personal Capacity (PC) with $\beta = 0.101$. Besides, the one factors Entrepreneurship Education through regression analysis, indicate that these factors do not influence the intention of ecotourism entrepreneurship among students majoring in tourism at universities in Nha Trang City.

Table 4. Regression results using the Enter method of the model

| | Total variance | The degrees of freedom | Variance | F statistic | Significance level |
|------------|----------------|------------------------|----------|-------------|--------------------|
| Regression | 214,568 | 6 | 35,761 | 67,040 | 0,000b |
| Residual | 316,327 | 593 | 0,533 | | |
| Total | 530,895 | 599 | | | |

a. Dependent Variable: BI

b. Predictors: (Constant), PC, BE, PT, SU, EE, AT

Source: Authors, 2024

Table 5. Estimated results

| Model | Coefficients ^a | | | | | Collinearity Statistics | |
|--------------|-----------------------------|------------|---------------------------|-------|-------|-------------------------|-------|
| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Tolerance | VIF |
| | B | Std. Error | Beta | | | | |
| 1 (Constant) | 0,694 | 0,180 | | 3,858 | 0,000 | | |
| AT | 0,260 | 0,034 | 0,279 | 7,641 | 0,000 | 0,753 | 1,327 |
| SU | 0,153 | 0,031 | 0,169 | 4,919 | 0,000 | 0,849 | 1,177 |
| BE | 0,004 | 0,028 | 0,004 | 0,127 | 0,899 | 0,979 | 1,021 |
| EE | 0,168 | 0,032 | 0,189 | 5,253 | 0,000 | 0,777 | 1,287 |
| PT | 0,205 | 0,035 | 0,211 | 5,844 | 0,000 | 0,771 | 1,298 |
| PC | 0,098 | 0,031 | 0,101 | 3,118 | 0,002 | 0,952 | 1,051 |

a. Dependent Variable: BI

Source: Authors, 2024

Through the Estimated results table (Table 7), it is evident that there are five factors influencing the intention of ecotourism entrepreneurship among students majoring in tourism at universities in Nha Trang City, namely: Attitude towards ecotourism entrepreneurship, Subjective Norm, Entrepreneurship Education, Personal Traits, Personal Capacity. The beta coefficient indicates the degree of influence of each independent factor on the dependent variable, with a larger coefficient indicating a more significant impact. Multicollinearity can cause biased regression estimates when the variance inflation factor is >2 (Quang, N.T. & Thu, D.A. (2023)). However, the coefficient of variance for each factor in the model is < 2 , indicating that multicollinearity does not occur.

The five factors affecting tourists' decision to the ecotourism entrepreneurial intentions of tourism students at universities in Nha Trang City are Attitude towards ecotourism entrepreneurship (AT) (0,279), Personal Traits (PT) (0,211), Entrepreneurship Education (EE) (0,189), Subjective Norm (SU) (0,169) and Personal Capacity (PC) (0,101).

5. CONCLUSIONS

The study, based on 500 survey responses, reveals that the entrepreneurial intentions for ecotourism among tourism students at universities in Nha Trang are influenced by five key factors: Attitude toward Ecotourism Entrepreneurship, Subjective Norms, Entrepreneurial Education, Personal Competence, and Entrepreneurial Intentions. To enhance these entrepreneurial intentions, the authors propose several solutions.

First, universities play a crucial role in designing ecotourism-related courses that effectively integrate theory and practice. Students should have opportunities to engage in research projects, develop business plans, and intern with existing ecotourism companies. Additionally, fostering an independent and innovative mindset among students is vital; extracurricular activities such as entrepreneurship clubs and guest lectures by successful entrepreneurs can inspire them.

Second, collaboration between academia and industry is essential for creating a vibrant entrepreneurial ecosystem. By establishing joint training programs with ecotourism companies, students can receive mentorship from industry experts and gain direct work experience. This collaboration not only equips students with specialized knowledge but also helps them build lasting professional relationships and access funding opportunities.

Lastly, universities should support students financially through grants and prizes in startup competitions, while also providing essential training in financial management. By equipping students with the necessary financial knowledge and mentorship, they can make informed business decisions, reduce risks, and ensure the sustainability of their ventures. Collectively, these strategies will enhance the ecotourism entrepreneurial intentions of students, contributing to the sustainable development of the local tourism industry.

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THE STATE'S ROLE IN DEVELOPMENT ADVENTURE SPORTS TOURISM IN VIETNAM

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ABSTRACT

Vietnam has many advantages for the development of adventure sports tourism. Recent statistics show that adventure sports tourism in Vietnam is a new direction attracting both domestic and international tourists. In the development of adventure sports tourism, the participation of the state plays a very important role. The objective of this article is to identify the State's role in the development of adventure sports tourism in Vietnam. The article employs traditional scientific research methods including survey methods, descriptive statistics, and expert methods. Through a survey sent to 100 tourism enterprises in the provinces of Lam Dong, Quang Binh, Lao Cai, Quang Ninh, and 20 management officials. This study identifies the content of the state's role and evaluates the success level of the state's role in the development of adventure sports tourism. Based on that, the author proposes several solutions to enhance the State's role in the development of adventure sports tourism in Vietnam.

Keywords: The State's role, development, adventure sports tourism, Vietnam.

1. INTRODUCTION

Vietnam has a natural advantage for developing adventure sports tourism, and it has indeed attracted a considerable number of tourists. With three-quarters of its terrain being mountainous, featuring beautiful caves, limestone mountain ranges, tropical forests, and over 3,000 km of coastline, the country has favorable conditions for developing adventure sports tourism in various locations such as Lam Dong, Quang Binh, Lao Cai, and Quang Ninh.

In practice, the provinces of Lam Dong, Quang Binh, Lao Cai, and Quang Ninh have already implemented strategies to promote the development of adventure tourism tours. For example, Lam Dong, with its advantageous terrain and climate, currently offers hundreds of famous tourist destinations that attract thousands of domestic and international visitors, such as the Tuyen Lam National Tourist Area, Bidoup Nui Ba National Park, and Datanla Waterfall Tourist Area. Quang Binh offers many adventure tourism products, such as Son Doong Cave, En Cave, and the 7,000-meter-long Thien Duong Cave. Lao Cai provides products such as conquering Fansipan Mountain and mountain climbing tours to peaks like Ky Quan San, Lao Than, and Nhiu Co San. Quang Ninh, with its diverse mountainous terrain, facilitates high-experience adventure sports like driving on rough roads or challenging terrains such as the Dong Son - Ky Thuong route (Ha Long City), and paragliding.

However, reality shows that the development of adventure sports tourism in Vietnam remains modest and does not fully align with the country's potential and advantages. Adventure sports tourism still faces challenges, inconsistencies, and lacks sustainability. Among the various

reasons limiting the development of this sector, the State's role is a significant factor. With this approach, the author has chosen to research the state's role in developing adventure sports tourism in Vietnam and suggest several solutions for further development.

2. THEORETICAL FRAMEWORK AND RESEARCH METHODS

2.1. Theoretical Framework

Studies on the State's role

Many researchers have examined the State's role in tourism economic development, such as Nguyễn Thị Ánh Tuyết (2022). International scholars like Elliott (2002), Marzuki (2010), Cheuk et al. (2010), Hall (2000), and Hall & Jenkins (2004) have also contributed. These studies emphasize the state's fundamental functions, including creating a conducive environment, formulating strategies, planning, policymaking, and controlling tourism activities. Marzuki (2010) and Cheuk et al. (2010) specifically analyzed the State's role in Malaysia's nine tourism development plans from 1966 to 2010.

Elliott's (2002) comparative study used case examples from countries like the UK, Australia, Vietnam, Thailand, and the U.S. to address key aspects of tourism management across different government levels, including planning, policy development, central and local government participation, public and private sector management, environmental control, and sustainable development.

Hall's (2000) study discussed seven roles of the state in tourism: First, coordination between different levels of government is necessary. Second, tourism planning and development. Third, legislative power. Fourth, providing infrastructure support or investing in risky tourism projects where private capital is insufficient. Fifth, offering interest rate subsidies. The remaining two roles include supporting social tourism and protecting public interests.

Studies on Adventure Sports Tourism

Adventure sports tourism is a popular and significant sector within the tourism industry and contributes to socio-economic development. However, it carries inherent risks if organizers or travel agencies do not comply with safety regulations, underscoring the need for a strong state role.

Adventure sports tourism is gaining increasing attention from researchers like Bourdeau et al. (2002), Sofield (2003), Swarbrooke (2003), Buckley (2006), and Kapur (2018). These studies commonly aim to define adventure tourism, outline principles for product development, and discuss the necessary infrastructure and technical conditions. Adventure sports tourism is understood as a type of tourism where participants engage in challenging activities to satisfy their need for exploration, self-improvement, and fitness. It is typically suited for young people or those who enjoy risky, physically demanding activities (Sofield, 2003).

Several studies affirm the impact of adventure sports tourism, such as Klaus & Maklan (2011), Kapur (2018), and Houge Mackenzie et al. (2023). These studies agree that adventure tourism participation positively affects psychological health, joy, and well-being by fulfilling basic psychological needs (autonomy and competence) and fostering a connection with nature.

However, their approaches differ. For instance, Kapur (2018) focuses on understanding the importance of adventure tourism, factors influencing it, its benefits, and its classification, while also analyzing the institutional framework and regulations.

Similarly, Klaus & Maklan (2011) and Houge Mackenzie et al. (2023) explored the psychological benefits of participating in adventure tourism, such as mountain biking camps. Their findings indicate that participants experience joy, personal growth, social interaction, efficiency, and a surreal sense of accomplishment. However, their methods diverge: Houge Mackenzie et al. (2023) proposed a conceptual model based on contemporary literature on adventure sports, tourism, and psychological health, while Klaus & Maklan (2011) used a direct approach with 89 semi-structured interviews conducted over three years with mountain biking camp participants. They identified joy and personal growth as core experiences valued by customers.

Several studies have examined how adventure sports tourism can revitalize specific economic areas, with Costa & Chalip's (2005) research being particularly significant. The authors emphasized the role of adventure sports tourism in boosting rural economies, using ethnographic methods to investigate the experiences and challenges faced by a rural community in Portugal that incorporated paragliding into its tourism offerings. While this case was seen as a successful example of using adventure sports for rural revitalization, the results showed that paragliding had a minimal impact on the community. Paragliders tended to socialize among themselves and often chose to shop and eat outside the area. However, they expressed interest in additional activities to enhance their visits and wanted to bring their families along. The absence of a strategic marketing plan hindered the community's ability to increase income from paragliding and related tourism markets. Additionally, an aging population, a conservative social environment, and tourism planning driven by external factors contributed to stagnation in development and marketing efforts.

Multiple studies have examined the features of adventure sports tourism, notably those by Morgan et al. (2005) and Apollo et al. (2023). Both utilized quantitative methods to investigate participation rates and gender differences in success rates among different groups and interests. In Apollo et al.'s (2023) study, which analyzed data from 124,508 participants in selected mountain climbing and ultramarathon events, the authors found a significant gender gap in participation, with more men than women taking part. However, women were more likely to meet their goals than their male counterparts. The research focused on adventure sports that have traditionally been male-dominated, such as mountain climbing and ultramarathons. While female participation has grown, a gender gap in overall numbers remains. Interestingly, when it comes to completion rates, women slightly outperformed men. To gain a deeper understanding of potential gender inequalities in competitive adventure sports tourism, it is important to consider both quantitative and qualitative participation data for male and female participants.

Another study focused on the characteristics of adventure sports tourism is that of Morgan et al. (2005), which approached the subject from a different angle: Depending on the nature of each activity, adventure tourists were classified as thrill-seekers who are either fearless, bold, eco-seekers, or skill-testers.

When discussing the experience of implementing adventure sports tourism, Kane's (2010) study focused on New Zealand and examined sports, tourism, and adventure tourism activities. The study concluded that: The sustainability of sports tourism requires continuous invention and the creation of experiences that facilitate adventure.

2.2. Research Methods

- *Approach*: When researching the State's role in the development of adventure sports tourism in Vietnam, the author focuses on both a functional approach and an institutional approach.

- *Research Objective*: The objective is to study the state's role in the development of adventure sports tourism in Vietnam, and to propose solutions to enhance the state's role in advancing this sector in the country.

- *Data Collection and Processing Methods*: In this study, the author combines traditional scientific research methods, including a literature review aligned with the research objectives, surveys, descriptive statistics, and expert consultations.

+ Concepts and scientific arguments are collected from specialized literature, reference books, scientific articles, and journals both domestically and internationally. Secondary data is gathered from officially published figures from various agencies and organizations of the Socialist Republic of Vietnam.

+ To collect primary data, the author identifies the target group and scope for the survey, sending questionnaires to 100 tourism companies across the provinces of Lam Dong, Quang Binh, Lao Cai, and Quang Ninh, along with 20 government officials.

- Sampling Procedure

First, the author designs two survey forms one for businesses and one for government officials and researchers.

Second, the sample size is determined.

According to Nguyễn Văn Thắng (2017), "The typical sample size for regression analysis, correlation, or group testing should be 100 observations or more." [21,167] Therefore, to ensure the sample's representativeness, the author plans to select a sample size of 120, which is relatively appropriate for statistical analysis. Primary data was collected from July to mid-August 2024 through indirect survey methods, such as email and other channels.

Data Analysis Method: The survey results will be processed using SPSS. The author applies descriptive statistical methods to provide simple summaries of the research sample, describing the basic characteristics of the collected data in various ways such as:

Presenting the data in summary tables. Quantitative analysis of the data will form the basis for assessing the current situation and providing solutions for the development of adventure sports tourism in Vietnam by 2030.

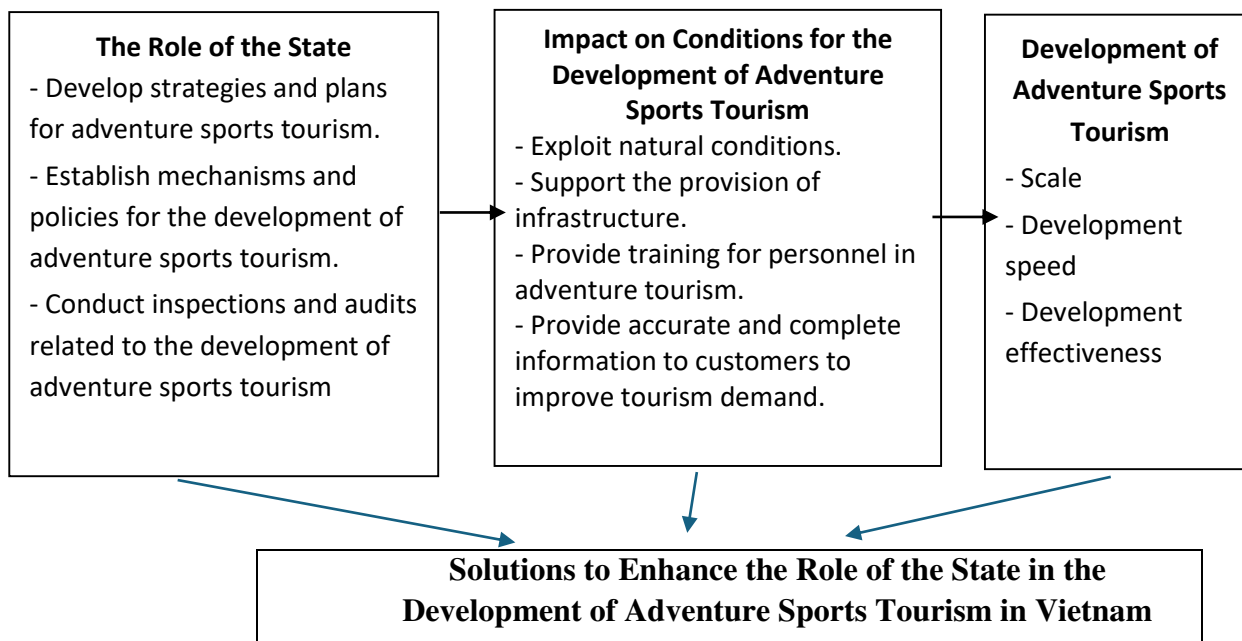


Figure 1. Research framework for the role of the state in developing adventure sports tourism in Vietnam

Source: Analytical results from the author's research data

3. RESEARCH RESULTS

3.1. Sample Description

The author employed a 5-point Likert scale for the study, where the scoring ranges from 1 to 5 (from strongly disagree to agree, and from not important to most important).

Before testing the validity of the measurement scales using EFA testing, the author checked whether the data met the conditions for analysis using KMO and Bartlett's test.

The results showed KMO = 0.826; the Bartlett test is statistically significant with Sig. = 0.000 < 0.05, indicating that the observations are correlated with each other within the overall context at a significance level of 99%. Therefore, the author's research model is suitable.

In the Total Variance Explained table, the criterion for accepting extracted variance is > 50%.

The analysis results indicate that the total extracted variance has a cumulative variance value of 76.280% > 50%, meeting the standard.

Conclusion: 76.280% of the variance in the factors is explained by the observed variables.

3.2. EFA Factor Analysis

The author has a rotation matrix:

Table 1. EFA Factor Rotation Matrix

| | Rotated Component Matrix ^a | | | | | | |
|------|---------------------------------------|------|------|------|------|------|------|
| | Component | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ACS8 | ,871 | | | | | | |
| ACS9 | ,830 | | | | | | |
| ACS4 | ,801 | | | | | | |
| ACS1 | ,796 | | | | | | |
| ACS7 | ,781 | | | | | | |
| ACS5 | ,696 | | | | | | |
| ACS2 | ,685 | | | | | | |
| ACS3 | ,629 | | | | | | |
| ACS6 | ,503 | | | | | | |
| AQL3 | | ,807 | | | | | |
| AQL6 | | ,796 | | | | | |
| AQL5 | | ,764 | | | | | |
| AQL2 | | ,758 | | | | | |
| AQL7 | | ,748 | | | | | |
| AQL4 | | ,739 | | | | | |
| AQL1 | | ,721 | | | | | |
| AHT4 | | | ,806 | | | | |
| AHT1 | | | ,772 | | | | |
| AHT2 | | | ,753 | | | | |
| AHT3 | | | ,723 | | | | |
| ACL3 | | | | ,916 | | | |
| ACL1 | | | | ,902 | | | |
| ACL2 | | | | ,896 | | | |
| APL1 | | | | | ,838 | | |
| APL2 | | | | | ,797 | | |
| APL3 | | | | | ,750 | | |
| ATT1 | | | | | | ,898 | |
| ATT2 | | | | | | ,752 | |
| ATC1 | | | | | | | ,776 |
| ATC2 | | | | | | | ,732 |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

a. Rotation converged in 7 iterations.

Source: Analytical results from the author's research data

4. RESULTS AND DISCUSSION

4.1. Research Results

The EFA (Exploratory Factor Analysis) for the independent variables of the factor rotation matrix shows that the factor loadings of the observed variables meet the condition of being greater than 0.55. Seven groups of criteria were identified.

Criteria group 1: "Effective Policies for Adventure Sports Tourism Development" includes 9 observed variables:

BCS1: Financial policies (investment from state budget, etc.)

BCS2: Credit policies (bank loans, etc.)

BCS3: Tax policies

BCS4: Land policies

BCS5: Promotion and marketing policies for adventure sports tourism

BCS6: Immigration, customs policies

BCS7: Training and human resource development policies for adventure sports tourism

BCS8: Policies on science and technology application

BCS9: Policies on infrastructure and technical facility construction for tourism

The formula for the criteria group is:

$$FAC_BCS = 0.846 BCS1 + 0.740 BCS2 + 0.727 BCS3 + 0.903 BCS4 + 0.736 BCS5 + 0.679 BCS6 + 0.828 BCS7 + 0.917 BCS8 + 0.919 BCS9$$

The BCS9 (infrastructure and technical facility policies) has the highest impact with a factor score of 0.919, while BCS6 (immigration and customs policies) has the lowest impact with a factor score of 0.679.

Criteria group 2: "Management of Adventure Sports Tourism Development" includes 7 observed variables:

BQL1: Coordination in implementing strategies and planning for adventure sports tourism between ministries, sectors, and local governments

BQL2: Implementation of standards and regulations in adventure sports tourism

BQL3: Local government cooperation with tourism associations and businesses

BQL4: Regular conferences and workshops sharing experience on adventure sports tourism development

BQL5: Local government support for information dissemination and product development

BQL6: Awareness-raising campaigns by local governments on safe tourism environments

BQL7: Regular evaluation and feedback by local governments on tourism activities

The formula is:

$$FAC_BQL = 0.805 BQL1 + 0.854 BQL2 + 0.867 BQL3 + 0.754 BQL4 + 0.801 BQL5 + 0.824 BQL6 + 0.736 BQL7$$

BQL3 (local government cooperation with associations and businesses) has the highest impact (0.867), while BQL7 (evaluation and feedback) has the lowest (0.736).

Criteria group 3: "International Cooperation in Adventure Sports Tourism Development" includes 4 observed variables:

BHT1: Active participation by ministries and local governments in international tourism cooperation

BHT2: Policies and partnerships to develop adventure tourism products

BHT3: Policies to attract adventure tourism customers

BHT4: Partnerships to attract investment in adventure sports tourism

The formula is:

$$FAC_BHT = 0.772 BHT1 + 0.830 BHT2 + 0.775 BHT3 + 0.847 BHT4$$

BHT4 (investment attraction) has the highest impact (0.847), while BHT1 (participation in cooperation) has the lowest (0.772).

Criteria group 4: "Policy System for Adventure Sports Tourism Development" includes 3 observed variables:

BPL1: Consistent, timely, and effective regulations for adventure sports tourism management

BPL2: Development of standards and regulations for adventure sports tourism

BPL3: Regular review and feedback on policies

The formula is:

$$FAC_BPL = 0.840 BPL1 + 0.789 BPL2 + 0.793 BPL3$$

BPL1 (regulations for adventure tourism management) has the highest impact (0.840), while BPL2 (development of standards) has the lowest (0.789).

Criteria group 5: "Strategic Planning for Adventure Sports Tourism Development" includes 3 observed variables:

BCL1: Timely, consistent, and practical tourism development strategies

BCL2: Assessing potential and feasibility of adventure sports tourism

BCL3: Proposing practical goals and solutions for tourism development

The formula is:

$$FAC_BCL = 0.720 BCL1 + 0.742 BCL2 + 0.629 BCL3$$

BCL2 (assessing potential and feasibility) has the highest impact (0.742), while BCL3 (proposing solutions) has the lowest (0.629).

Criteria group 6: "Inspection and Supervision of Tourism Development" includes 2 observed variables:

BTT1: Coordination between ministries, sectors, and local governments to inspect adventure sports tourism

BTT2: Local government responses to tourist feedback

The formula is: $FAC_BTT = 0.895 BTT1 + 0.894 BTT2$

BTT1 (coordination for inspections) has the highest impact (0.895), slightly higher than BTT2 (feedback responses) at 0.894.

Criteria group 7: "Management Structure for Adventure Sports Tourism" includes 2 observed variables:

BTC1: Building a consistent and stable management structure for adventure sports tourism from central to local levels

BTC2: A management structure aligned with the development of a key economic sector

The formula is:

$FAC_BTC = 0.794 BTC1 + 0.769 BTC2$

BTC2 (management aligned with key economic sector development) has the highest impact (0.769).

4.2. Proposals to Enhance the State's role in Developing Adventure Sports Tourism in Vietnam

Firstly, it is essential to correctly assess the role of investigation and survey work in the planning process; only then can the quality of the planning be improved and its feasibility ensured. A proper evaluation of the role of investigation and survey work in the planning process will enhance the quality of the plans and ensure their feasibility. Forecasting and assessing the situation of adventure sports tourism development in Vietnam over the next five years with a vision of 10-15 years is necessary to accurately and timely identify opportunities and challenges for the development of adventure sports tourism in Vietnam. From there, a new strategy can be developed for adventure sports tourism in Vietnam that aligns with the scale, position, and capacity of the Vietnamese tourism sector.

Secondly, there should be specific and reasonable investment mechanisms and policies to create a fundamental shift in mobilizing capital to encourage investment in developing adventure tourism, addressing investment bottlenecks in building infrastructure for adventure tourism development. Specifically, this includes: a system of infrastructure and technical facilities, communication systems, signage systems, tourist rescue stations, and equipment for adventure tourism activities.

Thirdly, it is important to strengthen professional training support for human resources serving the adventure sports tourism sector. Due to its specific nature, the workforce in adventure tourism has much higher requirements compared to other types of tourism. They must be systematically trained in qualifications and skills (rescue skills, emergency response skills, and accident handling). Specific proposals include:

- Enhancing systematic training with in-depth knowledge and experience for tour guides and business management personnel.

- Strengthening support for training professional human resources serving adventure sports tourism activities.

Fourthly, improving the ability to provide accurate and comprehensive information to customers to enhance demand for adventure sports tourism is crucial.

Promotional activities need to be continuous, diverse in information and approaches to attract interested individuals. For foreign markets, particular attention should be paid to accessing markets in Western Europe (Germany, Italy) and North America (USA), as these countries send many tourists to Vietnam and are also actively participating in adventure tourism activities. For the domestic tourism market, special attention should be given to youth, especially students. This demographic currently has many requirements for outdoor travel and exploration, and they are also capable of promoting and helping to expand the market.

Fifthly, enhancing inspection and monitoring activities related to adventure sports tourism is vital.

Strengthening management work is necessary to ensure security and safety in response to adverse situations in adventure sports tourism.

5. CONCLUSION

Developing adventure sports tourism in Vietnam has both advantages and achievements, but there are also many limitations evident in the forms, levels of safety, scale, and effectiveness of adventure sports tourism development. Especially with the increasing demand for this type of tourism, these limitations have become more apparent. Therefore, it is essential to strengthen the State's role to diversify forms, ensure absolute safety, increase the scale and effectiveness of adventure sports tourism. This is key to meeting the requirements for developing adventure sports tourism in a new phase, maximizing the natural conditions that are Vietnam's strengths, and contributing to making tourism in Vietnam quickly become a spearhead economic sector, thus contributing to the socio-economic development of the country.

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MOTIVES FOR DOMESTIC TOURISTS CHOOSING AGRICULTURAL TOURISM: A CASE STUDY OF VALLEY FARM, HUU LUNG DISTRICT, LANG SON PROVINCE, VIETNAM

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ABSTRACT

The study shows the motives of domestic tourists when choosing agricultural tourism in general and specifically at the Valey Farm, Huu Lung district, Lang Son province in particular. The authors research why tourists travel and the main motives in choosing agricultural tourism are to connect with nature, relieve stress, and gain agricultural experience. A. Maslow's hierarchy of needs theory on motive to satisfy 5 basic human needs is then expanded with cognitive, aesthetic, and self-expression needs applied to learn and analyze deeper into the needs of tourists. Among them, physical needs, safety needs, social needs, and respect needs of tourists are very high needs and have strong motivating significance when traveling on agricultural tourism. Self-expressive needs are needs that tourists have desires but at a lower level than the previous 4 needs. This is important data to provide synchronous solutions for Valey Farm in improving and developing tourism on the farm.

Keywords: Travel motive, A.Maslow's hierarchy of needs, agricultural tourism, Tourism Participants.

1. INTRODUCTION

Tourism is an activity that is becoming more and more popular and frequent among each individual. Each person can travel for different purposes such as entertainment, education, business or a combination of the above purposes. Tourism is also closely related to the personal characteristics of tourists such as personality, attitude, values and lifestyle. From there, tourists choose to travel to combine new experiences, meet people or relieve stress, immerse themselves in new cultures and traditions. This is closely related to psychology, in fact, the study of travel motive, needs and satisfaction of tourists is an important basis for tourism agencies to determine how to communicate with customers, to improve business or support business in this field.

Agricultural tourism, in the world, developed strongly in the 80s and 90s of the last century. In different countries, there are different names for this activity such as in the UK it is rural tourism, in the US it is farm tourism (Homestead), in Japan it is agricultural tourism and green tourism (Green - Tourism). In Vietnam, this type of tourism has developed strongly in recent years and left many important marks. Agricultural tourism brings a stable source of income to farmers, businesses and contributes to the economy of each locality. Agricultural tourism has contributed to the growth of Vietnam's tourism industry. Currently, in the world as well as in Vietnam, studies mainly focus on farms, overviews of agricultural tourism or building routes and points of agricultural tourism. These studies (e.g. Nickerson, Blacj, and McCool, 2001, Barbieri, 2010) often address the reasons why farm owners should engage in agritourism, and the main reasons are to

earn additional income and ensure employment opportunities for family members (Reyes and coworkers, 2021). Or Pratt and coworkers (2022) showed the overall picture of agritourism in Samoa as well as the opportunities and motives for implementing agritourism in the context of climate change in Samoa. Recently, there have been studies that look at agritourism from a psychological perspective. As the study by Rezaei and coworkers (2021) in Korea also showed that agritourism has the potential to be a resource to enhance positive mood and improve mental health. In Vietnam, most current research also focuses on overviews as well as applications to a specific locality such as Hanoi, Can Tho... with authors such as Dinh, PH, 2023, Anh, NT Q et al, 2023, Bui, TN, 2023, Canh, 2020. However, many agricultural tourism businesses are not successful because they do not know what agricultural tourists need or are looking for. Therefore, more specific research related to tourists in the agricultural tourism sector is needed to have appropriate approach and development strategies. The Valley Farm - Huu Lung Agricultural Cooperative - Lang Son was established in 2020 with the mission of creating good products for people and the environment. Since 2022, the farm has opened more agricultural experience tours and received a lot of support and love from customers. As of June 2024, the farm has welcomed more than 1,000 visitors. However, the operation is still not really professional, the number of visitors is still scattered. The farm hopes to develop more professionally and sustainably.

2. LITERATURE REVIEW

From a psychological perspective, motive encompasses all the factors that drive individuals to perform actions to achieve a certain goal. Tourism motive refers to the combination of factors that encourage tourists to seek, purchase, and use products and services to satisfy their needs and desires. Thus, the tourism motive explains the psychological reasons that prompt tourists to engage in tourism activities, including where they travel and what type of tourism they engage in. Without motive, there would be no consumer behavior from tourists. Motive plays the role of initiating and driving tourist consumption behavior, while also guiding behavior. The strongest motive will take a leading role in directing behavior. Particularly, when needs are satisfied, motive has a significant effect on maintaining and reinforcing behavior, referred to as the enhancement effect. This means that if a tourism business offers good, high-quality products, it helps reinforce and encourage repeated consumer behavior (Thu, 2009; Mai et al., 2013).

Research on tourist motives has been of interest for 50 years. Some of the early works include Plog (1974), Dann (1977), Crompton (1979), Iso Ahola (1982), Baloglu and Uysal (1996) and etc. Some studies focus on the “push and pull” factors of tourist motives such as Dann (1981), Snepenger and coworkers (2006), Biswas (2008) (Šimková and Holzner, 2014).

Research on motive in agricultural and rural tourism has garnered attention since the late 20th century. These studies primarily focus on two research directions. The first direction involves exploring the motive of farm owners and farmers who participate in providing services for agricultural tourism, as seen in studies by McGehee, et al. (2004), McGehee, et al. (2007), Lago (2017), and van Zy. et al. (2021). The second direction focuses on the motive of tourists when visiting agricultural tourism sites such as farms or specific rural regions in various countries. In this research area, scholars aim to answer the question: What drives tourists to choose agricultural

tourism over other types of tourism? Examples of studies in this area include those by Jolly and Reynolds (2005), Che, et al. (2006), Srikatanyoo & Campiranon (2010), Artuğer, S., & Kendir, H. (2013), Šimková, E., & Holzner, J. (2014), Varmazyari et al. (2017), and Reyes (2021). These studies have identified specific motives that encourage people to choose agricultural tourism, including (1) to purchase agricultural products such as vegetables, fruits, and local specialties; (2) to enjoy the peaceful beauty and fresh air of the countryside; (3) to experience unique agricultural activities at tourism destinations; (4) to spend quality time with family and loved ones; and (5) to relax both physically and mentally.

Thus, research on the motives for choosing agricultural tourism has become quite common globally in recent years. However, in Vietnam, there has been no study on the motives of tourists for selecting agricultural tourism. Meanwhile, agricultural tourism is a type of tourism that has been actively encouraged for development in Vietnam in recent years. This presents a research gap that we aim to address with this study.

3. METHODOLOGY

To reflect the motive for agricultural tourism, we used a survey with 130 participants. Part one deals with the personal characteristics of the participants (gender, age, occupation, income level, place of residence, how many times have they participated in agricultural tourism, with whom); Part two explores the motive for agricultural tourism with 5 criteria focusing on the internal psychological motives that motivate tourists to experience agriculture (participants can choose many different reasons from the 5 listed reasons (Cronbach's alpha showed the questionnaire reach good reliability, $\alpha(130) = 0.724$ (according to Nunnally, 1978). Part 3 includes a scale of agricultural tourists' needs according to Maslow's hierarchy of needs with 5 basic levels of needs (physiological needs, safety needs, love needs, respect needs and self-expression needs). The level of needs is assessed on a five-point Likert scale, (Not at all desirable = 1", "Undesirable = 2", "Neutral = 3", "Desired = 4", "Very desirable = 5".

SPSS version 22.0 software was used to analyze the results obtained with frequency calculations, mean scores, correlations, deviations standard, Cronback Alpha, factor analysis.

4. RESEARCH RESULTS

Table 1. Participants' Characteristics

| Variables | | N | Percentage |
|------------|---|----|------------|
| Gender | Male | 50 | 38.5 |
| | Female | 80 | 61.5 |
| Age | Under 20 | 18 | 13.8 |
| | 20- under 35 | 52 | 40 |
| | 35 – under 45 | 42 | 32.3 |
| | Over 45 | 18 | 13.8 |
| Occupation | State officials/ Public servants | 34 | 26.2 |
| | Company employees, individual organizations | 20 | 15.4 |
| | Worker | 22 | 16.9 |

| Variables | N | Percentage | |
|--|-----------------------------|------------|------|
| Income | Famer | 12 | 9.2 |
| | Service businesses | 24 | 18.5 |
| | Housewives | 12 | 9.2 |
| | Students | 6 | 4.6 |
| | Under 10 million | 46 | 35.4 |
| | From 10 to under 20 million | 48 | 36.9 |
| | From 20 to under 40 million | 30 | 23.1 |
| Place of residence | Over 40 million | 6 | 4.6 |
| | Urban | 44 | 33.8 |
| | Rural | 86 | 66.2 |
| Number of times going on agricultural tour | 1 time | 37 | 28.5 |
| | 2-3 times | 43 | 31.3 |
| | More than 3 times | 50 | 38.5 |
| Who do you go on agricultural tours with? | Alone | 0 | 0 |
| | Friends | 64 | 49.2 |
| | Family | 66 | 50.8 |
| | Lover/ | 0 | 0 |

The results in Table 1 show that the majority of people participating in agricultural tourism at The Valley Farm are women (61.5%), aged 20 - under 45 (72.3%), their main occupations are civil servants/public employees (26.2%), service business (18.5%) and workers (16.9%), total income from 10 to under 20 million VND (72.3%), their main place of residence is rural areas (66.2%), most tourists have been to agricultural tourism more than 2 times (69.8%), they mainly go with family and friends.



Chart 1. Tourists' motives for agricultural tourism

The chart above shows that the strongest motive for tourists to participate in agricultural tourism is to immerse themselves in nature, beautiful and peaceful scenery (44.6%) and to relieve

stress in life (44.6%). Having the opportunity to experience agriculture, craft villages and being with loved ones with the same interests is considered the second most motivating motive group (41.5%). Going on agricultural tourism to learn about culture, lifestyle and new things at the destination is the reason that motivates tourists less to go on agricultural tourism (35.4%)

Table 2. Tourists' needs when going on agricultural tourism

| | N | Min | Max | Mean | Std. |
|---|-----|-----|-----|-------------|-------------|
| Physical needs | | | | 4.28 | 0.52 |
| Comfortable, clean place to rest | 130 | 3 | 5 | 4.23 | 0.76 |
| Delicious, hygienic food and drinks | 130 | 2 | 5 | 4.20 | 0.82 |
| Clean, fragrant toilets | 130 | 3 | 5 | 4.40 | 0.69 |
| Safety needs | | | | 4.26 | 0.46 |
| Convenient transportation | 130 | 3 | 5 | 4.18 | 0.80 |
| Safety, security | 130 | 3 | 5 | 4.34 | 0.75 |
| Full health care and insurance | 130 | 3 | 5 | 4.20 | 0.75 |
| Guidance, information provision | 130 | 3 | 5 | 4.32 | 0.74 |
| Social needs | | | | 4.26 | 0.55 |
| Being with people with similar interests | 130 | 2 | 5 | 4.23 | 0.65 |
| Meeting family and friends | 130 | 2 | 5 | 4.26 | 0.79 |
| Socializing , meeting new people | 130 | 3 | 5 | 4.29 | 0.74 |
| Need for respect | | | | 4.24 | 0.56 |
| Professional, enthusiastic staff | 130 | 2 | 5 | 4.21 | 0.75 |
| Locals are warm and respectful | 130 | 3 | 5 | 4.3 | 0.72 |
| Feeling respected throughout the trip | 130 | 3 | 5 | 4.21 | 0.79 |
| Need for self-expression | | | | 4.16 | 0.56 |
| Self-expression activities | 130 | 3 | 5 | 4.32 | 0.70 |
| Being able to exchange and share what you know | 130 | 3 | 5 | 4.16 | 0.71 |
| Participating in social activities at the destination | 130 | 3 | 5 | 4.00 | 0.88 |

From the table above, it can be seen that physiological needs are the needs that agricultural tourists expect to be satisfied the most (Average = 4.28, SD = 0.52), followed by safety needs and social needs (Average = 4.26), respect needs are in 4th place (Average = 4.26) and finally self-expression needs (Average = 4.16). The 3 needs with the highest desire are clean, fragrant toilets (Average = 4.4); Safety, security (Average = 4.34) and Guidance, information provision, and self-expression activities (Average = 4.32).

5. DISCUSSION

This study aimed to determine the motive of agricultural tourists when participating in agricultural tourism, showing that tourists choose agricultural tourism for the reason of being immersed in nature, beautiful scenery, peace, and relieving stress in life. In other words, the motive for tourists to go on agricultural tourism is to relax mentally and immerse themselves in nature. There are similarities in the motive for agricultural tourism in this study and studies on agricultural

tourism motive by different authors in the world. Srikatanyoo and Campiranon (2010) conducted a study in Chiang Mai, Thailand and showed that the main motive of agricultural tourists is to relax mentally and enjoy nature. Artuğer and Kendir (2013) studied the motive for agricultural tourism of tourists in Turkey with 196 participants who gave the reason for their motive for agricultural tourism as enjoying the scenery and relaxing mentally. Moraru, RA (2019) in a study synthesizing relevant international literature to find out the reasons why tourists choose agritourism as a form of recreation found that mental and physical relaxation, the opportunity to spend fun time with family or friends, and the desire to be in direct contact with nature and enjoy the beauty of the landscape were the most obvious motives. Participation in agricultural activities was not a concern for agritourists. Reyes and coworker (2021) in a study on the motives and preferences of tourists, specifically urban areas when visiting agritourism sites in the Philippines discovered that relaxation and recreation had a great impact on their intrinsic motive when going on agritourism.

This result also shows the difference between the motive for agricultural tourism in recent decades and the first decades of the 21st century. Studies on the motive for agricultural tourism by authors around the world (although not many) have shown that the motive for participating in agricultural tourism is to buy agricultural products (fresh vegetables, fresh fruits, etc.). Specifically, Jolly and Reynolds (2005) conducted a study in the cities of Sacramento and Yolo, California to determine the motive of agricultural tourists when participating in agricultural tourism. The research results showed that the main motive of agricultural tourists is to buy fresh homemade products. In a study conducted by Che and coworkers in 2006 in the state of Michigan, the authors found that the main motive of agricultural tourists is to buy fresh fruits and vegetables (Moraru, RA, 2019; Reyes and coworkers, 2021).

The reason for this change is the transformation in human living environment. In the urbanization process, a real and airy living space with a rural character with a village agricultural community always has a special attraction for tourists of all ages. The special point of this study is that more than 60% of tourists come from rural areas and nearly 70% of tourists have traveled to agricultural tourism more than 2 times and they still intend to continue participating in agricultural tourism at The Valey Farm in particular and in other places in general is more than 90%. Thus, it can be seen that, no matter where, at any age, the desire to relax mentally, to immerse themselves in nature, to return to what is pure, cool and peaceful is always sought by people in today's modern society.

From a psychological perspective, when meeting an object, a motive will appear. Therefore, to satisfy the motive, research on the needs of tourists when traveling plays an important role in explaining the motive.

From the above research results, some suggestions can be made for farm owners and tourism workers operating in the agricultural tourism sector in Vietnam to make appropriate changes to satisfy tourists.

Firstly, nowadays domestic agricultural tourists participate in tourism to relax rather than to participate in agricultural experiences. Therefore, instead of prioritizing agricultural activities such

as agricultural events and festivals, agricultural tourism workers should focus on ensuring a farm environment where tourists can relax mentally and physically, rest and stay in a natural living environment. In particular, it is necessary to pay attention to the toilet system that is both convenient, clean, beautiful and fragrant. Tourism is agricultural but satisfying basic physiological needs is not "agricultural".

Secondly, to satisfy the needs of tourists, businesses and farm owners doing agricultural tourism must ensure safe resting places, in harmony with nature with designs that are characteristic of the agricultural culture of each region, green building materials such as bamboo, reed, wood. Hygienic food, promoting health and regional flavors.

6. CONCLUSION

Agritourism is a type of tourism that is developing comprehensively in the world. Thanks to its social and economic contribution to the development of rural communities and farms, agritourism has become an attractive alternative for diversifying agricultural enterprises. To develop agritourism successfully, it is not only necessary to focus on building tourist routes or managing and operating businesses in the context of changing business and legal environments, but also to focus on studying the psychological aspects of tourists. Specifically, it is necessary to know the motives of tourists because they promote the tourism consumption behavior of agritourists. Moreover, motiveal factors can serve to segment tourists. Our study only initially explored the motives and needs of domestic agritourists at The Valey Farm. The results achieved will be the premise for further studies. However, the study still has many limitations such as small sample size, focusing on 1 farm. Therefore, further research is needed to expand the research object, research scope and better research methods to have a more comprehensive view to help develop agricultural tourism in Vietnam.

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DIGITAL TRANSFORMATION IN VIETNAM'S HOTEL INDUSTRY: A CUSTOMER PERSPECTIVE

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ABSTRACT

Digital transformation of the hotel industry is a trend gradually becoming popular in Vietnam, especially in the context of globalization and fourth-generation technology. This research evaluated the digital transformation in Vietnam's hotel industry from a customer perspective based on survey data from 82 customers in February of 2022 with the support of SPSS22 software. The finding showed that customers utilized mobile applications to collect information, perform transaction operations, and integrate various services before, during, and after staying at the hotel. Artificial intelligence (AI) and chatbots were used when there was a need for reservations, weather conditions, locations of restaurants, ATMs, etc. The Internet of Things (IoT) helps customers search for and buy products or services, while virtual reality supports customers in searching for information about hotels on the Internet and allows them to visualize the hotel fully before and during their stay. Occupation, previous mobile application experiments, the IoT, and Virtual Reality positively impacted the customers' demand for digital transformation in the hotel industry. Age negatively impacts digital transformation; meanwhile, living area, gender, and previous experiments with AI and chatbots have not impacted customers' demand for digital transformation in the hotel industry.

Keywords: Digital transformation, hotel industry, Mobile application.

1. INTRODUCTION

Digital transformation of the hotel industry is a trend that is gradually becoming popular in Vietnam, especially in the context of globalization. Digital transformation trends of the hotel industry from customers perspectives include Mobile application to collect information, perform transaction operations and integrate various services before, during and after staying at the hotel such as searching for information, booking rooms, check-in, ordering meals room service or other additional services in the hotel, check-out, interacting after staying at the hotel; Artificial Intelligence (AI) and Chatbots in interaction when there is a need for reservations, weather conditions, locations of restaurants, ATMs... in popular languages; IoT connectivity that helps customers to save time searching and performing operations when they want to buy products or services; Rating and Review to share their opinions quickly through social networks such as Facebook, zalo, Instagram, TripAdvisor or travel websites to help hotels understand the customers' demand, improve their service quality and customers' satisfaction, build reputation through customer review scores; Virtual Reality supports customers to search for information of hotels on the internet, and visualize the hotel fully before and during the stay to helps them to make right decisions about their stay.

Digital transformation not only supports hotels to optimize their personnel, easily manage hotel systems, increase efficiency, and improve competitiveness, but also creates connections and links between hotels with their customers. In the digital transformation of the hotel industry, customers have become an integral part of hotel business models; because hotels want to be successful in the long term, they need to know the details of customers' needs. As the digital world develops, customer behavior changes, impacting the hotel industry. Customers expect a personalized experience, from choosing and booking a hotel through the hotel's website or booking apps to improved information about accommodation and customer service, experience activities, in-room facilities, hotel interactions, and more. Seek tools and apps like Google and Yahoo, and rank the appearance of blogs, tourism recommendation sites, and price-comparing Over-the-air (OTA) (Zsarnoczky, 2018) that support customers to find hotels faster and more conveniently. To attract customers and serve them better, hotels need to grasp the needs of their customers. Some digital transformation initiatives were/will be created based on these demands. Therefore, studying the digital transformation of the hotel industry from the customer demands' point of view is crucial.

2. LITERATURE REVIEWS

Intelligent technology is the basis of digital hotels. Jaremen's research confirms that the concept of a smart hotel is more than just a marketing tool. It is a new business model for the hotel industry. Implementing the concept of intelligent organization in hotel operations has a positive impact on the hotel's image, making it different from its competitors (Daria et al., 2016).

Emre Bilgin Sari's research (Emre et al., 2018) explores the impact of Industry 4.0 on business management in the service industry. In the case described in the smart hotel example, information about the changing guest reception conditions and subsequent dimensions is given.

With the rapid development of smart tourism and smart cities, intelligent hotels have attracted more and more attention. Peng, W., & Zhang, M. (Peng et al., 2020) used the SERVQUAL model in smart hotels to evaluate the gap between customer-perceived and expected service. The survey results showed that tangible things played a key role, while the importance of empathy was reduced. The highest and lowest scores are tangible assets and assurance. These results highlight the uniqueness of smart hotels and re-examine the basic principle of personalized service.

Cvijeta Djevojić and Zrinka Vitasovic (2023) investigated the role of digital transformation and how it helps companies face the challenges of a competitive dynamic market, pointed out the need for rapid digital transformation in the hotel industry, and emphasized the importance of sustainable development in tourism using the benefits that digital transformation provides. They provided an overview of the current literature on digital transformation and a definition of the mentioned terminology. They also discussed the status of digital transformation in the hotel industry and its positive impact on sustainable development, and implications for future research were considered.

Li Yonghan and Hongjiang Lv (2021) researched the Dilemma of Digital Transformation of China's Hotel Industry and pointed out that China's hotel industry as a whole is still in the "reaction period," and some leading companies have entered the "immersion period." The current dilemma of the development of Chinese hotels is mainly manifested in the following: the hotel industry's digital advertising is still dominated by OTA, the hotel's PMS cloudification rate is only 35%, the digital guest experience has not yet become the core competitiveness of the future, the old talent system and organizational structure constraints on digital development. Digital transformation has become an industry-level strategy. The authors suggested building a data analysis system and closed loop, increasing the recruitment and training of digital talents, establishing longer-term customer relationships, and using more efficient technical systems and tools.

3. RESEARCH METHODOLOGY

Data collection

A standard questionnaire randomly collected primary data from 82 hotel customers in Hanoi, Vietnam.

Analytical methods

A five-point LIKERT scale (Allen, I Elaine; Seaman et al. (2007) was used to assess the demand for digital transformation in the hotel industry in Vietnam, ranging from 1 (strongly disagree/Not at all interest/Not at all necessary) to 5 (Strongly agree/Very interested/Very necessary). The index is the weighted average of the number of customers in each level of response and the coefficient of each level, where "strongly disagree/Not at all interest/Not at all necessary" scored 1, and "strongly agree/Very interested/Very necessary" scored 5. Normally, a higher core means higher demand. Distance value = (Maximum - Minimum) / n = (5 - 1) / 5 = 0.8

Table 1. The interval of the level and the meaning

| Mean | Level |
|-----------|--|
| 1.00-1.80 | Deficient level of demand/interest/necessary |
| 1.81-2.60 | Slightly level of demand/interest/necessary |
| 2.61-3.40 | Moderate level of demand/interest/necessary |
| 3.41-4.20 | Relatively high level of demand/interest/necessary |
| 4.21-5.00 | High level of demand/interest/necessary |

Descriptive statistics were used to describe the demographic characteristics of the respondents. A regression analysis was conducted to estimate the relationship between customer behavior and its determinants (Mazzocchi et al., 2008). A multiple regression model was utilized to analyze the relationship between the respondents' demand for digital transformation and its determinants.

The multiple regression model can be specified as follows:

$$DT = \text{Cont} + \beta_1 * \text{AGE} + \beta_2 * \text{ARE} + \beta_3 * \text{GEN} + \beta_4 * \text{JOB} + \beta_5 * \text{MOB} + \beta_5 * \text{AI} + \beta_5 * \text{IOT} + \beta_5 * \text{VIR} + \text{error}$$

Where:

| Variables | Description of the variables |
|-----------|-------------------------------|
| AGE | Age of the respondent |
| ARE | Living areas |
| GEN | Gender |
| JOB | Job |
| MOB | Mobile application experiment |
| AI | AI and chatbot experiment |
| IOT | Internet of Things experiment |
| VIR | Virtual Reality experiment |
| β_i | Estimated coefficients |

4. FINDINGS AND DISCUSSION

4.1. Characteristics of the Respondents

Table 2. The major characteristics of the respondents

| Variables | Range | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------|-------------------------|-----------|---------|---------------|--------------------|
| Age | <18 years old | 13 | 15.9 | 15.9 | 15.9 |
| | 18-<35 years old | 19 | 23.2 | 23.2 | 39.0 |
| | 35-<55 years old | 45 | 54.9 | 54.9 | 93.9 |
| | >=55 years old | 5 | 6.1 | 6.1 | 100.0 |
| | Total | 82 | 100.0 | 100.0 | |
| Living area | Urban area | 51 | 62.2 | 62.2 | 62.2 |
| | Rural area | 31 | 37.8 | 37.8 | 100.0 |
| | Total | 82 | 100.0 | 100.0 | |
| Gender | Male | 42 | 51.2 | 51.2 | 51.2 |
| | Female | 40 | 48.8 | 48.8 | 100.0 |
| | Total | 82 | 100 | 100 | |
| Job | Academic staff/students | 9 | 11.0 | 11.0 | 11.0 |
| | Officers | 48 | 58.5 | 58.5 | 69.5 |
| | Enterprises' staff | 9 | 11.0 | 11.0 | 80.5 |
| | Freelander | 16 | 19.5 | 19.5 | 100.0 |
| | Total | 82 | 100.0 | 100.0 | |

Source: Survey data, 2022.

Most of the surveyed customers were middle-aged, aged 35 to under 55, and accounted for 54.9%. The number of young customers (from 18 to under 35 years old) accounted for 23.2%; the rest were teenagers (15.9%) and older people over 55 years old (6.1%). Regarding the living areas, the number of customers from cities accounted for 62.2%, and the remaining 37.8% came from rural areas. This difference is consistent with the conditions of Vietnam, where urban people have a higher average income than rural people, so they have the conditions to travel and stay in hotels more than people in rural areas.

The customers were mainly balanced in gender, with the number of men (51.2%) slightly higher than that of women (48.8%). In terms of occupation, the majority of them were government officials (58.9%), the rest were freelancers (19.5%), business employees (11%), and academic staff or students (11%).

4.2. Demand for digital Transformation in Vietnam's hotel industry from a customer's perspective

The survey results showed that, recently, customers have been using digital transformation applications in the hotel industry through mobile applications (4.11). In contrast, other applications such as AI and Chatbots (2.33), Internet of Things (2.33), or Virtual Reality (2.20) were slightly used. Customers' demand for using digital transformation applications to collect and find out information about hotels before booking through all these four applications (Mobile application, AI and Chatbots, Internet of Things, and Virtual Reality) was rather high, with mean values of 4.15, 3.54; 3.43 and 3.59 respectively) while the applications of the Internet of Things were moderate (3.5).

Customers' demand for contacting the hotels via digital transformation applications to find out information before booking through Mobile applications was extremely high (4.7); high (4.7); via AI, chatbots, and Virtual Reality were rather high (3.41 and 3.67), while the Internet of Things was less used (3.33).

Similarly, customers' demand for looking for previous interactions and reviews about hotels via digital transformation applications was extremely high (4.30). They also exploited AI, chatbots, and the Internet of Things at a rather high level while using Virtual Reality applications at a moderate level.

Demand for booking accommodation via digital transformation applications through Mobile applications was also extremely high. AI, chatbots, and Virtual Reality were used at a rather high level, while the Internet of Things was applied moderately.

Table 3. Demand for digital transformation of Vietnam's hotel industry from a customer's perspective

| Demand for using digital transformation applications to | Applications | N | Min | Max | Mean | Std. Deviation |
|---|--------------------|----|-----|-----|------|----------------|
| Collect and find out information about hotels before booking | Mobile application | 82 | 2.0 | 5.0 | 4.15 | 0.89 |
| | AI and Chatbots | 82 | 1.0 | 5.0 | 3.54 | 1.04 |
| | Internet of Things | 82 | 1.0 | 5.0 | 3.44 | 1.20 |
| | Virtual Reality | 82 | 1.0 | 5.0 | 3.59 | 1.19 |
| Contact the hotels to find out information before booking | Mobile application | 82 | 3.0 | 5.0 | 4.68 | 0.59 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 3.42 | 1.08 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.33 | 1.08 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 3.67 | 0.98 |
| Look for previous interactions and reviews about the hotel | Mobile application | 82 | 2.0 | 5.0 | 4.29 | 0.99 |
| | AI and Chatbots | 77 | 2.0 | 5.0 | 3.73 | 0.98 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.56 | 1.15 |
| | Virtual Reality | 75 | 2.0 | 5.0 | 3.36 | 1.07 |
| Book accommodation | Mobile application | 82 | 4.0 | 5.0 | 4.76 | 0.43 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 3.51 | 1.08 |
| | Internet of Things | 77 | 2.0 | 5.0 | 3.22 | 1.05 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 3.61 | 1.04 |
| Check-in | Mobile application | 82 | 3.0 | 5.0 | 4.56 | 0.61 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 3.50 | 1.12 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.50 | 1.18 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 3.60 | 1.05 |
| Book food and beverage | Mobile application | 82 | 3.0 | 5.0 | 4.23 | 0.81 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 3.51 | 1.07 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.35 | 1.06 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 3.44 | 0.93 |
| Book other hotel services (laundry, massage, hotel entertainment...) | Mobile application | 82 | 2.0 | 5.0 | 4.19 | 0.94 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 3.40 | 0.86 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.39 | 0.93 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 3.33 | 0.99 |
| Check out | Mobile application | 82 | 3.0 | 5.0 | 4.61 | 0.60 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 3.54 | 1.07 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.43 | 1.09 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 3.23 | 0.95 |
| Collect and find other information related to the trip (weather forecast, geography, history...) | Mobile application | 82 | 3.0 | 5.0 | 4.44 | 0.70 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 4.01 | 0.88 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.81 | 0.97 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 4.01 | 1.12 |
| Book other services related to the trip (food and beverages outside, entertainment, Seesighting...) | Mobile application | 82 | 3.0 | 5.0 | 4.70 | 0.58 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 3.95 | 1.01 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.94 | 1.09 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 4.04 | 1.00 |
| Look for information and support services for the trips (internet, banks, post offices,...) | Mobile application | 82 | 3.0 | 5.0 | 4.65 | 0.60 |
| | AI and Chatbots | 82 | 2.0 | 5.0 | 3.70 | 0.96 |
| | Internet of Things | 82 | 2.0 | 5.0 | 3.87 | 0.97 |
| | Virtual Reality | 82 | 2.0 | 5.0 | 3.85 | 0.96 |

Source: Survey data, 2022.

Demand for utilizing mobile applications for checking in, booking food and beverages, checking out, collecting and finding out other information related to the trip (weather forecast, geography, history...), booking other services related to the trip (food and beverages outside, entertainments, see sighting...), interacting and reviewing about hotel via digital transformation applications after the stay was high (mean value is higher than 4.2) while that of booking other hotel services via digital transformation applications (laundry, massage, hotel entertainment...) was rather high and frequency of reviewing and feedback about hotels via websites and social networks was at the moderate level. Customers also think that the trend of using digital transformation applications via mobile applications in hotels in the future is very high. The findings on customer demand for mobile applications are almost similar to the results of Jaremen (2016) and Jaremen et al. (2016).

Demand for AI and chatbots seems lower than that of mobile applications. In detail, demand for checking in, booking food and beverages, checking out, collecting and finding out other information related to the trip (weather forecast, geography, history...), booking other services related to the trip, food, and beverages outside, entertainment, see sighting...), interacting and reviewing about hotel via digital transformation applications after the stay were relatively high (mean value is from 3.41 to 4.2). The frequency with which customers employed AI and chatbots to review and provide feedback about hotels via websites and social networks was moderate. The customers' point of view about using digital transformation applications in hotels via mobile applications in the future is relatively high.

Table 4. Frequency and interest in applying digital transformation in Vietnam's hotel industry from a customer's perspective

| Factors | Applications | N | Min | Max | Mean | Std. Deviation |
|--|--------------------|----|-----|-----|------|----------------|
| Frequency of using digital transformation applications in the hotel industry | Mobile application | 82 | 3.0 | 5.0 | 4.11 | 0.74 |
| | AI and Chatbots | 82 | 1.0 | 4.0 | 2.33 | 1.08 |
| | Internet of Things | 82 | 1.0 | 5.0 | 2.33 | 1.14 |
| | Virtual Reality | 82 | 1.0 | 4.0 | 2.20 | 1.00 |
| Level of interest in interacting and reviewing hotels via digital transformation applications after the stay | Mobile application | 78 | 3.0 | 5.0 | 4.72 | 0.48 |
| | AI and Chatbots | 82 | 1.0 | 5.0 | 3.87 | 1.27 |
| | Internet of Things | 82 | 1.0 | 5.0 | 3.62 | 1.21 |
| | Virtual Reality | 75 | 1.0 | 5.0 | 3.51 | 1.20 |
| Point of view on the trend of using digital transformation applications in hotels in the future | Mobile application | 82 | 4.0 | 5.0 | 4.81 | 0.40 |
| | AI and Chatbots | 82 | 1.0 | 5.0 | 3.93 | 1.18 |
| | Internet of Things | 82 | 1.0 | 5.0 | 3.93 | 1.15 |
| | Virtual Reality | 82 | 1.0 | 5.0 | 3.95 | 1.14 |
| Frequency of reviewing and feedback about hotels via websites and social networks | Mobile application | 81 | 2.0 | 5.0 | 3.16 | 0.78 |
| | AI and Chatbots | 82 | 1.0 | 5.0 | 3.20 | 1.13 |
| | Internet of Things | 81 | 1.0 | 4.0 | 2.03 | 0.95 |
| | Virtual Reality | 81 | 1.0 | 4.0 | 2.32 | 1.10 |

Demand for utility IoT was lower than that of AI and Mobile applications. In detail, demand for checking in, checking out, collecting, and finding out other information related to the trip

(weather forecast, geography, history...), booking other services related to the trip, food and beverages outside, entertainment, see sightings...), look for information and support services for the trips (internet, banks, post offices,...), interacting and reviewing about hotel via digital transformation applications after the stay was relatively high (mean value is from 3.41 to 4.2) while those for booking food and beverage, booking other hotel services were at the moderate level. Customers' frequency of reviewing and feedback about hotels via websites and social networks was slightly low. Customers think the trend of hotels using digital transformation applications via the Internet of Things in the future is also relatively high.

The high demand of customers for mobile applications in Vietnam's hotel industry implies a trend of greater personalization. Vietnam's hotels should enhance tourists' experience by streamlining checking in, booking food and beverages, checking out, collecting and finding out other information related to the trip (weather forecast, geography, history...), booking other services related to the trip (food and beverages outside, entertainment, see sighting...), interacting and reviewing about the hotel and all accessible through mobile applications.

Meanwhile, the low use of IoT and AI reflects that the guest experience through these applications is still limited. The hotels should not only focus on enhancing mobile applications but also invest in educating customers about IoT, AI, and Virtual Reality. Vietnam's hotels had better gather valuable insights into customer preferences and behaviors via these app usages, and allows for customized services, targeted marketing, and loyalty programs. In addition, the hotel industry can support guest contactless experiences, enhance guest safety, and meet evolving health expectations.

To test the suitability of the regression model, the hypothesis $H_0: R^2=0$. The F test was used to test this hypothesis. The test results showed that $\text{Sig.} < 0.05$, they rejected the hypothesis H_0 , meaning that $R^2 \neq 0$, the regression model, is statistically significant and acceptable.

The test results showed that R Square and Adjusted R Square were 0.575 and 0.519, respectively. This showed that the independent variables included in the regression model affected more than half (51.9%) of the variation of the dependent variable; the rest was due to variables outside the model and random errors.

The results also showed that the Durbin-Watson statistic - value to test for autocorrelation in a regression model's output was 2.068, indicating almost zero autocorrelation, so the results do not violate the autocorrelation assumption.

Table 4. Multi Regression results

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|-------------------|----------|-------------------|----------------------------|---------------|
| 1 | .724 ^a | .575 | .519 | .581 | 2.068 |

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|------------|----------------|----|-------------|-------|-------------------|
| Regression | 31.015 | 8 | 3.877 | 3.463 | .002 ^b |
| Residual | 81.729 | 73 | 1.120 | | |

| Model | Sum of Squares | | df | Mean Square | F | Sig. | |
|-------|----------------|--|----|-------------|---|------|--|
| Total | 112.744 | | 81 | | | | |

| | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | Collinearity Statistics | |
|------------|-----------------------------|------------|---------------------------|---------------|-------------|-------------------------|-------|
| | B | Std. Error | Beta | | | Tolerance | VIF |
| (Constant) | .228 | 1.123 | | .203 | .840 | | |
| AGE | -.096 | .221 | -.068 | -2.435 | .005 | .407 | 1.459 |
| ARE | .086 | .500 | .035 | 1.171 | .160 | .232 | 1.310 |
| GEN | .152 | .358 | .059 | .424 | .673 | .515 | 1.941 |
| JOB | .498 | .265 | .391 | 2.877 | .045 | .229 | 1.371 |
| MOB | .381 | .222 | .238 | 2.717 | .049 | .516 | 1.940 |
| AI | .246 | .181 | .224 | 1.360 | .178 | .365 | 2.742 |
| IOT | .646 | .188 | -.627 | 3.439 | .001 | .299 | 1.348 |
| VIR | .757 | .299 | .641 | 2.534 | .013 | .155 | 1.453 |

The coefficients results showed that the variables AGE, JOB, MOB, IOT, and VIR had Sig values for the t-test of less than 0.05, so these variables were statistically significant, and all impacted the dependent variable DT. This means that occupation, previous experiments of using Mobile applications, the Internet of Things, and Virtual Reality had a positive impact on the demand for digital transformation in the hotel industry customers, while age had a negative impact on digital transformation in the hotel industry. Other variables, including ARE (living area), GEN (gender), and previous experiments with AI and Chatbots, had Sig values for t-test Sig of higher than 0.05, so these variables were insignificant in the regression model. In other words, these variables did not impact the demand for digital transformation in the hotel industry of customers.

5. CONCLUSIONS

Customers utilized mobile applications for checking in, booking food and beverages, checking out, collecting and finding out other information related to the trip (weather forecast, geography, history...), booking other services related to the trip (food and beverages outside, entertainment, see sighting...), interacting and reviewing about hotel via digital transformation applications after the stay. They used AI and chatbots at a lower rate than mobile applications. Demand for applying IoT was lower than that of AI and mobile applications.

The multi-regression model results showed that occupation, previous mobile application experiments, the IoT, and virtual reality positively impacted customers' demand for digital transformation in the hotel industry. At the same time, age has hurt digital transformation; meanwhile, living area, gender, and previous experiments with AI and chatbots have not impacted customers' demand for digital transformation in the hotel industry.

Due to the study's limited sample size, more comprehensive and in-depth studies are needed to make more accurate conclusions. Future studies could also investigate why AI and IoT adoption is low or how digital transformation affects different types of customers.

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APPLYING SOCIAL MEDIA IN DESTINATION DEVELOPMENT AND MANAGEMENT TOWARDS SMART TOURISM DEVELOPMENT IN VIETNAM

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ABSTRACT

Taking up the issue of applying social networks to the development and management of smart tourism in Vietnam, our article aims to clarify the impact of social networks on the exploitation and management of destinations, thereby bringing come up with solutions to exploit tourism in a smarter way. We conduct computational research in the form of a survey of social network users to provide discussions and conclusions on the issue of social network application in destination management and development. In order to have documents for research and achieve the research goals of the topic, we choose an authentic solution by conducting field surveys and reviewing documents to check evidence my point of view After gathering enough information, we move on to analyzing all the collected data, conducting discussions to prove our assumptions.

Keywords: social network; develop; manage; tourist destination.

1. INTRODUCTION

Vulnerability in a destination's tourism strategy can be understood as the weakness of the traditional competitive model when taking into account the changes associated with the development of digital technology affecting the tourism destination calendar and behavior of subjects participating in tourism activities. Therefore, traditional tourist destinations are forced to change or risk stagnation and decline in today's ever-changing global tourism market. A sustainable tourism development strategy must always face the challenge of the destination by using technology and competitive advantage, capable of enhancing competitiveness.

Smart destinations are characterized by the ability to use data from all new information and communication technologies in a profound, adaptive and effective way to serve the traveler's journey. Travel becomes "smart" because it converts large amounts of data into relevant data and creates value for destinations and tourists.

The current travel experience is strongly marked by digital technology, integrated into different stages of the travel cycle, with specific activities such as: before going on vacation, they understand the destination and book your stay, experience restaurant reservations during your stay, determine your location destination, etc and after the vacation, they shared their memories on social media platforms. Technology enables consumers to co-create experiences between travelers and suppliers. Thus, all information generated by tourists (georeferenced data, open data, Internet of connected objects, smart watches, mobile phones, etc) is information important for destination

managers to compare. Analyzing user-generated content on social media platforms (shared photos, forum comments, opinions about destinations, etc) allows tourism practitioners to better understand people's perceptions destination consumption. A smart destination must collect big data related to tourists and exploit that data to prioritize and deliver new experiences that meet tourist expectations.

2. RESEARCH OVERVIEW

In developed countries, smart tourism and destination strategies develop in parallel with smart city models. In both of these areas, the key, central element remains smart technology, helping to transform consumer experiences and create new business models in every sector. Cloud computing, big data, mobile applications, geolocation services, virtual reality, augmented reality and social networking platforms, etc are all examples of smart technology to improve tourism experiences and services (Wang, 2012).

Smart destinations must be associated with smart tourism development. Smart tourism facilitates new ways to manage tourist flows, improve tourism services, create new advertising models and new collaborative businesses that take advantage of new services, cloud technology and open data services to innovate, beyond traditional tourism boundaries (Gretzel, 2016). Smart tourism also refers to smart destinations (Buhalis and Amaranggana, 2014), which are specific variations of smart cities. These are urban or rural areas that apply smart city principles and infrastructure, and leverage big data not only from residents but also tourists in an effort to support the mobility (Hannam, 2019), resource availability and allocation, sustainability and quality of tours and tourism destinations.

Smart destinations are associated with sustainable tourism development or even more radical alternatives, such as moving towards equilibrium or degrowth. Several intelligence and sustainability elements benefit from an integrated approach in which monitoring systems, real-time management, public-private partnerships and open innovation are merged (Perles- Ribes and Ivars-Baidel, 2018). A smart tourism city will not only solve urban problems and provide people with a better living environment (Wang, 2012) but also allow tourists to explore new destinations, products and services new, local products and services at the right time as real-time availability and infrastructure are monitored (Lee, 2020).

Crouch and Ritchie have proposed a general model of the competitiveness of tourist destinations, based on Porter's (1990) theory of competitive advantage. The model identifies 36 competitive attributes grouped into 5 main factors: (1) basic resources and attractive destinations, i.e. attractive factors (climate, history, culture, events, activities, etc.); (2) Supporting factors and resources (infrastructure, accessibility, hospitality, etc); (3) Destination management (destination organization and management, marketing, etc); (4) Destination policy, tourism planning and development (Location, inspection, visibility, etc); and (5) Ability to identify and expand the determinants of competitiveness (security, costs/benefits, hospitality, etc) (Crouch, 1999 and Ritchie, 2003).

Dwyer, Forsyth, Rao (2000) developed a destination price competitiveness index that measures the import and export competitiveness of countries, but applied to the tourism industry (Dwyer, 2000; Furthermore, Dwyer and Kim, (2003); Gooroochurn and Sugiyarto (2005) also show that the competitiveness of a destination is not limited to the “price” factor but also includes other factors such as conditions. Sanitary and health conditions as well as a high degree of openness or international integration can contribute to the attractiveness of a destination.

The results of these various models or composite indices demonstrate a strong interest by public and private sector decision makers in tangible factors. This is consistent with the results of Ritchie and Crouch (2003) that the competitiveness of destinations is mainly based on their comparative advantages. Likewise, destination competitiveness is not the ultimate goal of policy development but an intermediate goal towards sustainability of the tourism economy.

3. THEORETICAL BASIS AND RESEARCH METHODS

3.1. Theoretical basis

Digital engineering has become an emerging field of research with a significant amount of research coming from a variety of fields. To some extent, most fields such as healthcare, media, education, tourism, etc are all affected by this new challenge. Indeed, new technologies will certainly encourage the tourism industry to transition to a digital economy or e-tourism. As digital developments have played a fundamental role in the growth of e-travel, travel companies have understood the importance of using digital as a springboard for growth development, especially being able to better and better meet the expectations of tourists.

E-tourism is emerging by combining travel with new technologies. Appearing in 1998, online tourism is an essential promotional method in the travel and tourism sector, whether for businesses or consumers of tourism products (Smahi and Abderrahim, 2015).

To keep up with this new trend, companies in the tourism sector must innovate to meet customer requirements, creating new personalized services, because in this field, when customers Currently a trip is considered purchasing products and using them. Companies in the tourism sector face an obligation to monitor developments across all sectors of society in order to meet consumer needs. Therefore, they have to innovate, even create new services.

E-travel provides easy access to various media and digital platforms around the world. The Internet is emerging as a special channel in all areas of business activities, causing a new term to appear in the tourism industry, which is “e-Tourism”.

UN WTO (World Tourism Organization): E-tourism is defined as the virtual representation of a trip for anyone who wants to travel, thereby giving an overview of the trip's potential go “The ability of Internet users to attract tourists, by providing them with electronic services, using effective navigation through various search engines to provide tourists” (UN WTO).

In Vietnam, digital transformation is a major policy of the Party and State in recent years. To implement digital transformation in the tourism industry, the Prime Minister issued Decision No. 1671/QĐ-TTg dated November 30, 2018 approving the “Master plan for information technology application in the tourism industry period 2018-2020, oriented to 2025”.

Therefore, e-tourism uses the same principles of classical tourism: the practice of choosing, organizing and booking a holiday at a given destination through digital tools such as the Internet, considered is a complement, not a replacement. Thus, on the one hand, digital technology creates a huge development lever for the tourism industry, on the other hand, social networks have become an effective tool to find information that users are prioritizing choose travel products and they can also post information about their experiences after each trip so they can share their positive and/or negative experiences. Our article aims to clarify the impact of social networks on a country's tourism image, pointing out the different behaviors and reactions of Internet users towards the use of social networks in tourism. Therefore, the implementation of this article requires a clearly defined methodological framework, which clearly states the problem, objectives, target audience and data collection tools.

3.2. Research Methods

To obtain research materials, we conducted field surveys using guided questionnaires to clarify contents such as: How to choose a destination before making the trip? Means of sharing destination images during and after the trip? What is the impact of social media on Vietnam's tourism image? Exchange on social networks to determine the correct information regime and issues related to smart travel. At the same time, based on reviewing the literature of previous researchers, we will identify studies in our research field.

Our survey collection support tool is to distribute paper questionnaires directly and questionnaires through Google form. Once we have collected enough information, we move on to analyzing all the data collected. Questionnaire counting was performed using the Excel section of the Google form questionnaire. To analyze the collected data, we use SPSS 16.0 and Excel 365 software. SPSS 16.0 software is used to analyze the ratio representing the frequency of occurrence and the average score.

4. RESEARCH RESULTS AND DISCUSSION

4.1. Results of survey of tourism participants

To draw conclusions about the impact of social networks on Vietnam's tourism industry, we conducted a survey of 3,470 people living, studying and traveling in Ho Chi Minh City, including research on impact of social networks. The impact of social networks on the tourism image of a destination. Survey content includes: The purpose of the survey is what impact does social networks have on the image of Vietnamese tourism? Does exchange on social networks limit the accuracy of information? Below is a statistical table of survey data of social network users choosing travel destinations.

Table 1. Social network users choosing travel destinations.

| Internet users | Search for tourist destination information on social networks | Use social networks to choose travel destinations | The influence of social networks on the image of tourist destinations |
|----------------|---|---|---|
| 3455 (99%) | 2655 (77%) | 2830(82%) | 3400(98%) |

4.1.1. Internet connection

To ensure appropriate data, right from the beginning of the survey, it is necessary to ask users whether they regularly use the Internet or not? Survey results show that 99% of people use the Internet and only 1% do not use it. Respondents do use the Internet regularly, in fact nearly 81% of respondents use the Internet more often (on average more than 2 hours per day), this confirms that the majority of respondents have Internet access.

It should be noted that the Internet is the main means of communication that helps users receive information more flexibly and easily than other conventional media.

For example, when asked about media in general, only 10% of respondents use television more often, while 15% said they use radio and newspapers to follow news. The results show that the social network Face Book still accounts for the highest proportion compared to other networks, followed by Zalo, Google + is increasingly visited, while in Vietnam the use of twitter and Instagram is still low.

However, when asked about companies' presence on the web to follow social trends, 66% of Internet users said companies are turning to the Web for advertising, while 26% said companies want to increase online visibility and 8% say that companies' motivation. The Web's motivation is to meet customer requirements.

4.1.2. Search for tourist destination information on social networks

The convenience of the Internet is the main reason travel planners use it to search for information or purchase information (TIA, 2000). Additionally, the quality of information, reliability, security, ease of contacting the company, post - purchase support, variety of options offered, and convenience of online payments all have a significant impact. to the participants. The results show that most customers will continue to choose the Internet for future trips.

Based on the data collected from our questionnaire, ask whether respondents do research on social media. The majority of the sample, at 77%, said they had done research about travel destinations on social media, on the other hand, only 3% of respondents were not interested in research. They pointed out that one of the reasons for not choosing a destination for Internet travel is because they prefer direct contact with company employees. Thus, from these results, it can be seen that the Internet has to some extent aroused people's curiosity about digital planning to guide the selection of tourist destinations and places to stay for the trip.

4.1.3. Information sources used to select travel destinations

In this context, it should be noted that digital is an interesting tool to attract tourists and will help countries strengthen and improve their tourism image. Digital marketing is a set of marketing activities of an organization, carried out through the use of digital channels (website, email, social networks and mobile applications) to communicate and promote a product. or a tourist destination of a country. Our survey results show that social networks are the source most frequently used by Internet users with 82%, while people around them account for 96%, being the trusted source of Internet users. On the other hand, 20.10% of people consult travel agencies, ultimately tour guides and other media.

We found that the impact of digitalizing a tourism destination is mainly related to changing the customer journey, in which visitors begin their travel experience even before arriving. With rich information, you can get opinions about travel destinations by browsing the Internet, consulting destination official websites, choosing offers and comparing the best prices on the app mobile. The preparation time for this trip is not only limited to research but also to locating different destinations using GPS (Google Maps). During their stay and after their stay, visitors will give their opinions about their vacation and share their experiences on social networks (Facebook, Zalo and Instagram,...), these are important channels to promote the destination. By taking advantage of these tools, tourist destinations will now take care of the image of the country transmitted on social networks (e-reputation) built through comments and messages from users use the Internet to post.

4.1.4. The influence of social networks on tourism destination image

One of the fundamental supports on which the tourism industry relies is image, both at the consumer level (brochures, websites, posters) and at the production level (photos taken by tourists themselves during their trip), this image is based on the basic characteristics of the tourist destination. This is what the scientific literature calls “tourism destination symbolism.” (Santillan, 2010), that is, the visual tourist landmarks disseminated by public administrations and private organizations to attract tourists, and the landmarks that these organizations transform themselves into an iconic sign that they must “see, identify, locate, and touch”. With the integration of new mobile technologies into tourism, new options have also emerged in this direction (Santillán, 2011).

Photography, video recording are integrated into these devices, giving travelers the possibility, in addition to storing these visual references, to share them via social media, making it possible social representation of a particular space in an image during a tour, providing feedback, to the collective imagination of a destination. Photography, video and social media thus become technological intermediaries in the creation and dissemination of images of a tourist destination. This activity, along with others related to social media, has revolutionized tourism marketing. Destinations and tourism businesses use social media images as quality promotional material (Akehurst, 2009), often referring to the already mentioned collective imagination that exists in relation to the destination and revenue attract potential tourists. It is the use of social media to promote tourism that has generated the greatest interest among the international scientific community involved in researching these new technologies in tourism (Boyd, 2008), a specific in-depth analysis of the use of images copied and shared by tourists on social media has yet to be conducted, with very few exceptions (Lo et al. 2011).

The image and popularity of a destination depends largely on customers' life experiences. This experience is posted online, commented on, compared, shared, accessed by any Internet user who is a potential customer. Tourism destinations are already aware of the impact and potential of this online activity. The challenge therefore includes maintaining one's presence on the web by creating quality content, spreading information, promoting and referencing new content and news, by maintaining relationships with Internet users as well as respond to their requests. In fact, when asked about the role of social networks in enhancing the image of tourist destinations, more than

98% said that social networks contribute to enhancing the image, while only 2% of opinions said that social media is ineffective in improving destination image. So we see that such an additional service can significantly change the behavior and attitude of tourists towards a country, applying a clear strategy and providing rich, quality content, the amount of information disseminated on social networks and its influence on Internet users.

Now, the dissemination of information via the Internet and exchange platforms plays a decisive role in tourism consumer behavior (Dalapa, 2011). With the prominent role of the Internet as a source of information, search engines are becoming increasingly important and becoming one of the main tools. Tourists use it to browse the vast online information space (Pan and Li, 2011). Therefore, promoting information to help potential tourists better understand the destination is considered an important factor in the destination selection process (Choi, Lehto and Morrison, 2007).

Because content on social media platforms is not under the direct control of the destination management organization, they contain both positive and negative comments about the destination. These comments influenced and changed the perceptions of potential tourists (Kislali, Kavartzis & Saren, 2016).

To ensure that people want to visit social networking sites, users must be able to easily learn how to use the site, and social networking sites must have useful, high-quality features as defined determined by the design of the site, to provide accurate, reliable information and achieve overall user satisfaction (Büttner and Göritz, 2008). The main and high quality characteristic that a social networking site must have is the quality of information. One can think of information quality as measured by the accuracy, timeliness, completeness, relevance and consistency of the information provided (DeLone and McLean, 2003). It is important that information quality is measured using these specific attributes because these attributes facilitate information sharing among participants. Therefore, the content of a social networking site must be complete, relevant, and understandable to ensure that users continue to return to the site (DeLone and McLean, 2003).

Through the survey, we found that 90% of respondents pay attention to the reactions of other Internet users, most trusting the reactions of Internet users with similar experiences and the same destination desires. Therefore, it can be said that the impact of digitalizing a tourist destination is mainly through the transformation of the customer journey, with visitors starting their travel experience even before arriving.

Therefore, social networks influence our behavior, decisions and consumption. This is also true for the tourism sector. The evidence is when we asked questions to find out whether tourists thought that the negative reactions of Internet users on this site could reduce the image value of a tourist city in their eyes. We received 81.6% of responses supporting this hypothesis, on the other hand 18.4% denied it.

It should be noted that in the field of tourism, social networks have quickly become an additional source of information for actual itineraries. Influencers, media, brands or users, everyone brings their experiences to social media. And today, social media news feeds have a real influence on their choice of holiday destination.

The results of another question revolving around important criteria affecting the selection of a tourist destination show that the most important criterion in choosing an online travel destination is mainly financial capacity with a ratio of rate 75%. 5% is tourism finance, followed by infrastructure at 59.5% and 54.3% is the culture, history and arts sector. And 51.9% belongs to natural resources.

Another question about destination selection, our results show that internet reviews and comments influence destination selection with an average of 69.80% and ranked first, followed by the second category showing photos posted on social networks with an average rate of 67%, and finally travel companies, destination attractiveness as well as quality/price.

4.2. Discuss results

Our research explores the role of social networks (Facebook, Instagram, Twitter, YouTube, blogs...) in choosing a tourist destination from the perspective of tourists in Vietnam. This section focuses on synthesizing the results obtained from the survey and empirical research conducted and explaining how our study responds to the problem and the hypotheses posed. The results obtained have proven the role of the Internet in general and social networks in particular in choosing travel destinations of Internet users.

First of all, regarding the habit of using social networks, it should be noted that the respondents are heavy users of social networks with an average rate of 99%. We observed that 90% of Internet users pay attention to the reactions of other Internet users. They also confirmed that information transmitted and shared by other Internet users has a direct influence on the choice of travel destination, which can be positive or negative. For example, when a member recommends a brand, on social media, and then hundreds of people endorse the recommendation, it is clear that the brand will be very successful.

On the one hand, we found that in terms of the gender of Internet users responding to our study, both men and women had similar participation rates, which suggests that gender does not influence the this activity. On the other hand, Internet users are now looking for a tool that provides clear and precise criteria to be able to orient themselves in the choice of offers and facilitate access to information about destinations and services travel services. Through the survey, the results proved our initial hypothesis:

- The Internet is a widely used tool in today's society, in which social networks are increasingly widely used in accessing and searching for information in general and choosing travel destinations in particular.

- Travel is a common need of people regardless of gender and choosing a travel destination via social networks is for everyone.

Therefore, it can be concluded that social networks not only have a huge impact on the brand image of a city/country but also have a huge impact on the choices of internet users and their destinations. This process takes place in three main stages, namely during the preparation for stay, during and after the stay.

5. CONCLUSION

The use of the Internet and more specifically social networks cannot be ignored by Internet users who want to learn about a desired destination. Nowadays, social networks are gradually starting to invest in travel professionals in the form of social networks. Regarding the impact of social networks, it can change the brand orientation of a city or a country, especially in the field of telecommunications and new technology.

However, in this article we make recommendations that can be handled as follows:

First, the influence of social network users' comments on tourism images and the change of initial decision after online exchanges proves that the tourism image of a country and a city is very sensitive. sensitive and can be easily influenced through the reactions of Internet users, who can express dissatisfaction or satisfaction with the desired destination. In this case, e-tourism professionals must consider and properly maintain their e-reputation.

Second, the appearance of Facebook, Zalo, ... groups: has become a group of highly influential people, able to change the choice decisions of Internet users, but above all, this group allows It can be very difficult for a company to get exposure and win over new customers, but with groups and social networks in general, it has become easier.

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CURRENT SITUATION OF RESPONSIBLE TOURISM IN LO LO CHAI VILLAGE (LUNG CU COMMUNE, DONG VAN DISTRICT, HA GIANG PROVINCE, VIET NAM)

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ABSTRACT

Responsible tourism is becoming increasingly popular worldwide, including in Vietnam, as a key approach to sustainable development. Lo Lo Chai, a famous destination in Ha Giang, known for its unique culture and stunning landscapes, attracts both domestic and international tourists. However, rapid tourism growth has posed environmental threats and challenges to preserving its cultural identity. This study analyzes and assesses the current state of responsible tourism in Lo Lo Chai, focusing on local policies, tourism revenue, infrastructure, and tourism product development. The author conducted a survey of 107 participants between June and August 2024 and used additional methods such as SWOT analysis. The findings indicate that responsible tourism practices in Lo Lo Chai are not yet widespread and face several limitations. The study proposes solutions to improve responsible tourism, such as enhancing education, raising awareness, and protecting local economic benefits, the environment, and cultural identity.

Keywords: responsible tourism, Lo Lo Chai Village, Lung Cu Commune, Dong Van District, Ha Giang Province.

1. INTRODUCTION

Responsible Tourism is becoming increasingly crucial for sustainable development in the globalizing era. Apart from aiming for financial success, environmental protection, cultural preservation, and local community involvement take the front stage. Though this growth has also brought social and environmental issues, global travel created over 319 million jobs and contributed 10.4% to the world GDP in 2019. With responsible travel taking the stage, some countries, including Vietnam, use sustainable tourism strategies. Home to the Lo Lo ethnic minority, Lo Lo Chai Village in Ha Giang has excellent potential but faces challenges from rising tourist numbers, which jumped from 100,000 in 2010 to about 1 million in 2022. This rapid development has strained nearby infrastructure and threatened cultural heritage and the surroundings. Although sustainable travel is feasible, Lo Lo Chai's ethical travel guidelines have not been entirely implemented, which has terrible consequences. More emphasis on responsible travel will help preserve the area's cultural and environmental features over the long term.

2. LITERATURE REVIEW

2.1. Overview of Responsible Tourism

In *Taking Responsibility for Tourism* (2011), Harold Goodwin underlines in *Aiming for a Balance between Economic Benefits and Resource Preservation* the function responsible tourism plays in environmental conservation and community support. Agreeing that environmental conservation must follow economic development, David Weaver investigates sustainable tourism strategies in management in *Sustainable Tourism: Theory and Practice* (2006). Frey and George (2010) stress the importance of mutual commitment between travel agencies and customers in excellent management. Anna Spenceley (2008) investigates how ethical tourism may help the growth and preservation of nature reserve communities. Emphasizing the maintenance of cultural identity in travel, Peter Dunbar-Hall (2006) employs Australian and Canadian case studies. These studies show the significant relationship between tourism, preservation, and community well-being.

Research by Harold Goodwin, David Weaver, Frey and George, Anna Spenceley, and Peter Dunbar-Hall shows responsible tourism is importance for sustainable development, promoting environmental protection, cultural preservation, and community benefits. Still, there exist gaps, particularly concerning the connection between responsible travel and mass tourism as well as the purposes of governments and NGOs. Though environmental preservation and stakeholder collaboration still suffer there, studies by Hà Văn Siêu, Nguyễn Thị Thanh Hương, and Lê Thị Kim Ánh have set the foundation for ethical tourism in Vietnam. Future research should aim to develop effective collaboration models and management strategies to enhance the national application of responsible tourism.

2.2. Studies on Tourism in Lo Lo Chai Village

The study of Đỗ Thị Anh (2013) presents basic concepts to ensure homestay tourism benefits the environment and cultural heritage and boosts the economy. Nguyễn Đức Dũng (2016) stresses the importance of community, business, and government cooperation to manage problems of cultural preservation in ethnic minority areas like Lô Lô Chải. Emphasizing that tourism development in Lo Lo Chai must coincide with natural and cultural preservation, the Panhou Declaration (2022) is warning of potential adverse impacts, Nguyễn Đình Duy (2022) advocates combining tourist development with poverty lowering. Trần Đức Thành (2024) looks at environmental issues related to tourism and advocates a growing understanding of responsible travel.

Research on environmental protection, cultural preservation, and sustainable tourism development has looked at Trần Đức Thành underlined environmental issues in homestay tourism and demanded a deeper understanding of management strategies for Lo Lo Chai. Nguyễn Đền Dũng and Đỗ Thị Anh underlined the preservation of traditional culture even if comprehensive research on community involvement is still lacking. The Panhou Declaration enhanced the development of tourism in line with environmental protection. Nguyễn Đình Duy focused more on economic growth than on the impact homestay tourism had on culture. More research is needed, nonetheless, on the relationship between visitors and local businesses as well as long-term consequences—especially in ethnic minority areas like Lo Lo Chai.

3. METHODOLOGY

This research utilizes surveys, in-depth interviews, and secondary data collection to compile and examine insights from local residents, visitors, and tourism managers in Lo Lo Chai Village. Data was collected using questionnaires from 71 respondents in Lo Lo Chai Village (51 local residents; 8 tourism service businesses such as guesthouses, hotels, restaurants, and travel companies; 10 tourism workers; 1 representative of the commune-level government; 1 representative from the district-level tourism management authority). The interviews were conducted from July 15, 2024, to August 20, 2024. The gathered information was subsequently examined through the SWOT analysis method to determine the strengths, weaknesses, opportunities, and challenges of responsible tourism in Lo Lo Chai Village. Additionally, content analysis and descriptive statistics were used to clarify trends and provide an overview of the current state of tourism, thereby offering relevant conclusions and recommendations for sustainable development in the local area.

4. FINDINGS AND DISCUSSION

4.1. Tourism Development Policy

Local authorities have been focusing on harnessing the tourism potential of Lo Lo Chai in Lung Cu Commune, Dong Van District, Ha Giang Province, to boost the local economy. While some positive results have been achieved, current policies still do not fully exploit the region's tourism potential and lack sustainability. A key strategy is promoting community-based tourism combined with cultural and environmental preservation. Despite efforts like Decision No. 1980/2016/QĐ-TTg supporting rural tourism development, challenges remain, particularly with infrastructure and services. Rapid tourism growth has threatened the cultural identity of the Lo Lo ethnic group, requiring further government support to protect intangible cultural heritage. Although 42 households participate in homestays, income distribution is uneven, and many families not involved in tourism still struggle financially. To address these issues, more precise policies, infrastructure investment, and sustainable tourism management are required. Additionally, training local residents to participate and benefit from tourism is crucial. Despite progress, improving policies is essential for achieving long-term sustainability and community benefits.

4.2. Tourism Development Activities in Lo Lo Chai Village

Table 1. Tourism Statistics in Lo Lo Chai Village.

| Category | Data | Detailed Description |
|------------------------------------|----------------|--|
| Number of households in Lo Lo Chai | 119 households | Of which, 104 households belong to the Lo Lo ethnic group, concentrated in Lung Cu Commune. |
| Number of homestay businesses | 42 households | These households provide traditional accommodation services, contributing to an authentic experience for tourists. |

| | | |
|--|---|---|
| Annual number of tourists | > 20,000 visits (estimated) | Lo Lo Chai is an attractive destination for cultural and natural exploration tours of Ha Giang, particularly drawing tourists from both domestic and international locations. |
| Tourism revenue | > 5 billion VND/year | Revenue mainly comes from accommodation services, food and beverages, and the sale of handicrafts such as brocade. |
| Number of restaurants serving tourists | 5 restaurants | These restaurants serve traditional Lo Lo ethnic dishes, meeting the culinary needs of tourists. |
| OCOP tourism products | 2 products | Lo Lo Chai Cultural Tourism Village has been acknowledged as a model cultural village linked to the One Commune One Product (OCOP) initiative. |
| Intangible cultural heritage | 1 heritage (decorative art on clothing) | The ornamental designs on the traditional attire of the Lo Lo ethnic group have been acknowledged as a National Intangible Cultural Heritage, elevating the significance of cultural tourism. |
| Percentage of international tourists | ~35% | About one-third of tourists come from other countries, mainly from Europe and North America, with a particular interest in indigenous culture and homestay experiences. |
| Cultural activities and festivals | 3-5 major festivals annually | Traditional festivals and cultural activities such as folk singing and dancing are held regularly, attracting tourists to participate. |

Source: Based on survey results

Lo Lo Chai captivates visitors not only with its scenic landscapes but also with the richness and variety of its ethnic culture. The yearly influx of tourists has grown remarkably, contributing substantially to the local economy through services like lodging, dining, and the sale of handicrafts.

4.2.1. Regarding Facilities and Infrastructure for Tourism

Infrastructure and facilities are key to the sustainable development of tourism in Lo Lo Chai, a well-known community-based tourism destination in Ha Giang. The rapid rise in tourist numbers has heightened the need for improved infrastructure, but despite local efforts, current facilities fall short of meeting tourism demands. In 2023, Lo Lo Chai saw over 57,000 visitors, with 400-600 tourists daily, straining accommodation options as there are only 42 homestay households, leading to overcrowding during peak seasons. While transportation has improved, rugged terrain and rainy season damage remain challenges. Public services like clean water supply and waste management are also insufficient, impacting service quality and the environment. Despite efforts to enhance infrastructure, further support from provincial authorities and NGOs is needed to invest in modern waste systems, water supplies, and transportation upgrades. These improvements will protect the environment and local culture, ensuring Lo Lo Chai's sustainable tourism growth and long-term appeal.

4.2.2. Regarding Revenue Generated from Tourism Development

Revenue from tourism and accommodation services in Lo Lo Chai, has seen significant growth in recent years, making a substantial contribution to the local economy and improving the livelihoods of residents. The increase in the number of tourists visiting Lo Lo Chai, particularly in 2023, has provided a stable source of income for households involved in tourism activities, especially those participating in the homestay model.

Table 2. Top 10 Most Popular Homestays in Lo Lo Chai Village

| Homestay | Room Type | Service Price/Person (VND) |
|-------------------------------|---------------------------------------|----------------------------|
| MOTOGO Home | VIP Room, Double Room | 550.000 – 950.000 |
| Lolo Village Homestay | Single Room, Room for 4 | 800.000 – 1.200.000 |
| Lolo Ancient House | VIP Room 1, VIP Room 2 | 800.000 – 1.000.000 |
| Homie Homestay | Dorm Room, VIP Room | 800.000 – 1.400.000 |
| Lo Lo Eco House | Single Room, Double Room | 800.000 – 1.050.000 |
| Long Co Tran – Homestay & Tea | Flag View Room, Shared Room | 800.000 – 1.000.000 |
| Lullaby Homestay Lo Lo Chai | VIP Room, Single Room, Double Room | 800.000 – 950.000 |
| Lung Cu Lake View | Double Room, Dorm Room | 800.000 – 1.400.000 |
| The Lover Lo Lo Chai | Shared Room, Room for 4 | 800.000 – 1.200.000 |
| Na Na homestay Lo Lo Chai | Single Room, Double Room, Shared Room | 850.000 – 950.000 |

Source: Based on survey results

Homestay tourism in Lo Lo Chai started in 2014 through tourism projects initiated by Lung Cu Commune and Dong Van District. These services primarily focus on homestay rentals and food for short-term visitors. In 2023, Lo Lo Chai attracted over 57,000 tourists, with 400-600 visitors daily, generating significant income for local families. Each household typically earns 50-70 million VND annually, with high-end homestays earning up to 200 million VND. Early in 2024, 18,000 guests arrived, providing over 100 inhabitants with consistent employment of 5–7 million VND. Homestays enhance their services by integrating regional festivities and cultural events like embroidery. Apart from housing, they provide eating options, crafts sales, and agricultural business, thus expanding the income streams. Still, income distribution is uneven; some families earn more than others. Long-term growth and sustainability rely on improving infrastructure, service quality, and fair income sharing, thereby enhancing the impact of tourism.

4.2.3. Regarding the Development of Various Types of Tourism

Lo Lo Chai is a village at the foot of Lung Cu Flag Tower that has become among the most well-known tourist destinations. It provides many sorts of activities. Appealing travel products created by beautiful natural surroundings, unique traditional culture, and the friendliness of the local people draw visitors from all around to discover and enjoy.

Community-Based Tourism

The most developed kind of travel in Lo Lo Chai is community-based one. This kind of tourism provides the residents with a regular income and helps preserve and advance traditional cultural values using direct community involvement. From food processing to agricultural production activities to learning how to make handicrafts like embroidery and tile-making, guests to Lo Lo Chai get the opportunity to experience the daily life of the Lo Lo ethnic people. Visitors could also take part in traditional activities like the unique Lo Lo people's folk dances, the Forest God Worship Festival, and the New Rice Festival. These are not only cultural activities but also chances for guests to get a more profound knowledge of the way of life and values of Lo Lo people.

Eco-Tourism

Because of its unique location and perfect natural surroundings, Lo Lo Chai has also seen a tremendous increase in eco-tourism. Open to guests are mountain climbing, trekking, route discovery across old forests, or contemplation of the unique beauty of the Dong Van Karst Plateau. Eco-tourism in Lo Lo Chai not only attracts people who enjoy the surroundings but also offers the opportunity to share knowledge about environmental preservation. Visitors and residents have helped to reforest, protect threatened plant and animal species, and support events like visits to natural preservation areas.

Agricultural Tourism

Originating in Lo Lo Chai, agricultural tourism lets visitors participate directly in traditional agricultural activities like cow farming, crop care, and rice planting. Apart from satisfying guest needs, the locally grown organic and clean agricultural products are sold as souvenirs, producing additional income for the residents. Agricultural tourism simplifies the food production process for ethnic minorities and connects tourists with their livelihood.

The harmonious combination of tourism development with cultural and environmental preservation not only benefits the locality economically but also contributes to preserving and promoting traditional values, ensuring sustainable development for the future.

4.3. SWOT MATRIX OF THE CURRENT STATE OF RESPONSIBLE TOURISM IN LO LO CHAI VILLAGE

Based on the information gathered from the author's survey, the following SWOT matrix can be constructed:

Table 3. SWOT Matrix of the Current State of Tourism in Lo Lo Chai Village

| | |
|---|---|
| S –Strengths | W – Weaknesses |
| S1. Majestic and unique natural landscapes. S2. Rich and diverse traditional culture with many unique festivals and customs of the Lo Lo people. S3. The active involvement of the local population in the growth of community-centered tourism. S4. Unique handicrafts with high cultural value. | W1. Incomplete transportation infrastructure and public services. W2. Inconsistent and unprofessional quality of tourism services. W3. Lack of long-term strategy and professional management in tourism development. W4. Low awareness of responsible tourism within the local community. |
| O – Opportunities | T – Threats |
| O1. Increasing interest from domestic and international tourists in sustainable tourism destinations. O2. Supportive policies for community-based tourism development from the government and NGOs. O3. Post-COVID-19 tourism trends favor less crowded, natural destinations. O4. Opportunities to attract investment in tourism infrastructure and services from businesses and international development organizations. | T1. The increase in tourist numbers may put pressure on local infrastructure and the environment. T2. Risk of loss of traditional culture due to commercialization and the influence of mass tourism. T3. Competition with other tourist destinations in the region with more developed infrastructure. T4. Climate change and environmental protection issues impacting tourism activities. |

The SWOT analysis shows that Lo Lo Chai has significant potential to develop into a sustainable tourism destination, but to achieve this, proper investment and management from the authorities, along with community support, are essential. Addressing the weaknesses and capitalizing on the opportunities will help Lo Lo Chai not only attract more tourists but also protect

and promote cultural and environmental values, while simultaneously creating sustainable economic development for the local community.

5. CONCLUSION

Research on tourism development in Lo Lo Chai identified its potential for sustainable tourism alongside several challenges. The area benefits from stunning natural scenery, rich cultural traditions, and strong community participation in tourism initiatives. However, issues such as inadequate infrastructure, variable service quality, and a lack of long-term management strategies limit its tourism capabilities. Although challenges include rising visitor numbers, threats to cultural identity, and effects of climate change, chances present themselves from increasing tourist interest in sustainable practices and government and NGO support. If we want to promote sustainable travel, infrastructure and service quality must be improved, and knowledge of environmental protection and cultural preservation must be increased. Cooperative efforts of local government, the people, and international organizations will help preserve the area's cultural and natural heritage. Lo Lo Chai might become a unique and attractive tourism destination with constant work.

Encouragement of sustainable tourism in Lo Lo Chai will also rely on continuous education and capacity-building projects for the local community to ensure their active engagement in and gain from the expansion. Reducing the negative impacts of mass tourism also relies on implementing sensible policies to manage visitor numbers and protect cultural heritage. Giving these projects priority would let Lo Lo Chai enhance its tourism offerings and set an example for other ethnic minority communities striving for sustainable development.

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AGRICULTURAL TOURISM PRODUCT DEVELOPMENT IN NA HANG AND LAM BINH DISTRICT (TUYEN QUANG PROVINCE, VIET NAM COUNTRY)

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ABSTRACT

Agricultural tourism products are the integration of agricultural production activities and entertainment and educational services to bring visitors interesting experiences. Na Hang districts and Lam Binh districts where many factors converge to develop agricultural tourism products, however, this development is only based on available resources, lacking coordinated distribution, management, regional connectivity, and have not created incentives for tourists to stay longer. The article will explore the current situation to discover the price potential and propose some publishing issues and recommendations for developing agricultural tourism products in Na Hang and Lam Binh districts. Article data is collected from domestic and foreign articles and research, written data, image documents, notes from field trips, and opinions and interviews from experts participating in the field of tourism. The results show that the development of agricultural tourism products in Na Hang and Lam Binh districts has a lot of potential, but this development is still low compared to current potential and demand. Therefore, it is essential to implement policies, solutions, and recommendations to fully harness potential and resources, aiming to develop agricultural tourism products into key offerings in the two districts and across Tuyen Quang Province.

Keywords: Agricultural tourism products, Na Hang district, Lam Binh district, Tuyen Quang province.

1. INTRODUCTION

Tourism is a vital economic sector with a significant impact on trade and services, contributing to economic restructuring and enhancing the well-being of rural residents. Agricultural tourism is recognized as a key driver for overall tourism growth globally, and Vietnam's tourism strategy emphasizes ecotourism linked to agriculture and rural areas as one of its main product lines. With its rich biodiversity and diverse terrain, Vietnam has a solid foundation for developing agricultural tourism products, attracting visitors to various models from north to south, such as Duong Lam village and Mu Cang Chai's rice terraces. Despite the abundance of resources, agricultural tourism in Vietnam often lacks professional exploitation and remains small-scale and fragmented. The Na Hang and Lam Binh districts in Tuyen Quang Province exemplify areas with great potential for agricultural tourism development but face challenges. Recognizing this, the Ministry of Culture, Sports, and Tourism has initiated the project "Developing Rural Tourism in Connection with Building New Rural Areas," approved by the government. This project aims to assess the current state of agricultural tourism in Na Hang and Lam Binh, proposing solutions and policies to enhance rural tourism development and contribute to sustainable rural development goals.

2. RESEARCH OVERVIEW

2.1. Overview of Foreign Research

Research indicates that the agricultural tourism sector grew significantly during the 1980s and 1990s, with various countries adopting different terms. In the UK, it's called Rural Tourism; in the US, Homestead tourism; and in Japan, Agricultural Tourism and Green Tourism. The OECD's 1994 publication defines rural tourism as occurring in rural areas, with the European Community categorizing any tourism organized in such areas as rural tourism. Examples of tourism development programs include "agricultural tourism" in Italy and "sleeping in straw" in Switzerland. Na Songkhla and Somboonsuke (2012) studied Chang Klang district in Thailand, highlighting agro-tourism activities like product processing demonstrations and their impact on local agriculture. Overall, agricultural tourism is recognized as a vital strategy for rural economic development, cultural preservation, and improving residents' quality of life.

2.2. Overview of Research in Vietnam

The thesis "Developing Agricultural Tourism Products in Ninh Thuan Province" outlines the theoretical foundation for agricultural tourism, including concepts like tourism products and the development process. It establishes an analytical framework to assess the competitiveness of destinations and their potential for exploiting agricultural tourism. Using data research, interviews, and surveys, the thesis evaluates tourist satisfaction with factors such as tourism resources, infrastructure, product quality, development policies, and community participation. The analysis identifies opportunities, strengths, challenges, and weaknesses in developing agricultural tourism in Ninh Thuan. Based on this assessment, the thesis proposes solutions focusing on key aspects. In conclusion, agricultural tourism in Ninh Thuan holds significant potential, but achieving success requires a comprehensive strategy and collaboration among stakeholders. Prioritizing environmental protection, service quality, and local product promotion will position Ninh Thuan as an attractive and sustainable tourist destination in the future (Nguyen Bao Chau, 2021). "Developing Agricultural Tourism in Lam Dong Province" presents research that incorporates theories of agricultural tourism and builds an analytical framework from supply and demand perspectives. It examines the supply side by providing an overview of agricultural tourism development, local participation, and the effectiveness of households involved in tourism models. On the demand side, it analyzes tourist attraction to destinations in Lam Dong. The study offers policy implications and recommendations for developing agricultural tourism in the province, serving as a reference for policymakers, government agencies, and researchers. (Ph.D. candidate Nguyen Thai Dung, 2023). Research on agricultural tourism products in Vietnam indicates growing interest from both the government and businesses, highlighting significant development potential due to diverse agricultural resources and rich traditional culture. Studies focus on specific regions like Ninh Thuan, Lam Dong, and the Central Highlands, showing that agricultural tourism generates income for farmers, promotes sustainable rural development, improves local quality of life, and preserves culture. However, limitations remain, including weak tourism infrastructure, unprofessional services, and a lack of systematic promotional strategies. Many current products

offer simple sightseeing experiences without developing creative activities or enhancing added value.

3. RESEARCH METHODOLOGY

To develop and fully utilize resources to create tourism products in Na Hang and Lam Binh districts, the research employs several methodologies: Secondary Data Collection Methods: Data Collection Method: Gathering data and information from managers, local residents, and tourists regarding relevant and reliable data. Data Processing Method: Analyzing collected data to extract meaningful insights. Primary Data Collection Methods: Field Survey Method: This method helps to explore agricultural resources by identifying prominent agricultural areas, types of crops, specialty livestock, and traditional farming practices. It also involves observing agricultural activities, such as cultivation, processing of agricultural products, and events related to agriculture. In-depth Interview Method: Interviews with Farmers: Collecting farmers' opinions on production processes, experiences, and the challenges faced in developing agricultural tourism. Interviews with Tourists: Understanding the needs and desires of tourists regarding agricultural experiences, such as farm visits, harvesting, and food processing. Interviews with Tourism Businesses: Engaging in discussions with tourism businesses to gather information about existing agricultural tourism products and the demand for further development. Expert Interview Method: Interviewing experts in tourism and agriculture to gain insights into the development potential and effective strategies for agricultural tourism.

4. RESEARCH RESULTS

4.1. Introduction to the Study Area

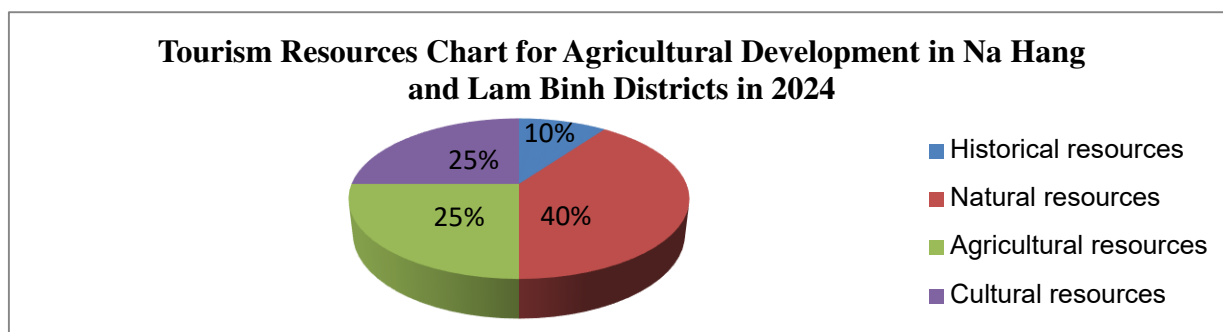
Na Hang District, located about 100 kilometers from Tuyen Quang city center in the north of Tuyen Quang Province, lies within the Na Hang - Lam Binh Natural Reserve, characterized by its mountains, rivers, lakes, and primary forests. The district is situated within the basins of the Gam River, which flows 53 kilometers from China, and the 25-kilometer-long Nang River, which originates in Cao Bang Province. Na Hang's mild climate supports agriculture and eco-tourism, making it an attractive destination for agricultural tourism, particularly featuring specialty crops like ancient Shan Tuyet tea, upland rice, and various fruits. Similarly, Lam Binh District, about 120 kilometers from Tuyen Quang city center, borders Ha Giang and Bac Kan provinces. Its complex terrain of mountains and forests, combined with a humid subtropical climate, is ideal for agriculture and outdoor tourism. The district is home to ethnic minority groups, including the Tay, Dao, Hmong, and Pa Then, who maintain vibrant cultural traditions and festivals that attract tourists. Developing tourism products is essential for modernizing the economy and addressing socio-economic issues in rural areas. Although many studies focus on agricultural tourism worldwide and in Vietnam, research specifically on Tuyen Quang remains limited. This thesis comprehensively analyzes the current state of agricultural tourism in Na Hang and Lam Binh districts and proposes solutions for effective development.

4.2. Current State of Agricultural Tourism Product Development in Na Hang and Lam Binh Districts

The development of agricultural tourism products is regarded as a "gold mine" for enhancing rural economic growth and acts as a crucial catalyst for advancing the establishment of new rural areas in the Na Hang and Lam Binh districts. To successfully achieve the objectives of rural development, it is vital to prioritize agricultural tourism, leveraging current assets and exploring future growth opportunities. This strategy is a fundamental solution and task within the national target program for developing new rural areas for the 2021–2025 period.

4.2.1 Tourism Resources for the Development of Agricultural Tourism Products in Na Hang and Lam Binh Districts

With the field survey method in Na Hang and Lam Binh combined with the data collection and processing method, the following is a chart showing the results of the tourism resource system serving the development of agricultural tourism products. Na Hang and Lam Binh industries:



First of all, historical tourism resources in 2024, although only accounting for 10%, play an important role: Tourists will be introduced to local history, creating experiential tourism routes that combine exploration, history and visit local agricultural models. Next, natural tourism resources account for 40%, the highest percentage, including natural attractions such as lakes, primary forests, and characteristic ecosystems. In Na Hang and Lam Binh, these resources are often located in rugged terrains; however, they are in close proximity to each other, making it convenient to connect destinations within tourism tours. The combination of natural tourism and agriculture has created green tourism products, where visitors can experience rural life while also protecting the environment. Thirdly, we cannot overlook agricultural tourism resources, which are mainly distributed in the rural areas where local residents live in Na Hang and Lam Binh districts. With a diverse range of resources from crops to livestock, these contribute to the richness of agricultural tourism products. Finally, there are cultural tourism resources, with diversity reflected in ethnic cultural resources. Na Hang and Lam Binh districts are home to various ethnic groups, such as the Tay, Dao, Mong, and Pa Then. This is a resource with the potential to be integrated with agricultural tourism, not only enhancing the value of products but also preserving and promoting traditional culture. The resource distribution map of Na Hang and Lam Binh reveals significant potential for developing agricultural tourism alongside eco-tourism and cultural tourism. With natural resources taking a dominant role, the development of sustainable agricultural

tourism is a necessary direction, while adding cultural and historical elements to increase the appeal of tourism products.

4.2.2. SWOT Matrix of the Current State of Agricultural Tourism Product Development in Na Hang and Lam Binh Districts

| | |
|--|--|
| <p style="text-align: center;">S (STRENGTHS)</p> <p>S1: Rich natural resources with beautiful landscapes (Na Hang primary forests, etc.)</p> <p>S2: Fresh and cool climate, favorable for the development of local and agricultural tourism.</p> <p>S3: Unique agricultural products: Shan Tuyet tea, lake fish, honey, wild bamboo shoots, etc.</p> | <p style="text-align: center;">W (WEAKNESSES)</p> <p>W1: Limited transportation infrastructure, making it difficult for tourists to access the area.</p> <p>W2: Low quality of tourism workforce, lacking experience and skills in serving tourists.</p> <p>W3: Lack of a sustainable and long-term tourism development strategy, with insufficient coordination between agencies and localities</p> |
| <p style="text-align: center;">O (OPPORTUNITIES)</p> <p>O1: Supportive policies for tourism development from the government and international organizations, providing opportunities to attract investment and develop infrastructure.</p> <p>O2: The growing interest in and development of green tourism and agricultural tourism.</p> <p>O3: Potential to link agricultural tourism with cultural tourism offering experiences of local life and traditional folk activities.</p> | <p style="text-align: center;">T (THREATS)</p> <p>T1: Negative impacts from climate change, affecting agricultural activities and eco-tourism.</p> <p>T2: The increase in the number of tourists could lead to overcrowding and put pressure on the environment and natural resources if not managed properly.</p> <p>T3: Competition from other regions developing agricultural tourism within the country, especially those with better infrastructure and services.</p> |

SWOT Matrix Table of the Current State of Agricultural Tourism Product Development in Na Hang and Lam Binh Districts

The SWOT matrix has clearly identified the positive factors and challenges that Na Hang and Lam Binh are facing. Leveraging natural and cultural resources wisely, along with investing in infrastructure and human resources, will be key to developing sustainable agricultural tourism. To overcome challenges such as competition and climate change, there needs to be a clear strategy, coordination among stakeholders, and a long-term vision for tourism management and environmental protection.

4.2.3. Agricultural Tourism Product System in Na Hang and Lam Binh

The research results in the table above show that the number of tourists participating in agricultural tourism products in Lam Binh and Na Hang is quite large, reaching a total of 72,500 visitors in 2024. This is a positive signal for the tourism industry in this area. The estimated revenue from agricultural tourism in these two districts is also very promising, reaching 27 billion VND, contributing significantly to local economic development. Eco-tourism at Na Hang Lake and the waterfalls in Lam Binh are the most popular attractions, drawing a total of 27,000 visitors (approximately 50.9% of the total number of tourists). This indicates a high demand for nature-based tourism in the area and creates opportunities for developing additional related products such as trekking, camping, and other outdoor activities. Cultural tourism products in the Hmong ethnic villages and agricultural experiences in Tay villages also attract a large number of tourists (a total

of 16,500 visitors), demonstrating the strong potential for the development of community-based and cultural tourism. Agricultural tourism at organic orange and tangerine orchards is also gaining attention, with 5,500 visitors in 2024, reflecting the growing trend of green and healthy consumption. Looking at the data, it can be assessed that the development of agricultural tourism in Na Hang and Lam Binh districts in 2024 is very promising, and it is expected to see even stronger growth in the coming years.

Table of Notable Agricultural Tourism Products in Lam Binh and Na Hang Districts (Tuyen Quang) in 2024

| Order number | Agricultural tourism product name | Location | Number of visitors in 2024 (people) | Estimated revenue (billion VND) | Key features |
|--------------|---|-------------------|-------------------------------------|---------------------------------|---|
| 1 | Eco-tourism at Na Hang Lake | Na Hang | 27.000 | 8,5 | Tour boat rides, cave exploration, nature experiences. |
| 2 | Agricultural experience in Tay village | Lâm Bình | 7.500 | 3,2 | Participate in rice planting, fruit harvesting, and livestock care.. |
| 3 | Cultural tourism in the Hmong ethnic villages | Na Hang, Lâm Bình | 16.500 | 4,8 | Explore local culture, participate in traditional festivals, and experience local cuisine. |
| 4 | Explore the waterfall system in Lam Binh | Lâm Bình | 12.000 | 6,0 | Trekking and exploring Khuoi Nhi and Khuoi Sung waterfalls, surrounded by magnificent nature. |
| 5 | Visit organic orange and tangerine orchards | Na Hang | 5.500 | 2,7 | Harvest organic fruits and enjoy them fresh in the garden. |
| 6 | Tay ethnic handicrafts and textiles | Lâm Bình | 4.000 | 1,8 | Participate in craft-making and learn about the production process |

4.2.4. Technical Facilities and Infrastructure System for Developing Agricultural Tourism Products in Na Hang and Lam Binh Districts

The development of technical facilities and infrastructure plays a key role in promoting agricultural tourism products in Na Hang and Lam Binh districts. This is a decisive factor not only in attracting tourists but also in creating sustainable value for the local community. Specifically, the role of infrastructure development is demonstrated through the following aspects:

Transportation: A good transportation system helps tourists easily access agricultural tourism sites in Na Hang and Lam Binh districts. The development of both road and waterway transport is necessary to navigate the hilly terrain and allow visitors to easily reach remote areas. However, the current state of transportation in these two districts faces many challenges, such as susceptibility to landslides during the rainy season, with many routes not yet paved or asphalted. Public transport options are also limited. The local government of Tuyen Quang province has been implementing various transportation upgrade projects aimed at improving accessibility and supporting economic development through tourism.

Accommodation Facilities: Accommodation is vital for developing agricultural tourism in Na Hang and Lam Binh, as it not only meets tourist needs but also connects them with nature and rural culture. Homestay models allow tourists to stay with locals and participate in agricultural activities, providing an authentic rural experience.

Emerging farmstay options combine tourism with farming activities, offering relaxation and education about agricultural production processes. In these mountainous districts, sustainable and eco-friendly accommodation, such as eco-lodges, can attract tourists interested in green tourism while minimizing environmental impact. Developing facilities near agricultural sites enhances accessibility and creates seamless tourism routes for visitors. **Electricity, Water, and Telecommunications Systems:** The first important factor is ensuring a stable and sufficient power supply, which is essential for operating accommodation facilities, restaurants, and other tourism services. The second factor is providing clean water, with the water supply system needing regular checks to ensure efficient use in accommodation facilities and agricultural activities. The telecommunications system also plays a crucial role, especially in mountainous provinces like Lam Binh and Na Hang, where challenges persist in achieving stable network connections and limited speed. Recognizing these limitations, local authorities and service providers have implemented infrastructure upgrade projects. **Tourism Support Facilities:** Providing tourists with comprehensive information about destinations, much like a mini guidebook, helps tourists gain an overall and detailed view of the destination. Centers can provide detailed information about agricultural tourism sites, including production models, farms, cooperatives, and specialty agricultural products. Organizing promotional programs and advertising campaigns about agricultural tourism in Na Hang and Lam Binh through social media channels and traditional advertising systems is also an effective way to quickly attract tourists.

Connecting Businesses and Tourists: Centers can act as a bridge between tourism businesses and tourists, making it easier for both sides to find each other and connect. Furthermore, local collaboration creates opportunities for tourism businesses, agricultural cooperatives, and local communities to cooperate and develop tourism products.

4.2.5. Agents involved in the agricultural tourism market in Na Hang and Lam Binh districts

To develop a complete tourism product, there needs to be smooth coordination among the following participants in tourism: **Government agencies and local authorities:** The Department of Culture, Sports and Tourism – most of Tuyen Quang is responsible for developing policies, planning, and promoting agricultural tourism. The People's Committees of Na Hang and Lam Binh districts coordinate and implement tourism development programs, manage, and supervise local tourism activities. **Tourism and service businesses:** These companies specialize in providing tour packages, organizing agricultural experience tours for visitors, and promoting agricultural tourism in Na Hang and Lam Binh districts specifically, and Tuyen Quang province more broadly. **Local residents:** Local people play a crucial role in developing agricultural tourism products in Tuyen Quang. The residents and communities in Na Hang and Lam Binh are key in agricultural production, providing agricultural products to tourists. They also participate in welcoming and guiding visitors through tours and experiences. **Tour guides:** Currently, the training of tour guides is limited, affecting service quality. Many tour guides have good local knowledge but need to improve their communication skills and update information. Therefore, it is essential to establish in-depth training policies on tourism knowledge and skills for tour guides.

4.2.6. The integration of agricultural tourism with other tourism products in the entire province

Na Hang and Lam Binh are distinguished by their unique agricultural products, such as glutinous rice and honey, which can be combined with scenic tourism to attract visitors. Connecting agricultural cooperatives with tourism businesses is essential for promoting local products. Upgrading transportation infrastructure will make it easier for visitors to access and develop tourism routes. Joint promotional events, such as agricultural fairs combined with cultural exhibitions, will attract visitors and contribute to the sustainable economic development of Tuyen Quang..

4.3. DEVELOPMENT ORIENTATION

4.3.1. Some Development Solutions

The orientation for agricultural tourism development in Na Hang and Lam Binh districts will focus on the following areas: Improve the quality of agritourism services by providing training programs for tourism staff. Develop tour programs to promote, promote, stimulate tourism demand and create many unique agricultural tours to attract both domestic and foreign tourists. *For state agencies:* Propose financial support packages for businesses and households investing in tourism.. *For businesses and companies:* Focus on developing specific products such as rural experience tours and activities associated with indigenous culture *For local communities:* Raise awareness, organize seminars and training sessions to raise awareness about agritourism.

5. CONCLUSION

The advancement of agricultural tourism products in the districts of Na Hang and Lam Binh not only presents considerable potential for local tourism but also plays a vital role in preserving and promoting the community's traditional cultural values. Offerings like farm tours, agricultural production experiences, and local culinary specialties have opened up new opportunities for both local residents and investors.

However, achieving sustainable success requires coordinated investment and close collaboration between government, businesses, and the community. Improving service quality, ensuring visitor satisfaction, and protecting the environment are key factors in the long-term development of agricultural tourism in this region. Additionally, raising awareness about the value of agricultural tourism products is essential. Supportive policies and encouragement for creativity in developing and promoting agricultural tourism products are needed to enhance local income and living standards.

Developing agricultural tourism in Na Hang and Lam Binh is a strategic direction that can boost the local economy and preserve cultural heritage. Achieving this potential requires unified effort and continuous commitment from all stakeholders.

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RESEARCH ON THE EVALUATION FRAMEWORK OF TREKKING TOURISM ROUTES: A CASE STUDY OF PU LUONG NATURE RESERVE IN VIETNAM

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ABSTRACT

Trekking Tourism in National Parks and Nature Reserves has become a trend worldwide and is chosen by many tourists, especially young people. However, trekking routes in National Parks or Nature Reserves are often constructed largely based on subjective experience with less rigorous evaluation and documentation methods. Typical among them is trekking tourism at Pu Luong Nature Reserve. It is located between the two northwestern mountainous districts of Thanh Hoa Province, for instance, Ba Thuoc and Quan Hoa. The article focuses on the overview of trekking itinerary evaluation framework research by domestic and foreign authors. The study uses the documentation research method to review the documentation, and at the same time, it uses techniques such as collecting, statistics, analysis, and synthesis of documents (secondary data). The research paper aims to select and apply the framework for evaluating trekking tourism routes and guide solutions to improve the attractiveness of trekking tourism routes in the Pu Luong Nature Reserve.

Keywords: Tourism route evaluation framework; Trekking tourism; Pu Luong Nature Reserve.

1. INTRODUCTION

Trekking is a form of long-distance walking tourism that combines walking tours to form a chain of nature exploration experiences for nature enthusiasts and those seeking endurance challenges. Renowned destinations such as the Himalayas in Nepal, Kilimanjaro in Tanzania, the Alps spanning France, Switzerland, and Italy, the Inca Trail in Peru, the Appalachian Trail in the United States, Camino de Santiago (the Way of St. James), the Tour Mont Blanc (TMB) traversing from France to Italy and around Switzerland, Tasmania in Australia, Tibet, Ciudad Perdida in Colombia, and the rainforests of South America consistently attract trekking aficionados. This type of tourism immerses visitors in the wilderness and provides unique cultural experiences as they explore remote and lesser-known regions.

In Vietnam, this trend is notably sought-after among young people, opening many prospects for the development of trekking tourism. With its mostly mountainous terrain, Vietnam has emerged as an attractive destination for trekking enthusiasts, with prominent landmarks such as Fansipan Peak, Ta Lien Son, Lao Than Mountain, Yen Tu, Langbiang, Apachai, Ba Den Mountain, Pu Ta Leng Peak, Sa Mu U Bo Peak, along with trekking routes in National Parks such as Cat Ba, Ba Be, Cat Tien, Cuc Phuong, Bach Ma, Chua Mountain, The Bidoup Nui Ba, and Chu Yang Sin, etc.

The western part of Thanh Hoa Province, with its favorable terrain and climate, is also prominent in the evolution of trekking tourism, especially at Pu Luong Nature Reserve in Ba Thuoc District. With its rugged mountain ranges, lush green valleys, and Thai villages, Muong villages, Pu Luong offers a unique trekking experience, combining nature exploration and local culture. Currently, trekking routes in the area are mostly formed from trails created by local people during the cultivation process, lacking a rigorous and thorough assessment method. In that context, this study focuses on the evaluation framework of trekking tourism routes by domestic and foreign authors to select and apply the trekking tourism route evaluation framework. The results obtained are both theoretically and practically meaningful, contributing to an objective assessment of the trekking route. At the same time, several measures were taken to improve the attractiveness of the trekking tourist route in the Pu Luong Nature Reserve.

2. LITERATURE REVIEW

According to the research conducted by O Chesanovskyi and T Kupach (2024) on trekking tourism in the Carpathian region of Ukraine, several key factors contribute to the promotion of hiking activities. These include diverse landscapes, marked trails, rich biodiversity, and the cultural traditions of local communities. The infrastructure supporting hiking tourism consists of a network of shelters and mountain huts, which ensure visitor comfort and safety. Sustainability and environmental consciousness play a crucial role in developing tourism aimed at preserving the natural and cultural resources of the Carpathians. This involves implementing measures to reduce tourism's environmental impact and support local populations.

As noted by Jan Nyssen (2019) in his description of trekking routes in Dogu'a Tembien, these trails are designed to showcase geological features and the mountain landscape, encouraging appreciation of geomorphological, geological, biological, and cultural diversity while fostering integration with local communities.

Diana Dryglas (2014) states that hiking is a significant phenomenon in contemporary tourism. The appeal of trekking lies in its varied terrains, unpredictable weather, and the sense of personal achievement it offers. While trekking is often linked to mountainous areas, it can be categorized into eight types: mountain, desert, rainforest, glacial, polar, riverine, swamp, and volcanic trekking. Each type presents unique opportunities for participants.

Kastenholz and Rodrigues (2007) suggest that hiking experiences should ideally take place at low to medium altitudes (below 3000m) to prevent overexertion. They emphasize the importance of providing adequate support services and the possibility of combining hiking with other adventure activities, such as river rafting or wildlife watching. The infrastructure used for hiking, including paths and roads, should be suitable to minimize fatigue, and where possible, cultural elements like visits to cultural sites or homestays should be included.

Research indicates that the development of trekking routes is influenced not only by geographical, topographical, and climatic conditions but also by a variety of other significant factors, including biodiversity, cultural heritage, community development, and infrastructure. Despite this, many aspects remain underexplored, highlighting the need for more in-depth and comprehensive studies to enhance the trekking experience

3. METHODOLOGY

3.1. Secondary data collection methods

This method is based on the inheritance, analysis, and synthesis of sources of documents, documents, figures, and information related to the study of reports, research articles, reference books, newspapers, and news articles... domestic and foreign to provide an overview of the theoretical basis and practice of trekking tourism. In addition, the study referenced secondary documents from the agencies and departments of the Ba Thuoc District Department of Culture and Information and the Department of Culture, Sports, and Tourism of Thanh Hoa Province.

3.2. Questionnaire survey method

The authors conducted a three-stage questionnaire survey to obtain the subjective opinion of the subject as a tourist who has participated in trekking:

- Stage 1: Selection of the survey group

The authors chose trekking tourists as the target group due to their direct experiences with the trekking routes, enabling them to offer valuable insights into the quality of the trails, infrastructure, and related services. Additionally, these visitors can assess the route's appeal, level of difficulty, and overall satisfaction. By focusing on this demographic, the authors aim to create a framework for evaluating trekking routes in Pu Luong Nature Reserve that is both realistic and aligned with the needs and preferences of visitors.

- Stage 2: Conduct the survey.

The author created an online questionnaire aimed at tourists trekking in Pu Luong Nature Reserve to collect their feedback on the criteria influencing their choice of routes. This feedback serves as a basis for drawing insights and conclusions regarding the evaluation framework for trekking routes within the Reserve.

- Stage 3: Synthesis and evaluation

The survey garnered 150 responses in total. The authors utilized a percentage-based approach to analyze the collected data, allowing them to provide the most objective insights regarding the trekking route assessment framework in Pu Luong Nature Reserve.

3.3. Field research methods

The author has surveyed the field at Pu Luong Nature Reserve with 3 trek routes (Pu Luong Peak Trek; Con Soi Stone Trek and Pu Luong Heritage Trail Treks). By surveying and evaluating the trekking routes in terms of landscape, infrastructure, accommodation facilities, rest stops, difficulty, and slope.

4. RESULTS

4.1. Overview of trekking tourism

4.1.1. Some concepts of trekking

According to Robert Strauss: "Trek is a long-term travel program that goes into remote areas

that are difficult to access using transportation, through the method of organizing walking so that tourists can separate themselves from the civilized world, learn about nature in remote and highland areas”

Unlike Robert Strauss, David Noland believes that: “Trek” is a long-distance, multi-day hiking trip from point A to point B (or back to A) during which the hiker does not have to carry heavy luggage or prepare food.”

In Vietnam, in the view of Trinh Le Anh and his research team, the experience of trekking tourism in the town of Sa Pa is that: “Trekking is not merely an outdoor picnic, a hike in the mountains, or a climb. Trekking is a journey that requires a high level of physical and material effort in the role of the performer. It was a challenging trip because of the length and the strangeness of the visitor's perception. It's at least a two-day trip”.

Therefore, the trekkers will need food, rest/accommodation on the way, equipment maintenance, and the assistance of a guide. Lodging here is defined as where guests can stay in the homes of local families in remote villages at camping sites.

Travelers must climb through natural areas with steep slopes or high mountains or through remote villages on high hills, where people gaze and graze at their livestock. Most villages were without telephone lines and police stations (where modern conveniences and services did not appear)”. (Trinh Le Anh, 2009).

4.1.2. Components and levels of trekking tourism

Table 1. The basic elements of trekking tourism

| Basic elements | Specific |
|--------------------|--|
| Trip length | Total time a visitor leaves home until returning home for a trekking trip. |
| Time on trek | Number of trek days at the tourist destination |
| Walking distance | Total miles/kilometer traveled during the trek |
| Maximum altitude | The highest altitude is relative to the sea level that visitors reach. This parameter not only demonstrates the ability to conquer but also control the dilution syndrome. The physical demands of each trek are typically divided into five levels, ranging from 1 to 5. Level 1 is the easiest and level 5 is the hardest. This level designation simultaneously reflects a synthesis of the maximum altitude, terrain, distance walked per day components. On the other hand, it is quantified in sports science as the huff-and-puff/sore muscle index. <i>Trekking level 1:</i> About 4 to 6 hours of walking per day through low altitude areas, below 610 meters or below 2000 feet, especially in National Parks, at this level trekkers do not need to prepare much luggage. <i>Trekking levels 2, 3, and 4:</i> With these levels now being the preferred choice for most travelers, they fit the fitness and needs of most trekkers as well as the trekking programs of trekking tour companies worldwide. So far there is no clear way to differentiate between the criteria for these three levels, although there are still some other factors such as terrain and weather... These factors always influence the difficulty of the trekking route. Typically, a level 3 trekking journey will be made with a duration of 24 trekking times of 6-7 hours of walking per day and an altitude change of 2000 -3000 feet at about (610 meters to 915 meters) a day, an altitude above sea level 10,000 to 15,000 feet at about (3050 – 4575 meters). <i>Trekking level 5:</i> Requires a daily minimum of 10 hours of hiking a minimum height difference of 4000 feet (1200 meters) a day and a peak elevation gain of over 17,000 feet (5185 meters). |
| Physical challenge | |

Below are the common components that professional trekking organizers around the globe attempt to quantify to classify trekking levels. This is to classify the trekking products that they extend to visitors, to make it easier for visitors to choose the right products, and at the same time to support the supplier in serving better (*Trinh Le Anh, 2009*).

4.2. Trekking routes in Pu Luong Nature Reserve

4.2.1. Introduction to the field of study

Through changes in phases, currently, the forest area of the Pu Long Nature Reserve Management Board is 16,999.81 ha. The reserve is about 200 kilometers Southwest of Ha Noi City.

Pu Luong Nature Reserve consists of two mountain ranges running parallel in the Northwest-Southeast direction and separated by a valley. The terrain here has both stepped and linear characteristics with a modification from high mountain ranges surrounding the plateaus to low mountain ranges with valleys and valleys of structural erosion. The smaller ranges in the southwest are formed mainly from igneous and metamorphic rocks with the highest point having an altitude of 1,700 meters as the Pu Luong peak. The larger range in the northeast is part of a continuous limestone zone running from Cuc Phuong National Park to Son La Province. The rocky area is sharply divided so that there is a relatively large slope, sloping gradually from northwest to southeast. The landscape in this area is dominated by cat-eared limestone mountains, which, combined with the distinctive karst formations, create numerous stunning caves, including Doi Cave (Kho Muong Cave).

The valley area located in the two districts of Ba Thuoc and Quan Hoa is also the main community tourism development area of the Pu Long Nature Reserve buffer zone. With flat terrain, surrounded by a limestone mountain system, these villages have a very advantageous atmosphere and landscape to develop tourism such as the community of Hieu, Kho Muong village, etc.

Pu Luong Nature Reserve represents a globally representative example of the only remaining large-scale and highly biodiverse limestone forest ecosystem in the North Vietnamese lowlands and is home to many economically valuable medicinal herbs. With a tropical climate, winds, and cool, pristine scenery. According to the results of the investigation of the 2012-2013 listing project, the Pu Long Nature Reserve has 908 typical animal species such as *Ursus thibetanus*, *Chrotogale owstoni*, *Trachypithecus phayrei*, *Capricornis sumatraensis*, monkeys, etc. The Pu Luong Nature Reserve currently has 1,579 plant species, of which, there are 106 high-ranking plant species named in the 2013 IUCN Red List as *Cypripedioideae*, *Anoectochilus setaceus*, *Pinus kwangtungensis* Cun ex Tsiang, *Taxus chinensis*, *Paris polyphylla* Smith, *Cinnamomum balance* Lecomte, *Annamocarya*, *Burretiodendron hsienmu*, *Chukrasia velutina*, *Aquilaria crassna*, *Madhuca pasquieri*. Etc. There are also a total of 590 species of medicinal plants that grow naturally such as *Nervilia fordii* Schultze, *Rauvolfia verticillata* (Lour.), *Gynostemma pentaphyllum*, *Dracaena cochinchinensis* (Lour.) S.C. Chen, *Maranta arundinacea*, *Anoectochilus calcareus* Aver, *Rhizoma Smilacis Glabrae*, *Pinus kwangtungensis* Cun ex Tsiang, some species in the genus Lime vase, genus *Heptapleurum*, and genus *Strychnos nux-vomica*.

Pu Luong Nature Reserve offers visitors the wild, casual beauties of a traditional land bearing the bold, cultural identity of the Thai ethnic group, the ethnic group of Muong. It still

preserves the old floorboards, the traditional costumes, dances, customs, festivals, and traditional crafts of the Thai people: Mai Da Dieu festival; Muong Kho festival, Muong Ca Da festival. Along with that are typical Thai dishes such as bamboo rice, sticky rice dumplings, dried radish soup, pig offal soup, rice wine drunk from a jar, etc, and typical Muong dishes such as fermented pork, wild fruit soup, fish salad rolls, meat salad, etc.

4.2.2. The status of trekking routes in the Pu Luong Nature Reserve

Nowadays, trekking activities in Pu Luong Nature Reserve have attracted a lot of tourists, not only domestic visitors who like to explore but also many foreign tourists who enjoy the wild, majestic beauty of the Ba Thuoc Forest Mountain. Accommodation activities are concentrated in the buffer zone of the Pu Luong Nature Reserve with many different types of accommodation such as homestay homestay homestay, cottages, resort resorts, and hotels. Among them, the accommodation facilities chosen by many tourists are currently concentrated in Don Village, Bang Village, Hieu Village, etc., with costs ranging from 150,000 VND to 1,000,000 VND per guest per night, meeting the needs of many people. Customers range from popular to high-end. However, as of now, tourism activities in this area remain limited, and additional services such as tour guides, food and beverage sales, and rental of climbing or camping equipment are not available. In addition, infrastructure such as toilets, shelters, climbing trails, and signage has not been invested in.

From surveying, collecting actual data and based on elements researched by professional trekking organizers around the world; According to research by Trinh Le Anh (2009), the author has made a preliminary assessment of 3 trekking routes in Pu Luong Nature Reserve as follows:

Table 2. Basic elements of the trekking route at Pu Luong Nature Reserve

| Basic elements | Route 1: Pu Luong Peak | Route 2: Con Soi Stone | Route 3: Pu Luong Heritage Trail Treks |
|--------------------|------------------------|------------------------|--|
| Trip length | 2 days 1 night | 1 day | 2 days 1 night |
| Time on trek | 20 hours | 9 hours | 18 hours |
| Walking distance | 10,4 kilometers | 6,74 kilometers | 29,5 kilometers |
| Maximum altitude | 1700 meters | 1126 meters | 736 meters |
| Physical challenge | Level 3 | Level 2 | Level 3 |

In the process of participating in trekking in Pu Luong Nature Reserve, besides the basic elements, visitors are usually interested in some other factors, below is a chart showing the survey results obtained which the author adds some additional elements:

According to the chart, trekking visitors are very interested in the factors of Security and Safety (98%); Equipment and Supplies (99.33%); and Access to Medical Services (98.67%). In particular, the security and safety factors are considered a top priority, showing that trekking visitors are very concerned about avoiding risks during the journey. They also pay special attention to access to medical services, which reflects their concern for handling emergencies and health problems when trekking. At the same time, the high concern for the quality of equipment and supplies shows that visitors want to ensure that the support equipment will meet the requirements of the trip.

In addition, trekking visitors also pay much attention to other factors such as camping on the trekking route (96.67%); Tourism resources associated with the cultural values of the community (93.33%); and Scenery on the route (93.33%); Trekking guides and guides' knowledge (86.67%). The great interest in camping conditions shows that visitors appreciate the comfort and convenience of camping areas. They also pay special attention to local cultural values and tourism resources and want to learn and experience the culture of the indigenous community. The places where you can see and take pictures of the scenery along the route are an important factor, giving trekkers great visual experiences throughout the journey. An important factor is the local guides and their knowledge, because they are the ones who lead the way, and provide food services and local knowledge.

Slope (66.67%) and Ideal time to trek (60.00%) are 2 factors that trekkers care less about than other factors. However, although not a top priority, the slope still affects the trekker's comfort level and ability to participate, and it is easy to adjust the schedule or choose the right time according to weather conditions and personal schedules.

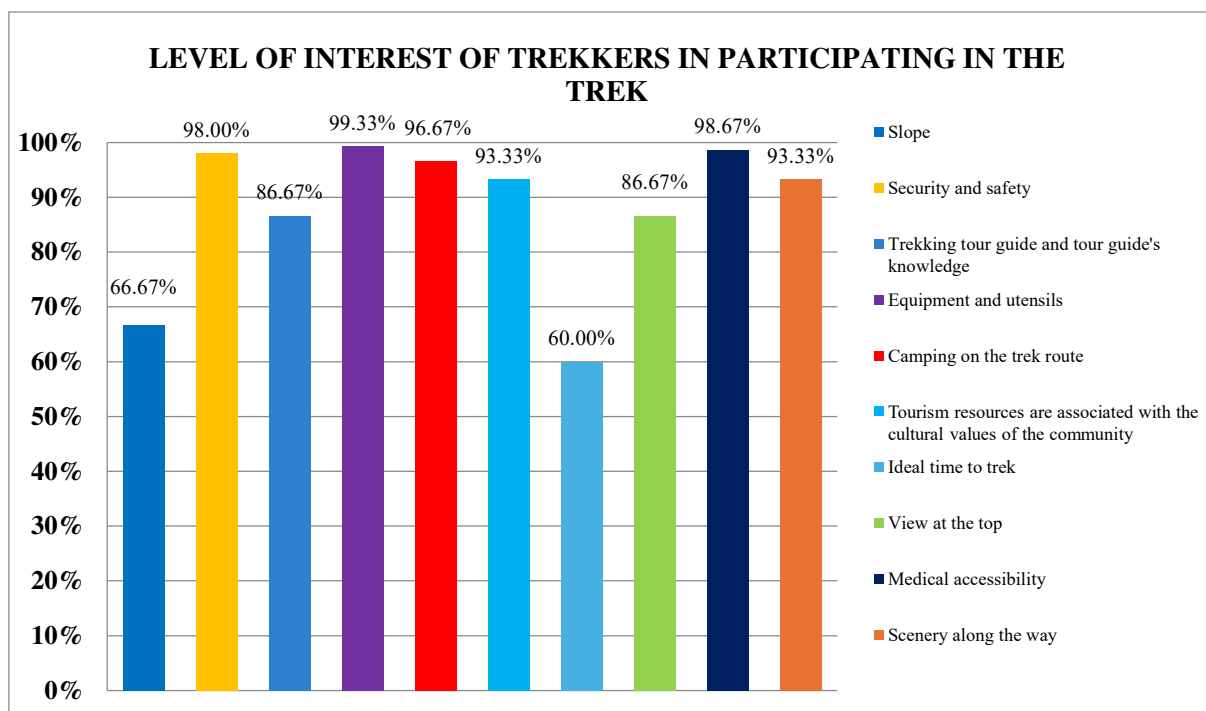


Chart 1. Level of interest of trekkers when participating in trekking at Pu Luong Nature Reserve

4.2.3. Some solutions to enhance the attractiveness of trekking tourism routes in Pu Luong Nature Reserve

Regarding awareness raising and human resource development for trekking tourism: Cooperate with organizations/enterprises to open training courses, improve tourism management and operation capacity for officials and employees in Pu Luong Nature Reserve; Provide professional training and issue cards for trekking tour guides; Raise awareness of biodiversity

conservation for visitors through environmental interpretation on the route. Provide training on trekking safety skills, including first aid, rescue techniques, and how to handle emergencies.

Regarding infrastructure and technical facilities for trekking tourism: Build infrastructure such as toilets, shelters, and camps on mountain trails. Create a clear and consistent marking system for trekking routes, using signposts, markers, and digital maps; Renovate some difficult and steep trails with stone blocks and steps; Provide and fully equip safety tools such as first aid kits, rescue tools, and emergency communication devices at important points along the route.

Regarding trekking tourism products: Provide additional tourism services such as tour guide services, selling food and drinks, renting climbing/camping equipment, and experiencing herbal baths of the Thai ethnic group.

Regarding security and safety in organizing trekking tourism activities: Periodically monitor and inspect the infrastructure system and technical facilities of trekking tourism to ensure safety in all seasons; Provide medical and rescue units on the trekking route, first aid handbooks for tourists, and have a risk management plan, medical access in case of emergency. Periodically develop training programs on security and tourism safety for tour guides and local people.

5. CONCLUSION

Trekking routes are not only evaluated by factors such as trip length, trekking time, walking distance, maximum altitude, and physical challenge according to research by professional trekking organizers worldwide; according to research by Trinh Le Anh (2009). In this study, the author has developed some additional factors based on the assessment of the level of interest of trekking visitors when participating in the trek. The results show that this study not only provides a framework for evaluating trekking routes in Pu Luong Nature Reserve but also opens directions for managing and developing trekking tourism for the Reserves.

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ACCESSIBLE TOURISM AT SOME MUSEUMS IN HANOI: ORIENTATION AND SOLUTIONS

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ABSTRACT

The overall purpose of accessible tourism is to ensure that everyone, regardless of circumstances or abilities, has access to all tourism services at all tourist sites. The topic is about the execution of the United Nations' Sustainable Development Goals, specifically the third aim, "Good Health and Well-being." Museums play a vital role in tourism, by conserving the past, present, and future as portrayed via exhibitions. The museum is quite stable, which makes it ideal for investment, upgrading, and appropriately adjusting facilities and services to meet the needs of the target tourism audience. The study's research goal is to assess the implementation of accessible tourism at certain museums in Hanoi and to propose solutions and recommendations to improve the accessibility of museums in Hanoi to promote accessible tourism. The research is qualitative, with primary data acquired through observations and direct interviews. The evaluation of the implementation of accessible tourism in museums is divided into five dimensions: information, transportation, common requirements, universal design, and accessibility. This study aims to give metrics and recommendations for improving the implementation of accessible tourism in museums. Encourage persons with impairments to participate in tourist activities, enhancing their health and social welfare. For a society that values sustainable development.

Keywords: accessible tourism, tourism for all, museum, disability.

1. INTRODUCTION

Tourism has become a fundamental aspect of both cultural and spiritual life, and it is rapidly growing into a major economic sector worldwide. Today, tourism is a global phenomenon with widespread concern. According to the World Health Organization (WHO), 15% of the global population, or approximately 1 billion people, live with disabilities (WHO, 2017). Regardless of their circumstances, all individuals should have access to tourism infrastructure, products, and services, which are crucial for fostering sustainable tourism. Beyond being a basic human right, accessibility presents a business opportunity for destinations and tourism providers, helping them attract a broader audience and boost revenue.

In Vietnam, people with disabilities and the elderly often face significant challenges in accessing tourism infrastructure and services. These difficulties often stem from attitudes and lack of awareness among service providers and others in the community. Many tourism service providers do not cater to the needs of people with disabilities or the elderly and lack the knowledge required to offer appropriate support (Hai Nam/VOV.VN, 2021). In addition to medical care,

employment, education, and leisure activities, travel is vital for everyone, including the elderly and those with disabilities. Equal treatment and respect are essential when providing travel services, and addressing this issue is not only a social responsibility but also a legal obligation.

In Hanoi, there are 111,173 people with disabilities, making up 1.33% of the population (Ministry of Labor, War Invalids, and Social Affairs, 2022). Nationally, Vietnam has 7 million people with disabilities, representing 7.06% of the population (Government Newspaper, 2022). This data indicates that Hanoi has a relatively high proportion of individuals with disabilities compared to other provinces and cities. Museums play a crucial role in Hanoi's tourism landscape by preserving history, culture, and future perspectives through exhibitions. While attractions such as restaurants and hotels may experience fluctuations—such as closures during the COVID-19 pandemic—museums have continued operating, ensuring stability. This stability allows for ongoing investment and improvements in facilities to better serve a broader audience, including individuals with disabilities. Vulnerable members of society often seek accessible venues, and museums provide such inclusive spaces. Most of Hanoi's museums are concentrated in the city center, making them easily reachable by public transit. In contrast, museums or attractions located in suburban areas are less accessible to vulnerable travelers. Additionally, museums are increasingly catering to a diverse range of visitors by offering facilities and technical equipment designed to meet the needs not only of the public but also of vulnerable groups in the community.

The primary aim of this study is to evaluate the implementation of accessible tourism in select museums in Hanoi and to propose solutions and recommendations for improving museum accessibility, thereby promoting accessible tourism. The study addresses four key questions: Do the selected museums meet the criteria for accessible tourism? How effectively is each dimension of accessible tourism (information, transportation, common requirements, universal design, and accessibility) implemented at each museum? Which dimensions are the most and least effectively implemented across the museums? How can the effectiveness of accessible tourism implementation be improved at Hanoi's museums? This research is qualitative in nature, with primary data collected through observations and direct interviews.

2. LITERATURE REVIEW

2.1. History of research on Accessible Tourism

The initial intersection between tourism and disability dates to the development of the Stoke-Mandeville Games, which later evolved into the Paralympic Games in 1960. According to Darcy et al. (2017), “people with physical or mobility disabilities need to be transported and accommodated in the host country when they come from other places, other countries to participate”. According to Van Horn and Isola (2006), “outside the context of sport, people with disabilities who wish to travel have been virtually absent from the history of tourism due to inaccessibility in terms of transportation and accommodation”. According to Woodside and Etzel (1980), “It was with the United Nations Declaration (1975) on the Rights of Disabled Persons and the 1976 proclamation of 1981 as the International Year of Disabled Persons that a social movement for disabled persons began to develop, calling for their rights in all areas of citizenship, including travel and tourism” (Simon Darcy, Bob Mckercher and S. Schweinsberg, 2020).

Accessible Tourism emerged from the final convergence of two stages, the final stage in the process of “cultural normalization” of tourism was its recognition as a universal right (Gascón, 2016). At the Manila Conference in 1980, 107 signatories recognized “the right to travel as an aspect of human fulfillment” (UNWTO, 1980)”, and was officially approved by the UNWTO in 1999 on the “Global Code of Ethics for Tourism”, which clearly stated that “tourism for persons with disabilities should be encouraged and facilitated” (Lucía Rubio-Escuderos, Hugo García-Andreu and Javier Ullán de la Rosa, 2021)

In 1980, at the UNWTO Council Session held in Manila, the UNWTO adopted the Manila Declaration on World Tourism, where tourism and accessibility were first linked. The term “Accessible Tourism” was first introduced in the academic literature in 1989, in a report published by the English Tourism Council entitled “Tourism for all” (Baker, 1989). The document aimed to describe the progress made in the country since 1981 (the year declared the International Year of Disabled Persons) in designing, promoting, and implementing tourism services that are accessible to all, regardless of age or disability.

The first academic authors to use the term “Accessibility” in tourism was Ralph Smith in his 1987 publication “Leisure of disabled tourists: Barriers to Participation”. The main objective of this paper was to establish hypotheses and questions for future research. The paper argued that disabled people face barriers to participating in leisure activities, which reduce their sense of freedom and personal feelings. The importance of this paper is that it guides future research on the topic of accessible tourism.

The first academic work based on field research appeared during the 1990s. However, the educational significance of Accessible Tourism studies only began to gain momentum from 2000 onwards when influential journals such as *Tourism Management* and *Annals of Tourism Research* began publishing articles on the topic (Lucía Rubio-Escuderos, Hugo García-Andreu and Javier Ullán de la Rosa, 2021)

In general, studies on accessible tourism in general are very rich and diverse, relating to many aspects of tourism such as the behavior of tourists with disabilities when participating in tourism; problems, difficulties, and barriers they encounter in tourism; costs of paying for tourism and from the perspective of tourism service providers, there are studies on accommodation, means of transportation, tourist destinations... In addition, the economic potential of accessible tourism is also an attractive topic for research because of its relevance to many other stakeholders, not just tourists with disabilities. In summary, research on accessible tourism through various studies shows that the implementation of accessible tourism not only benefits people with disabilities but also brings benefits to other beneficiaries such as the elderly, pregnant women, and normal people.

2.2. Accessible Tourism

According to Mr. Taleb Rifai, Secretary General of UNWTO, “Accessibility is a central element of any responsible and sustainable tourism policy. It is both a human rights imperative and an exceptional business opportunity; Above all, we must come to appreciate that accessible tourism does not only benefit persons with disabilities or special needs, it benefits us all” (UNWTO, 2016).

According to the Center for Universal Design (2009), “Universal design means the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design”. Universal design includes 07 principles: Equitable use; Flexibility in use; Simple and intuitive; Perceptible information; Tolerance for error; Low physical effort; Size and space for approach and use (Center for Universal Design, 2009).

There is still no universally agreed-upon and authorized definition of "accessible tourism" at the time of this study. The development of accessible tourism throughout time has resulted in a variety of synonyms, with different nations adopting different terminology and no consensus on the usage of a single phrase common accessible tourism. Examples of related words include inclusive tourism, adaptive tourism, tourism for everyone, barrier-free tourism (BFT), accessible tourism, and universal tourism bridge...

Each research specialist has a distinct definition, and there has been no international agreement on an acceptable definition for all parties. According to Grünewald, L. et al. (1996), “A series of activities performed during free time devoted to tourism by people with restricted capacities that makes their fully functional and psychological integration possible and so full individual and social satisfaction is obtained”. According to Darcy, S. (2006), “A process of enabling people with disabilities and seniors to function independently and with equity and dignity through the delivery of Universal Tourism products, services and environments.” (UNWTO, 2016).

As accessibility has evolved, so has the concept of Accessible Tourism. It refers not only to tourists with disabilities but also to accommodation, the adaptation of the tourist environment to make it accessible to all groups of the population (World Tourism Organization, 2016). According to the Economic and Social Commission for Asia and the Pacific (2009), “Accessible Tourism is tourism and travel that is accessible to all people, with disabilities or not, including those with mobility, hearing, sight, cognitive, or intellectual and psychosocial disabilities, older persons and those with temporary disabilities”. According to Agnes, F. et al. (2010), “Accessible tourism is the ongoing endeavor to ensure tourist destinations, products, and services are accessible to all people, regardless of their physical limitations, disabilities, or age. It encompasses publicly and privately owned tourist locations. The improvements not only benefit those with permanent physical disabilities but also parents with small children, elderly travellers, people with temporary injuries such as a broken leg, as well as their travel companions”. According to Darcy & Dickson (2009), “Accessible Tourism is a form of tourism that entails strategically planned collaboration processes between stakeholders that “enable people with access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services, and environments. This definition adopts a whole-of-life approach to tourism. The benefit of accessibility in tourism is evident for every person throughout the whole of their lives. This would include people with permanent and temporary disabilities, people with specific medical conditions, seniors, and families with small children.” (Dimitrios Buhalis, Simon Darcy, 2010).

In short, the general goal of accessible tourism is that everyone - regardless of circumstances and abilities, can access all tourism services at all tourist destinations. The main target audience of

accessible tourism is people with disabilities, however, when tourism services and tourism facilities at tourist destinations are aimed at accessible tourism, in addition to the main target audience, there are also beneficiaries. From the benefits of accessible tourism, it also brings benefits to the elderly, children, people with accidents, and illnesses, people with bulky luggage... Accessibility also benefits businesses and tourist destinations by improving quality, creating differences, and new market opportunities, and being more competitive, socially responsible, and sustainable economic-social-environmental development (R D Wiastuti, M P Adiati and N S Lestari, 2018).

2.3. Subjects of accessible tourism

Main subject

According to the World Health Organization (WHO, 2017), an estimated 15% of the world's population, or more than 1 billion individuals, has at least one kind of impairment. According to this organization, the number of persons with disabilities will rise in the future, owing to the aging of the global population and a growth in the prevalence of several chronic diseases. The issue of disability has evolved into a worldwide concern that needs coordinated study and solutions. There are several discrepancies between the idea of disability and impaired persons. That distinction is determined not just by consciousness and comprehension, but also by each country's historical economic, cultural, and social situations and changes as it progresses through successive phases of development. These many points of view revolve around the phrases "disability", "incapacity", "reduced ability", "disability"...

In Vietnam, the term "people with disabilities" is increasingly being used in place of "disabled people". According to Nguyen Thi Bao (2006), "People with disabilities are people who have defects in one or more bodies or have physiological, psychological, or other human function disorders, regardless of the cause." This results in partial limitation or loss of ability to work, as well as many difficulties in living, studying, and integrating into society.

The Convention on the Rights of Persons with Disabilities – CRPD (2006) gives an opinion, "Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others" (United Nations, 2006). According to Article 2 of Vietnam's Law on People with Disabilities (National Assembly, 2010), "Persons with disabilities are people with defects in one or more body parts or functional impairments expressed in the form of disabilities that prevent them from working." Living and studying are difficult. Vietnam's definition of "Persons with Disabilities" is restricted to medical problems and does not address the obstacles that individuals with disabilities have while obtaining public services or engaging in social activities (Tran Thi Binh, Vu Hong Phong, & Phuong Thao, 2017).

Changes and developments in the perspectives of individuals and organizations are showing a transformation in the way of working with people with disabilities, focusing on ensuring the rights of people with disabilities to access services or support necessary in their lives. According to the rights approach, people with disabilities are considered subjects with the same rights as other citizens in society (Tran Thi Binh, Vu Hong Phong, Vu Phuong Thao, 2017). Same as Principle 1:

Equitable use. Applied to the tourism industry, fairness comes from the use of products, services, and facilities at tourist destinations. The implementation of fairness is moving towards the concept of accessible tourism – a trend of an aging population.

Related subjects

Related subjects are those who benefit from the benefits that accessible tourism brings from tourism products, services, and facilities when the tourist destination implements the concept of accessible Tourism.

Elderly people are the beneficiaries, right after people with disabilities, because the aging population in the world is becoming stronger, especially in developed countries. According to the United Nations Population Fund (UNFPA) and HelpAge International (2012), in 1950, there were 205 million people aged 60 and over worldwide. By 2012, the number of elderly people increased to nearly 810 million people. It is estimated that this number will reach 1 billion people in nearly 10 years and will double to 2 billion people by 2050 (UNFPA, HelpAge International, 2012). Vietnam is one of the countries with the fastest population aging rate in the world. People aged 60 and over accounted for 11.9% of the total population in 2019, and by 2050, this number will increase to more than 25%. By 2036, Vietnam will enter a period of aging population. This has huge implications for the tourism industry, particularly regarding accessibility issues as disability rates increase with age.

Age and reduced capacity are directly related to each other, but not all elderly people have disabilities and that is why the elderly are classified as beneficiaries of Accessible Tourism, becoming an important target group of accessible tourism. In addition to the notion that the elderly are simply people who benefit from health care, in countries with outbound tourism, elderly tourists are the population over 60 years old, with or without disabilities, who travel at the same or even higher levels than other population groups. Due to various factors such as stable income, more free time, and the ability to travel more (World Tourism Organization, 2016).

In addition, some other subjects such as People with mobility problems: People who have just had surgery or are sick at a particular time; People with temporary disabilities or people who have to use crutches for a certain period of time; People carrying luggage, heavy objects, or strollers or carts; Pregnant; Children; People with short and tall stature or overweight... People with information problems: Do not understand the destination environment, which leads to disorientation when using transportation or how to move at that location; Not knowing the language leads to difficulty in communication; Not understanding culture and customs leads to difficulties in dealing with people...

The above issues show that regardless of human capabilities or the surrounding environment, access issues can be created, and these issues can be resolved through the implementation principles of Universal Design. Universal design benefits the entire population because, for most of their lives, people will experience the same needs regardless of disability. Furthermore, implementing accessible tourism not only benefits people with disabilities or other beneficiaries but also benefits tourists and local people, because of mobility transportation, information, and communication... (World Tourism Organization, 2016).

3. METHODOLOGY

3.1. Document Research

The authors reviewed various sources, including research papers, books, newspapers, domestic and international documents, and online articles to gather relevant information on accessible tourism. Two key documents stand out as the most influential in shaping the theoretical foundation for this research: *"Implementation of Accessible Tourism Concept at Museums in Jakarta"* by R. D. Wiasuti, M. P. Adiati, and N. S. Lestari (2018), and *"Manual on Accessible Tourism for All: Principles, Tools, and Best Practices – Module I: Accessible Tourism – Definition and Context"* by the World Tourism Organization (2016). According to research by R D Wiasuti, M P Adiati, and N S Lestari (2018), the evaluation of the implementation of accessible tourism in museums is divided into five dimensions: information, transportation, common requirements, universal design, and accessibility. This study employed the five dimensions of accessible tourism mentioned above as criteria to evaluate the implementation of accessible tourism at some museums in Hanoi.

3.2. Observation

The authors conducted direct observations at three selected museums, using a prepared observation guide to collect data and take notes. During the visits, the authors engaged with museum staff to gather additional insights related to the observations and to strengthen the data collection process.

3.3. Interview

The authors conducted interviews with experts in accessible tourism to evaluate the implementation of accessible tourism at the three selected museums, focusing on both advantages and limitations. The expert interviews were held from 4:30 p.m. to 5:30 p.m. on December 21, 2023, via an online platform (Google Meet). Additionally, interviews were conducted with accessible tourism participants between January 7 and January 10, 2024. The questions explored the challenges and benefits of visiting these museums, reasons for not visiting (both objective and subjective), and suggestions for improving access to tourist attractions, particularly museums.

3.4. Questionnaire Survey

The authors designed a questionnaire using Google Forms to collect data from tourists who have visited the three museums selected for the study and are part of the accessible tourism demographic. The questionnaire employed a Likert scale with responses ranging from 1 (Very Poor) to 5 (Very Good). A total of 23 questionnaires were distributed, with 18 valid responses received. The survey was conducted between December 15, 2023, and January 3, 2024.

To address the limited number of survey participants, the authors supplemented the data collection with in-depth interviews, providing a more comprehensive understanding of the experiences and perspectives of accessible tourists. Despite the limited number of participants (23 respondents with 18 valid responses), the combined use of surveys and interviews helped clarify the opinions of the target group on the accessibility of the museums.

3.5. Data Analysis

Using tools such as Google Forms, Excel, and Word, the authors synthesized, compared, and analyzed the data collected from observations, surveys, and interviews. Based on these results, the authors formulated assessments, provided comments, and made recommendations for improving the implementation of accessible tourism in the three museums under study.

4. RESULTS

4.1. Observation results

Information

The Vietnam Museum of Ethnology, the Vietnamese Women's Museum, and the Vietnam Fine Arts Museum all have official websites. All information about the museum can be found on web tools like Google. The Vietnam Museum of Ethnology has social media such as Facebook, Instagram, YouTube, and TripAdvisor. The Vietnamese Women's Museum has Facebook, Instagram, YouTube, TripAdvisor, and Twitter. Vietnam Fine Arts Museum has Facebook, Instagram, YouTube, and Twitter. All major websites have a contact phone number or email. Most other media leave their email and main website links in their introductory information. However, everything from the main website to other media of the museum does not mention or give detailed information about the appropriate time for visitors to contact and therefore there is no time for visitors to contact. Contact and receive a response from the museum. Regarding private messaging services, websites do not have it. On all platforms, some museum information has not been fully updated. Especially on media such as YouTube, Tripadvisor, and Twitter, information about upcoming and ongoing events hardly appears, only basic information about the museum. In addition, on these platforms, posting is irregular, leading to slow updates of new information. Information about new and upcoming events is only being updated on the main website, Facebook, and Instagram.

Transportation

Located in Hanoi City, all types of vehicles can travel to museums, except for trains, because no train lines are passing through all three museums. However, from the train station, it is also possible to connect by other means or walk to these museums. Means of transport are easily accessible to tourists, including foreign tourists, because public transport such as taxis can be booked directly on the online platform. Movement in museums is all on foot. Because the museum space is in multi-story buildings, the area is not too large to move by other means. The Vietnam Museum of Ethnology has the largest museum area compared to the other two museums, but the facilities such as roads and area are not large and not enough to have other means of operation. Moving to the museum is an alternative to walking.

Common requirements

The Vietnamese Women's Museum and the Vietnam Fine Arts Museum are in the center of Hanoi City, so parking is limited. Meanwhile, the Vietnam Museum of Ethnology has a spacious outside parking lot, meeting the space for large passenger cars. Museum parking lots are monitored to ensure safety. Regarding the parking area for people with limited mobility, the Vietnam

Museum of Ethnology has a separate area for wheelchairs, marked but in the process of being completed, while the Vietnamese Women's Museum, unmarked, and the Vietnam Fine Arts Museum does not have this area.

Regarding communication, the Vietnam Museum of Ethnology and the Vietnam Women's Museum provide both visual and audio communication methods to explain the museum collection. While the Vietnam Fine Arts Museum only uses images. Although equipped with sound, the sound is not clear, it is barely audible, and not all collections have sound. The Vietnamese Women's Museum has automatic audio guides, the Vietnam Museum of Fine Arts has automatic captions via the iMuseum VFA application, and the Vietnam Museum of Ethnology's automatic caption system has stopped working. due to the impact of the COVID-19 epidemic.

Regarding signs and instructions, most of the notices at the three museums are in visual form, printed - displayed on boards. Signs such as wheelchair entrance signs, restroom signs, and emergency signs are all complete. Some signs have symbols only, some are text with symbols, and some are text only.

Regarding lateral movement, three museums are equipped with wheelchair access, all on the right side. If there is a height difference between the floors, the Vietnam Museum of Ethnology will mostly be equipped with ramps. The Vietnam Fine Arts Museum and the Vietnam Women's Museum are not equipped with other ramps except the wheelchair ramp mentioned above. Portable ramps at these two museums are not provided.

Regarding vertical movement, the Vietnamese Women's Museum and the Vietnam Fine Arts Museum are multi-story buildings, while the Vietnam Museum of Ethnology has just a multi-story, two-story building, and a full frame. outdoor park. All three museums have elevators for people with disabilities. The elevators at the three museums have similarities such as the buttons do not have braille, and there is no sound to announce the floor number. The Vietnam Museum of Ethnology has a more accessible elevator than the other two museums.

Regarding restrooms, the three museums all have restrooms and toilets for people with disabilities. The restroom is equipped with signs so visitors can identify the location. The restroom space at the three museums is adequate but difficult for people with disabilities. Access is there but the level of access is not high.

Regarding price, museum entrance prices vary depending on different audiences. Only at the Vietnam Fine Arts Museum, tickets for people with disabilities are free. In terms of payment for ticket prices, all three museums only accept cash and do not accept payment by other forms such as bank transfer or card swiping.

Universal design

In most of the three museums, the display information boards, and artifact annotations are of a height appropriate to the average height of Vietnamese people. However, there are still descriptions of artifacts and information displayed that are too high for the vision of children and people with disabilities, especially those displayed in square glass cabinets. The information and annotations are placed horizontally with the square glass cabinet, so visibility is even more difficult to access. According to observations, there are cases where the information is too low, leading to

foreigners, whose average height is higher than the average height of Vietnamese people, because their vision is too high, but the information is too low, they must bend very deeply to reach it.

Notes on artifacts and collection information at the three museums are in three languages: Vietnamese, English, and French. The Vietnamese Women's Museum, using the Audio Guide, provides audio explanations through devices and is equipped with many languages: Vietnamese, English, French, Japanese, Korean, and Spanish. The Vietnam Museum of Fine Arts does not use an Audio Guide but instead uses automatic narration with iMuseum VFA. This is a multimedia application (audio, text, photo) that helps users visit online or in person at the Vietnam Fine Arts Museum. The application is integrated on both Android and iOS platforms, using QR code scanning and iBeacon positioning technology. iMuseum allows viewing high-quality images of works; Reading the introductory content; determining the exact location of exhibiting artifacts; Seeing display system diagrams; and Distinguish rooms that have been, are, or have not been visited by color... iMuseum VFA is integrated into 9 languages: Vietnamese, English, French, Chinese, Japanese, Korean, Spanish, Italian, and German.

There are no physical barriers in the walkways, stairs, and hallways in the sightseeing area to prevent visitors from visiting. Emergency alarms, fire suppression systems, and fire extinguishers are placed in easily recognizable areas without affecting other displays. Most fire extinguishers are placed in the corner of the wall.

Accessibility

The Vietnam Museum of Ethnology and the Vietnamese Women's Museum have opening and closing times listed on the ticket counter and the ticket. All three museums did not have any information regarding the estimated time needed to visit, covering the entire museum area. Regarding tour guides who use sign language, none of the three museums have them. Regarding maps, the three museums all use maps with incomplete annotations placed directly at the museum. In short, the maps at the three museums are not synchronized between the maps directly located at the museum and the maps in the handbooks or maps on the museum's media.

4.2. Interview and questionnaire survey results

Processing survey data with the number of ballots issued is 23, the number of valid ballots received is 18, and the number of ballots processed is 18. The survey period is from December 15, 2023, to January 3, 2024. Summary Regarding the occupation of the survey participants, the majority are students. Regarding means of transportation, most survey participants choose the bus as the means of transportation.

The average score of the five aspects of accessible tourism at the Vietnam Museum of Ethnology; Vietnam Women's Museum; and Vietnam Fine Arts Museum through the survey is 3.38; 3.25; and 3.03 respectively. All three museums are assessed to meet the conditions of accessible tourism at a fairly (average) level. The Vietnam Museum of Ethnology, through the survey, showed that the museum performed best in the aspect of accessible information, while the other two museums were both in the aspect of accessibility. In terms of poor performance, the two museums, the Vietnam Women's Museum and the Vietnam Fine Arts Museum, both performed in

the aspect of universal design, while the Vietnam Museum of Ethnology performed in the aspect of transportation.

Combined with interviews with survey participants to clarify opinions, the authors conducted in-depth interviews with survey participants for museums, most of whom were people with mobility disabilities. Through the interviews, some common points were made as follows:

- *First*, the means of transportation of most survey participants was the bus. This means of transportation is difficult for people with disabilities to access due to the facilities and stopping times of the bus.

- *Second*, the issue of information, most survey subjects were students, and the search for information took place on online platforms and social networks. Therefore, information is easy to find, easy to read, and easy to recognize. However, if we delve into the issues of information accessibility, the survey participants are not interested in and aware of these factors, especially information about the accessibility of infrastructure and museum accessibility services on online platforms and social networks.

- *Third*, most survey participants are people with mobility disabilities, so they are more interested in mobility issues, including walkways, ramps, and elevators. Information issues are less concern for this group.

Through surveys and interviews with tourists who are subjects of accessible tourism, it can be concluded that each group with different types of disabilities will be interested in factors that directly affect that type of disability. When researching, it is necessary to pay attention to this issue, and there is an appropriate division to propose improvement measures for each different group.

5. IMPLICATIONS AND CONCLUSION

5.1. Implications

After synthesizing research results through observations, surveys, and expert opinions, the five dimensions of accessible tourism are information, transportation, common requirements, universal design, and accessibility. The museums selected for the study generally perform the above five dimensions from worst to best in the following order: common requirements; information; transportation; universal design; and accessibility.

First, common requirements

Security guards should adopt improved communication methods, including sign language and Braille. Adjustments are needed for stairs, ramps, elevators, and toilets to ensure accessibility. Museums should enhance video introductions by adding subtitles and sign language. Install accessible push buttons with Braille in elevators. If permanent facilities like ramps or toilets aren't feasible, museums can use mobile ramps.

Second, information solutions.

Museums should regularly update accessibility information on their websites, such as wheelchair accessibility, ramps, and assistance options for disabled visitors. Include contact hours and response times for inquiries.

Third, transportation solutions.

Although museums don't provide accessible transport, they should offer information on public transit routes and accessibility options, like bus stops and ramps.

Fourth, universal design solutions.

Display information should be at an accessible height for wheelchair users. Facilities like ramps and elevators should be available to everyone, not just those with disabilities.

Fifth, accessibility solutions.

Museums should provide maps with clear symbols and directions for amenities like restrooms, exits, and galleries. Maps should be accessible and guide all visitors effectively.

Recommendations.

Accessibility issues outside the museum require government and transport company attention. Public infrastructure must meet accessibility standards, and bus services should offer accessible features and staff trained in disability assistance.

5.2. Conclusion

The primary goal of accessible tourism is to ensure that all individuals, regardless of their circumstances or abilities, have access to tourism services at all tourist sites. This study relates to the implementation of the United Nations' Sustainable Development Goals, particularly Goal 3: "Good Health and Well-being." Accessible tourism also benefits businesses and tourism destinations by improving quality, creating differentiation, tapping into new market opportunities, and enhancing competitiveness, social responsibility, and economic sustainability. When a person with a disability travels, he or she is often accompanied by one or more individuals. Therefore, excluding people with disabilities means missing out on the economic benefits generated by those traveling with them.

Although this research has addressed its objectives and research questions, several limitations remain:

First, while there are numerous criteria for evaluating accessible tourism, this research focuses only on five dimensions: information, transportation, common requirements, universal design, and accessibility, as outlined by R.D. Wiastuti, M.P. Adiati, and N.S. Lestari (2018).

Second, the research is limited to museums in Hanoi and does not extend to other tourist attractions or services such as restaurants and hotels. The geographical focus on Hanoi restricts the scope of the findings. Future studies should expand to include other tourist destinations and services to provide a more comprehensive understanding.

Third, this research relies solely on qualitative methods, such as observations, expert interviews, and surveys of tourists with disabilities, with a relatively small sample size. Consequently, the findings are limited in their ability to fully represent the accessibility needs of people with disabilities. Additionally, the gap between the travel time of disabled tourists and the research period creates a limitation, as changes in museum facilities may have occurred. Future research should address this issue by considering more timely data collection.

In conducting this research, the authors aim to contribute to the improvement of accessible tourism implementation in some Hanoi museums. Accessible tourism is still a relatively unfamiliar concept in Vietnam, and the authors hope that this study will raise awareness and stimulate interest in this important issue. By encouraging greater participation of people with disabilities, the research seeks to motivate tourist attractions to prioritize the implementation of accessible tourism practices.

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PHU THO (VIETNAM) TOURISM DEVELOPMENT LINKAGE TOWARD SUSTAINABILITY

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ABSTRACT

Phu Tho is a province with rich and diverse tourism resources, possessing great potential for tourism development. Over the past years, Phu Tho has engaged in activities to enhance cooperation and development linkage among provinces in the region, as part of the extended Northwest tourism development cooperation program. However, alongside these achievements, the province still faces challenges in tourism human resource development, the creation of distinctive tourism products, addressing seasonality in tourism, and the inadequacy of infrastructure and facilities to meet visitor demand. These limitations have prevented tourism development from fully realizing its potential. This study utilizes data collection methods and sociological survey techniques via questionnaires for local government representatives and tourism enterprises to assess the current state of tourism development linkage for sustainability. The author also proposes several solutions to enhance the effectiveness of tourism linkage in Phu Tho, contributing to improving the province's competitiveness, attracting tourists, and moving toward sustainable tourism development.

Keywords: Linkages, tourism, development, sustainability, Phu Tho.

1. INTRODUCTION

Linkage is an essential trend in tourism development, helping to expand spaces, leverage local strengths, and create diverse and attractive tourism products. Establishing and developing collaborative relationships among stakeholders emerges as a prerequisite for sustainable tourism development (Albrecht, 2013) and enhancing competitiveness (Anderson, J. C., Hakansson, H. & Johanson, 1994).

Phu Tho province holds a strategic position as the gateway connecting the Northwest region of Vietnam with Hanoi, located along the Kunming (China) - Hanoi - Haiphong economic corridor and the capital region. It also lies within the potential economic corridor of Bac Giang - Thai Nguyen - Phu Tho. This advantageous position provides favorable conditions for the province to develop tourism centers. Moreover, Phu Tho possesses a wide range of tourism resources: natural tourism resources, cultural tourism resources including historical-cultural relics, revolutionary sites, archaeology, architecture, traditional cultural values, festivals, folk arts, and other cultural values. However, compared to other destinations, tourism development in Phu Tho still faces many limitations due to its mountainous nature, small economic scale, and difficulties in investment resources, which put natural resources and the tourism environment at risk of degradation and waste. Additionally, the infrastructure and tourism facilities are inadequate to meet the growing development needs, affecting the tourism environment.

As tourist demand increases, it becomes crucial to capitalize on geographic advantages, resources, potential for development, and connect value chains to create attractive tourism products. The linkage among localities, tourism enterprises, and the community in developing tourism in a professional and sustainable manner is key to attracting tourists. This research focuses on compiling the theoretical foundations of tourism development linkage, analyzing the contents of tourism development linkage in Phu Tho toward sustainability, and proposing solutions to enhance the competitiveness of the destination.

2. LITERATURE REVIEW

Intersectoral linkages have been studied since the late 1950s to identify "key industries" central to economic development (Hirschman, 1958). Later, Greek scholars Sgouro Melisidou and colleagues (2014) concretized the goals of linkage, which include creating joint products or services: jointly purchasing equipment, services, or technology; sharing service results to create a common brand and promote the area; and enhancing tourism products and local destinations. The overarching goal of linkage must be "local linkage, global competition," meaning that linkage should improve competitiveness beyond national borders. If the network allows businesses to access specific services at lower costs, clusters attract essential services to one area. Members of the network share common business objectives, while clusters provide a long-term collective vision (Melisidou, 2014).

Several global studies have also explored expanding areas in tourism spatial linkages, showing connections within and beyond regions, linking coastal tourism with mountain tourism both domestically and internationally, which have developed since the latter half of the last century in works by Babbier (1967, 1989), Balseinte (1977), and Knafou (1978, 1987) in Europe. These are "horizontal" linkages, simply connecting through tours and tourism routes. To achieve linkage in tourism development, territorial organization is a key concern because effective linkage management cannot be achieved without considering its spatial (territorial) aspect.

Many studies have emphasized the role of linkages aimed at sustainable tourism development (Gunn C. A. Vacationscape, 1997), (Baggio; Scott; Cooper, 2010), (Mariani & Kylanen, 2014). Linkage contributes to the promotion, marketing, and transaction of destinations as a collective effort (Wang & Shaul, 2008). On the other hand, as competition among destinations increases, collaborative linkage becomes an essential tool for success. Such cooperative linkage is necessary to increase demand, help destinations achieve growth and sustainable development, balance economic growth, social welfare, and limit environmental impacts. Studies by Bramwell & Lane (1993), Choi & Murray (2010), Cole (2006), Macleod & Todnem (2007), Cascante & colleagues (2010), Timur & Getz (2008, 2009), Vernon & colleagues (2005), and research by Wesley & Pforr (2010) share the view that participation and cooperation among stakeholders in destinations are crucial for sustainable tourism development.

In Vietnam, research on linkage in tourism development has also been discussed in numerous studies on regional and sub-regional tourism development linkages. Regional and sub-

regional tourism development linkage is an important goal and content in regional economic development and a factor promoting the implementation of regional linkage policies in geographic areas with common natural, socio-cultural characteristics and tourism resources, fostering tourism development (Hoang et al., 2018). Thus, tourism development linkage, in general, is seen as a broad concept, ranging from inter-regional, international linkages to intra-regional, intra-national linkages; from tourism industry-specific linkages to cross-industry linkages, and deep linkages among stakeholders in tourism activities. Linkage in tourism development allows for the exploitation of relative advantages, comparative advantages, and mutual supplementation among localities in tourism resources, infrastructure, facilities, and other resources for tourism development (Trần Đức Thanh, 2023).

3. THEORETICAL FRAMEWORK

3.1. Some Concepts

Linkage

The term "linkage" has long been used in various fields of science such as physics, biology, military, politics, etc. In each discipline, it carries different meanings and approaches, with each author providing a different perspective on linkage.

Author Hirschman (1958) approached linkage in the context of development theory. He suggested that linkage is the process of how one activity leads to another, explaining that linkage exists when an ongoing activity prompts other entities to begin a new activity. Porter, M. E. (1980) argued that linkage is one of the elements of competitive strategy. Linkage creates new product value that no single member had before, thus generating a competitive advantage for the group, i.e., the parties involved in the linkage (Porter, 1980).

Author Trần Thị Thu Hương defined local linkage as the interactive relationship between local governments (also known as intra-regional linkage). This form of linkage occurs between two or more provincial-level local governments in a region, aiming to bring benefits to all parties and the entire region, benefits that no single local government could resolve on its own. Thus, linkage is a broad concept, encompassing many entities participating in linkage (such as local governments, schools, research institutes, businesses, social organizations, etc.) (Trần Thị Thu Hương, 2017).

Author Hoàng Văn Hoa (2019) stated that linkage is the cooperation between entities to transform potential and comparative advantages into competitive advantages of a region by forming a shared economic space, focusing resources to create scale and specialization in production within the region (Hoàng Văn Hoa, 2019a).

Tourism Development Linkage Toward Sustainability

Tourists have various needs such as eating, sleeping, traveling, resting, enjoying cultural and artistic performances, visiting scenic spots, historical sites, architectural works, and receiving healthcare during their stay. To satisfy these needs, it is essential to link tourism activities with other activities within a province. Moreover, tourists often want to explore multiple scenic spots,

historical sites, and architectural works in different locations, so the tourism activities of one province need to be linked with those of another.

Building upon both domestic and international studies, the author defines: "Tourism development linkage toward sustainability is one of the linkages in socio-economic development in general. It is the process of cooperation and connection between stakeholders (local governments, businesses, organizations, individuals, etc.) within one locality or across several localities within the same province/region to implement tourism development policies, coordinate the development of tourism infrastructure, create a unified tourism space, develop tourism products, train and develop human resources, promote local tourism, enhance competitiveness, and collaborate to protect the environment. This ultimately contributes to effectively utilizing the resources and advantages of each locality and brings benefits to all participants, aiming toward the goal of sustainable tourism development."

3.2. Forms of Tourism Development Linkage

(1) Vertical Linkage

Vertical linkage refers to the connection between entities or components that are hierarchical or ordered, such as between managing entities and entities being managed within an administrative system; or between business entities within a production cycle or value chain; or between major cities and satellite towns. In a value chain, vertical linkage is the connection between actors in different stages of the chain, such as between producers (farmers) and input suppliers (referred to as backward linkage), or between producers and buyers and processing enterprises (referred to as forward linkage). The purpose of vertical linkage is to reduce production costs, ensure stability and quality in the chain's operations through supervision and management of the chain (Friedmann, 1978) (Hoàng Văn Hoa, 2019b).

In this study, vertical linkage is represented by the connection between provincial-level government agencies and local-level governments at the district and commune levels. Additionally, vertical linkage also appears in the connection between higher-ranked and lower-ranked organizations and enterprises (e.g., the linkage between 4-star and 3-star hotels).

(2) Horizontal Linkage

Horizontal linkage is the connection between similar entities, forming collective actions and coordinating activities to create a larger scale. In provincial-level linkages, this is the connection between localities within the same province, aiming for collective action to replace individual efforts in socio-economic development. Horizontal linkage among economic actors (businesses, household enterprises, etc.) aims to achieve larger-scale collective action, reduce costs, and increase efficiency in investment, production, and business operations. The outcome of horizontal linkage can result in the formation of cooperative organizations such as cooperatives, alliances, and associations, and may even lead to monopolies in certain markets.

In this study, horizontal linkage is represented by the connection between tourism organizations, businesses, professional associations, or between similarly ranked businesses and local governments at the same administrative level (province/district/commune).

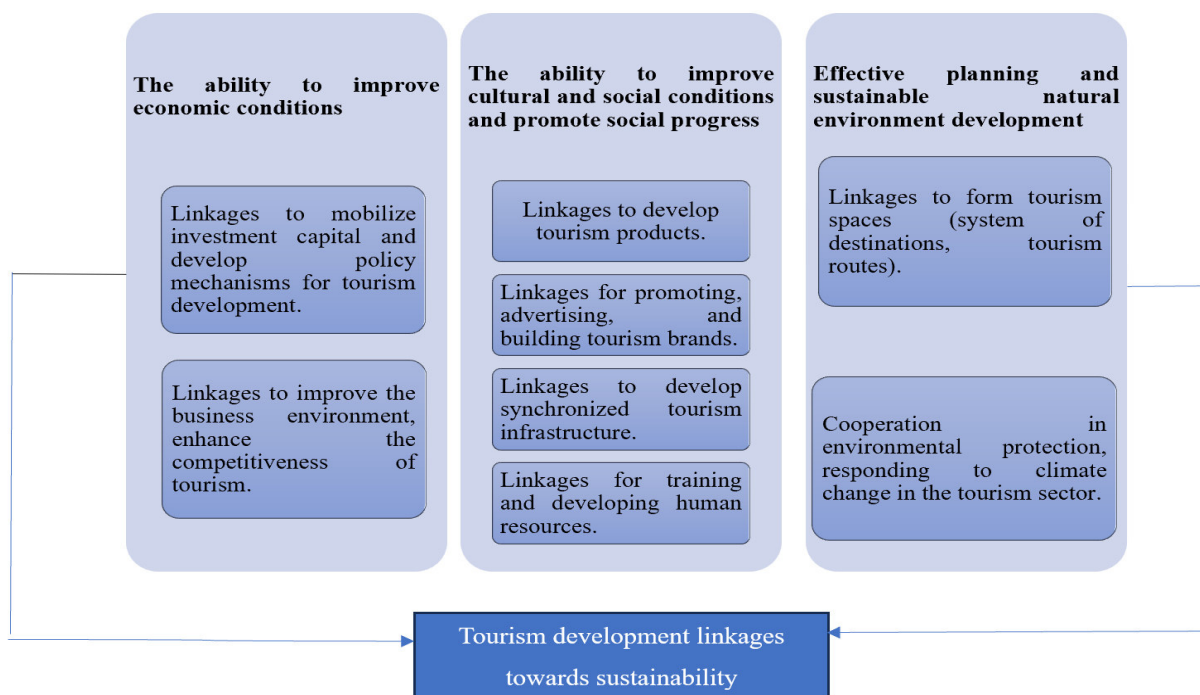
(3) Public-Private Partnership (PPP)

A public-private partnership (PPP) is essentially a partnership between public sector organizations and private sector investors and enterprises, aimed at designing, planning, financing, constructing, providing, and/or operating infrastructure, facilities, or related services (Kim & Woo Park, 2007). According to global experiences, marketing and promotion are the primary areas where public-private partnerships have developed. Additionally, partnerships can also be established in product development, human resources - education and training, technology and operations, advocacy, safety and security, and finance and investment. These areas of cooperation can significantly contribute to tourism growth (Kim & Woo Park, 2007) (Young, 2002).

(4) Hybrid Linkage

This form of linkage involves multiple stakeholders and considers the spatial aspects of linkages, such as industry clusters. According to M. Porter (1990), an industry cluster is a group of interconnected companies and associated organizations within a specific field, concentrated in a particular geographical area, linked by similarities and complementary aspects. In this study, hybrid linkage is understood as the connection between related sectors/industries, such as the linkage between travel companies and accommodation facilities, educational institutions, etc.

3.3. Content of tourism development linkages towards sustainability



Source: Compiled and proposed by the author, 2024

4. RESEARCH METHODOLOGY

4.1. Data Collection Method

The author collected secondary data through reports and plans from the General Statistics Office, the Ministry of Culture, Sports, and Tourism, the People's Committee of Phu Tho Province, and relevant departments and agencies. Additionally, information from conferences, seminars, and related articles on tourism development linkage was also gathered.

To achieve the research objectives, the author collected primary data via surveys using questionnaires, with a sample of 80 respondents consisting of local government officials and tourism businesses in Phu Tho Province. The survey was focused on four districts/cities: Viet Tri City, Thanh Thuy District, Ha Hoa District, and Tan Son District. The purpose of the survey was to gather data, information, and assessments related to the linkage in tourism product development, and to evaluate the impact of these linkages on the business performance of the tourism sector in Phu Tho. The assessments were designed using a 5-point Likert scale: 5 – Strongly agree, 4 – Agree, 3 – Neutral, 2 – Disagree, 1 – Strongly disagree. Based on the data collected, all secondary data were entered into SPSS 26.0 for ease of processing and calculation.

4.2. Sociological Survey Method

To achieve the research objectives, the author conducted a survey using questionnaires, with a sample of 80 respondents from local government officials and tourism businesses in Phu Tho Province. The survey was conducted in four districts/cities: Viet Tri City, Thanh Thuy District, Ha Hoa District, and Tan Son District. The purpose of the survey was to collect data, information, and evaluations related to tourism development linkage. The evaluations were designed using a 5-point Likert scale.

4.3. Analysis and Synthesis Method

Based on the collected data and information, all data were entered into the software for statistical analysis, computation, and synthesis to analyze the results.

5. RESEARCH RESULTS AND DISCUSSION

5.1. Evaluation of Phu Tho's Tourism Development Linkage Toward Sustainability

5.1.1. Ability to Improve Economic Conditions

Linkage in mobilizing investment capital and creating investment policy mechanisms for the overall development of tourism in the province.

In recent years, Phu Tho has successfully played the role of lead in tourism development cooperation among the eight expanded Northwest provinces and Ho Chi Minh City. The province has proactively coordinated with the People's Committees of other provinces and cities to develop, issue, and implement many plans and documents to carry out specific activities. The provinces and cities regularly coordinate to exchange information, share experiences, and support each other in

attracting investment from large corporations and major tourism projects in the locality. This is achieved through the issuance of projects, resolutions, and medium- to long-term plans, fostering tourism growth, limiting negative issues, and addressing violations in tourism activities. Furthermore, an information technology system has been established to serve the overall tourism activities between the eight expanded Northwest provinces and Ho Chi Minh City.

The province has also attracted and facilitated the investment of reputable tourism enterprises, encouraging the development of competitive, high-quality tourism products and services, thus increasing tourism revenue. Investments in 3- to 5-star hotels, resorts, standard restaurants for tourists, high-end entertainment services, eco-tourism, and mixed sports tourism projects are encouraged. This is evident through major investment projects such as the pedestrian street and urban housing project in Tien Cat by Song Hong Thu Do Group and the Tam Nong Ecological Urban Area, Resort, and Golf Course by T&T Group.

Linkage to Improve Business Environment and Enhance Tourism Competitiveness

According to statistics from the Phu Tho Department of Culture, Sports, and Tourism, in 2023, total tourism and service revenue reached VND 3.365 trillion, accounting for 108.5% of the annual target and increasing by 27% compared to 2022. There were 776,000 overnight stays, an increase of 13.3% from 2022, of which 8,860 were international tourists, up 18.1%. A total of 860,400 tourist days were recorded, up 18.7% compared to 2022, with international tourist days increasing by 46%. It is estimated that in the first six months of 2024, Phu Tho welcomed 482,900 visitors with 565,400 tourist days (including 5,470 international visitors and 11,600 international tourist days). Total revenue is estimated at VND 2.697 trillion (Phu Tho Department of Culture, Sports, and Tourism, 2024).

The effectiveness of tourism development linkage has been highly valued by both local government and businesses, contributing to improved business efficiency for enterprises, mobilizing a wave of investment in local tourism development, and enhancing the competitiveness of the destination (as detailed in Table 4.1).

Table 5.1. Assessment by businesses and local authorities on the effectiveness of tourism development linkages in Phu Tho

| Evaluation Criteria | Evaluation Score | Meaning |
|---|------------------|----------------|
| Mobilizing an investment wave for local tourism development | 4.01 | Agree |
| Reducing promotion and advertising costs | 4.28 | Strongly agree |
| Enhancing the competitiveness of the destination | 3.87 | Agree |
| Expanding the scale of business operations | 3.34 | Average |
| Increasing revenue and profits for businesses | 4.36 | Strongly agree |

Source: Author's survey, 2024

According to the author's survey results, businesses and local authorities believe that tourism development linkages in Phu Tho have proven to be most effective in increasing revenue and profit for businesses (4.36 points). These linkages also help reduce promotional costs, as businesses and

localities involved in the linkages can mutually support each other's marketing efforts. This, in turn, raises awareness among investors, facilitating a wave of investment in local tourism development and enhancing the destination's competitiveness. However, tourism development linkages have not significantly helped businesses expand their operational scale (3.34 points). This is mainly because most tourism businesses in Phu Tho are small and medium-sized enterprises, and scaling up operations requires substantial investment resources for linkage development

5.1.2. Ability to Improve Cultural Conditions and Promote Social Progress

Linkage in Building Synchronized Tourism Infrastructure

Phu Tho province has mobilized resources and enhanced support for budget capital investment to develop infrastructure for tourism development. However, inter-provincial transportation systems still face many difficulties, particularly in the extended Northwest region, where landslides and road blockages during the rainy season affect the effectiveness and feasibility of inter-provincial and inter-regional tourism product development. The tourism-related technical infrastructure, such as accommodation, dining, and entertainment facilities, has not yet met the demand of tourists. According to statistics, there are 376 accommodation facilities in Phu Tho province, but they lack connectivity, are scattered, and are primarily concentrated in Viet Tri City and Thanh Thuy District (Phu Tho Department of Culture, Sports, and Tourism, 2022).

Linkage for Effective Tourism Product Development, Especially Local Specialty Products

Currently, Phu Tho province is focused on continuing to invest in and upgrade tourism products linked with culture at the Hung Kings' Historical Relic Site, Thanh Thuy Hot Springs Resort, and Xuan Son National Park. The province has also implemented a model of cultural and spiritual tourism associated with the ceremonial water procession at Bach Hac, creating new tourism products in Viet Tri City. The province has developed and recognized cultural community tourism sites such as Bach Hac and Au Co Temple, as well as the Hùng Lô cultural community tourism site, offering agricultural activities and traditional handicraft production experiences. The province's investment in upgrading unique tourism products and continuing to develop new products based on its strengths and market competitiveness, as well as promoting inter-provincial tourism product tours, reflects this effort. Additionally, the Phu Tho Provincial People's Committee has partnered with Hung Vuong University to develop an information technology system for automatic QR code scanning at Hùng Lô communal house to diversify tourism products and enhance their quality.

Despite these achievements, the number of travel agencies in the province remains relatively small, with only 26 businesses. Most of these are small and medium-sized enterprises concentrated in Viet Tri City, and some companies have not focused on developing new tourism products, relying instead on exploiting old products with little innovation, which results in limited success.

Linkage in Training and Developing Human Resources

In local human resource development, Phu Tho province regularly collaborates with various departments and sectors, as well as Hung Vuong University, to organize conferences that promote

and disseminate the Tourism Law and training courses on tourism services for the local community and management for government officials. At the beginning of 2024, the province organized five training courses on tourism expertise at the Long Coc community eco-tourism site in Tan Son District, with approximately 230 participants. One training course and qualification exam for tour guides were conducted in Xuan Son Commune, Tan Son District, with 24 participants in 2024, and another course on state tourism management was held for 97 participants. However, government officials in districts and cities with key tourism development projects often handle multiple tasks and lack specialized knowledge in tourism, limiting their ability to coordinate and advise on local tourism activities. Tourism enterprises in the province also suffer from a shortage of qualified staff, with only 201 tour guides, including just 65 international guides, insufficient to meet the growing demands of tourists (National Tourism Administration of Vietnam, 2024).

Linkage in Tourism Promotion and Branding

Phu Tho province regularly coordinates and organizes tourism promotion activities and participates in tourism development cooperation with tourism associations and businesses across the country, at events in Hanoi, Ho Chi Minh City, and other southern provinces. The province has organized programs and events such as the Hoa Ban Festival and National Tourism Year 2024, the First International Cultural, Tourism, and Culinary Festival in Ha Giang in 2024, Ho Chi Minh City's Tourism Festival, and the VITM – Hanoi International Tourism Fair to promote tourism, introducing the province's tourism image to travel agencies, investors, and both domestic and international tourists. The province has also developed 2-day-1-night and 3-day-2-night intra-provincial tours connecting local tourist attractions, which have been introduced to travel companies such as Viettreking, SPOTravel, Wolfravel, among others. Phu Tho has also strengthened tourism promotion on the dulichtaybac.vn website, the "Sắc màu Tây Bắc – Hồ Chí Minh" fan page, and through social media, mass media, and other platforms. These promotion activities have helped expand the tourist market and gradually establish Phu Tho's reputation, image, and tourism brand on the Vietnam tourism map.

5.1.3. Ability for Effective Planning and Sustainable Development of the Natural Environment

Linkage to Create Tourism Spaces (Tourist Points and Routes)

The Phu Tho Travel Association has actively collaborated to implement inter-provincial tourism tours, launching several linkage programs with tourism associations in Hanoi, Da Nang, and Ho Chi Minh City. To date, Phu Tho has effectively exploited tourism routes connecting provinces, such as "Back to the Land of Ancestors – Roots of the Nation," "Epic of the Northwest," "Colors of the Highlands," and others. New tours have been developed to attract tourists, such as "Exploring UNESCO Heritage Sites," "Hanoi – Moc Chau – Hua Phan (Laos)," and trekking tours like "Climbing Bach Moc Luong Tu Peak" and the "Pa Vi Ancient Stone Path" on the route connecting Sang Ma Sao, Bat Xat District, Lao Cai Province, and Sin Suoi Ho, Phong Tho District, Lai Chau Province. Additionally, the inter-provincial tour "One Journey, Five Destinations" has been established.

Collaboration in Environmental Protection and Climate Change Response in Tourism

Recently, various units, organizations, and the Phu Tho Tourism Sector have coordinated to

implement comprehensive solutions for managing and protecting the ecological environment. In tourist areas such as Van Lang Park, the Hung Kings' Special National Historic Site, Xuan Son National Park, and Long Coc Tea Hill, local authorities have directed the development of specific plans, organized tree planting and protection activities, and encouraged and guided residents and tourism service providers to collect waste in a scientific and reasonable manner. Training sessions have been organized to raise awareness and enhance the capacity of farmers in craft villages regarding environmentally-friendly production and business practices linked to tourism development. Environmental education is incorporated into training programs for all individuals involved in tourism activities. Plans have been made to preserve and restore historical and cultural relics in the region, linked to the conservation and utilization of natural landscapes, and to strengthen intersectoral cooperation for environmental protection in tourism.

Currently, at tourist areas, information panels promoting environmental protection and slogans advocating for environmental conservation are installed, and waste collection bins are placed in designated areas to prevent pollution. The Department of Culture, Sports, and Tourism, the Provincial Tourism Association, and travel businesses have closely coordinated in the design, survey, and development of proposals, programs, tours, and routes aimed at green tourism, contributing to building the image of "green – clean – beautiful" destinations. Tourism service providers have also signed commitments to environmental protection and reducing plastic waste.

5.2. Solutions and Recommendations

First, strengthen market orientation for Phu Tho tourism: Develop a target market information system to support tourism promotion and advertising, focusing on markets such as Hanoi, Da Nang, Ho Chi Minh City, and the Southeastern region. Enhance the socialization of tourism information and promotion efforts; provide appropriate support to encourage travel agencies to develop tours and routes to Phu Tho Province.

Second, increase the application of information technology and utilize Industry 4.0 technology in tourism information, promotion, and advertising; develop distinctive tourism products; organize live performances with content closely tied to the cultural heritage of the ancestral land.

Third, attract investment from both domestic and international businesses. Invest in building tourism infrastructure and technical facilities, offering attractive policies for investors in the development of Phu Tho tourism.

Fourth, in developing tourism products, it is essential to ensure strict management of tourism resource exploitation, emphasize environmental protection, and collaborate with various sectors to address climate change in the tourism industry.

6. CONCLUSION

The research has reviewed and presented the theoretical framework related to sustainable tourism development linkages, proposing various forms and content for sustainable tourism development linkages. Based on this framework, it evaluates the tourism development linkages in

Phu Tho according to the following criteria: the ability to improve economic conditions; the ability to enhance cultural conditions and promote social progress; and the ability to plan and develop the natural environment sustainably. The findings on the current situation indicate that: The collaboration efforts in developing Phu Tho tourism have brought many positive results, not only attracting a large number of tourists and contributing to the overall development of the localities, but also establishing a reputable brand that is highly valued nationwide through the provision of distinctive local tourism products. Along with the synchronized participation of localities and stakeholders in tourism activities, infrastructure, transportation systems, and accommodation facilities have begun to receive investments and upgrades. The scale of tourism activities by businesses has expanded as more localities have joined in, coordinating in the promotion and advertisement of tourism products. Associations, clubs, and tourism businesses have also grown, both in number and in economic value. However, for tourism development collaboration to be truly effective and generate significant economic impact, businesses, organizations, institutions, and tourism education centers need to actively participate and collaborate in all aspects. Localities should focus on developing human resources and creating tourism products, identifying key markets, and offering unique products that are competitive in the market. Additionally, they should minimize the seasonal nature of tourism activities, protect natural resources and the environment, all of which contribute to the goal of sustainable tourism development.

This research is limited in terms of its spatial scope and study area. If the scope and content could be expanded, future research directions might include evaluating the factors influencing sustainable tourism development linkages.

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LOCAL COMMUNITY PARTICIPATION IN COMMUNITY-BASED TOURISM ACTIVITIES IN CAM THANH COMMUNE, HOI AN CITY, QUANG NAM PROVINCE

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ABSTRACT

This study aims to determine the level of local community participation in community-based tourism activities in Cam Thanh commune, Hoi An city, Quang Nam province. The study utilizes multiple methods including secondary data collection, field surveys, questionnaire survey, and in-depth interviews with the local community. The results indicate that local people primarily participate in community-based tourism in Cam Thanh at three levels: information, consultation, and material incentives. The level of self-mobilization participation is the lowest. Based on these findings, the study proposes several suggestions to enhance community participation in tourism activities, with the aim of achieving sustainable development goals.

Keywords: Community participation, local community, community-based tourism, sustainable tourism development.

1. INTRODUCTION

In recent years, community-based tourism has become a sustainable economic development trend in many countries, especially in rural and mountainous areas with beautiful landscapes and diverse cultures. Community-based tourism not only brings economic benefits but also helps preserve and promote the region's inherent cultural and natural values. In Vietnam, community-based tourism has strongly developed in many localities and is considered an essential direction toward sustainable tourism development.

Cam Thanh commune, located in Hoi An city, Quang Nam province, is one of the localities with many advantages for developing community-based tourism. With the unique Rung Dua Bay Mau ecosystem and distinctive cultural values, Cam Thanh has attracted many tourists for sightseeing and experiences. However, the local community's participation has not been effective, and the proactive role of the people has not been fully utilized. This makes the development of community-based tourism in Cam Thanh unsustainable, and the exploitation of resources needs to be adequately controlled.

This study aims to assess the level of local community participation in community-based tourism activities in Cam Thanh commune. Based on the findings, the study proposes several recommendations to improve the role and proactive participation of the community towards sustainable tourism development.

2. LITERATURE REVIEW

In sustainable tourism development models, community-based tourism has become a familiar concept, attracting the interest of many researchers. In the broadest sense, “community-based tourism is a type of tourism organized, managed, and owned by the local community, aiming to bring economic benefits and protect the shared environment by introducing tourists to the local characteristics (landscapes, culture)” (Quỹ Châu Á & VIRI, 2012). For community-based tourism to be truly effective and ensure sustainable development economically, socially, and environmentally, active participation from the local community is considered a key factor (Dung & Hà, 2019; Simpson, 2008).

A search on the Scopus database on 02/08/2024 with the query: TITLE-ABS-KEY (“community participation” AND “tourism”) AND (LIMIT-TO (DOCTYPE “ar”)) AND (LIMIT-TO (LANGUAGE “English”)) yielded 673 research articles on community participation in tourism published since 1986. However, the number of initial articles was relatively low, and it wasn’t until 2010 that this topic gained significant attention, peaking in 2017. Countries with extensive research on this topic include Indonesia, China, the United States, South Africa, and Malaysia. Vietnam has also contributed 16 articles on this subject.

Continuing the search with the query: TITLE-ABS-KEY (“community participation” AND “community-based tourism”) AND (LIMIT-TO (DOCTYPE “ar”)) AND (LIMIT-TO (LANGUAGE “English”)) yielded 62 related articles published since 2008, concentrated between 2019 and 2024. Leading countries in research on this topic include South Africa, Indonesia, Malaysia, and Thailand. Vietnam has contributed two related studies.

The initial review shows that many studies on community participation in tourism activities exist, but research on local community participation in community-based tourism is still relatively limited. Most studies emphasize the importance of active community involvement in tourism planning and management (Okazaki, 2008; Simpson, 2008; Witchayakawin et al., 2024). Furthermore, research has identified factors promoting (Gutierrez, 2023; Hlengwa & Maruta, 2020; Wijayanti et al., 2023) or barriers affecting the level of local community participation in community-based tourism activities (Gohori & van der Merwe, 2024; Mmeko et al., 2023; Setokoe & Ramukumba, 2020).

In Vietnam, research on local community participation in tourism activities has also received significant attention. Two studies from Vietnam that made it into the Scopus database (Hai & Ngan, 2022; Huong & Creutz, 2022) once again affirm the role of community participation in sustainable tourism development. However, many studies have pointed out that the level of local community participation in tourism activities in Vietnam is still limited, mostly formalistic and passive, not commensurate with the community’s role in local tourism (Dung & Hà, 2019; Liên, 2018; Thanh & Hoa, 2022). Therefore, although community-based tourism is a sustainable development model, enhancing community participation remains a significant challenge (Long & Kieu, 2019; Quang et al., 2023).

In Cam Thanh commune, although tourism attracts a large number of domestic and international tourists, the exploitation, development, and management of tourism here still face

many issues. Research on tourism in this area is still scarce, mainly focusing on the Rung dua Bay Mau ecotourism area. The study results show that local community participation is mainly formal or passive (Thur et al. 2019).

These documents provide a scientific foundation for the author's research on local community participation in developing community-based tourism in Cam Thanh commune, Hoi An city, Quang Nam province to achieve successful results.

3. THEORETICAL BASIS AND METHODOLOGY

3.1. Theoretical Basis for Community Participation

According to Lee (2013), community participation is conceptualized as the degree to which community members engage in daily and routine activities connected to the community in which they live. In the tourism field, many perspectives and related concepts have emerged. This study employs the following approach: The participation of the local community in tourism development is a process where the local community becomes aware of the role and benefits of tourism for themselves and their locality, eventually engaging in tourism activities in various forms, levels, and time frames (Dung & Hà, 2019).

Depending on their awareness, the local community has different levels of participation. The level of community participation has been studied by many authors, such as Arnstein (1969), (Pretty & Hine, 1999), Tosun (1999), Kantsperger et al., (2019). In this study, the author chose the 7-level model by Pretty & Hine (1999) to evaluate the level of local community participation in community-based tourism development in Cam Thanh commune. Pretty's criteria have been widely applied in tourism research and are suitable for the local context. Each level is represented by different forms, as shown in the following table:

Table 1. The levels of community participation and forms according to

| Typology | Characteristics of each type |
|--|--|
| Self-mobilization | People take independent initiatives to change systems without reliance on external institutions. They establish connections with these institutions for necessary resources and technical advice while maintaining control over the utilization of those resources. |
| Interactive participation | People participate in joint analysis, develop action plans, and strengthen local institutions. Participation is a right, not just a means to achieve project goals. |
| Functional participation | People engage in functional groups to meet partial project-related goals under the supervision of government or external organizations. |
| Participation for material incentives | People contribute resources, such as labor, in exchange for food, cash, or other material benefits. |
| Participation by consultation | People participate by providing input through consultations or answering questions. External agents determine the problems and the methods for gathering information, thereby directing the analysis. |
| Participate in providing information | People share information and answer questions about local tourism development when consulted by external agencies and organizations. |
| Passive participation | People are informed about decisions or events that have occurred. This process involves unilateral announcements from administrators or project managers, with no consideration for public feedback. The shared information originates solely from external professionals. |

Source: Pretty & Hine, 1999

3.2. Methodology

The research was conducted to assess the level of local community participation in community-based tourism activities in Cam Thanh commune based on the 7-level scale of Pretty & Hine (1999). The research method combines qualitative and quantitative approaches. Data were collected through field surveys, in-depth interviews, and questionnaire investigations.

Field method: Conducting a direct field survey from July to September 2024 through observation, photography, video recording, and audio recording, the author gained a comprehensive understanding of the activities and development of community-based tourism in Cam Thanh commune.

In-depth interview method: Interviews were conducted with residents participating in tourism activities, government officials, and tourism managers in Cam Thanh. These interviews provided a multi-dimensional perspective on local community participation in community-based tourism.

Questionnaire survey method: A questionnaire survey was conducted from August 20 to 26, 2024, in three villages: Van Lang, Thanh Tam Đông, and Thanh Đông, which are the most active in tourism. The survey targeted residents participating in tourism activities. A minimum sample size of 99 was determined using Yamane's (1973) formula with a margin of error of 10%, $N = 9.457$ (the population of Cam Thanh commune in 2023). To increase reliability, the sample size was raised to 150 questionnaires, with 50 for each hamlet. The results yielded 147 valid questionnaires, while 3 were invalid due to incomplete information. The data were analyzed using Excel.

4. RESULTS AND DISCUSSION

Based on the actual situation in Cam Thanh, the participation of local people in community-based tourism activities is evaluated through three main activities: environmental and tourism resource protection, participation in tourism development activities, and tourism promotion. To measure the level of community participation, the author used the 7-level scale by Pretty & Hine (1999).

4.1. Local community participation in environmental and tourism resource protection in Cam Thanh

With the overall orientation of Quang Nam province toward green and sustainable tourism development, environmental protection and the preservation of tourism resources are given special attention. Accordingly, the Cam Thanh community's environmental and tourism resource protection awareness is relatively high. This is reflected through activities such as residents proactively cleaning up and collecting waste, removing floating coconut husks from the river to address local environmental pollution and reduce marine pollution, complying with regulations that coconut leaves can only be harvested twice a year, in February and July, with a limit of three leaves per tree each time, and participating in the "Water coconut forest restoration" project. In addition, roads are always kept clean, and waste is collected in designated areas.

The survey results on the level of local community participation in environmental protection and tourism resource preservation activities in Cam Thanh commune are presented in the table below:

Table 2. The level of local community participation in environmental and tourism resource protection in Cam Thanh commune

| The level of local community participation | | Yes | | No | |
|--|---|-------|------|-------|------|
| | | Votes | % | Votes | % |
| Self-mobilization | Do you have the authority to proactively propose initiatives and make independent decisions on matters related to environmental protection and tourism resource preservation in the local area? | 5 | 3.4 | 142 | 96.6 |
| Interactive participation | Are you involved in discussions, analysis, and planning regarding environmental protection and tourism resource preservation in the local area? | 93 | 63.3 | 54 | 36.7 |
| Functional participation | Are you a member of the local environmental and tourism resource protection group? | 17 | 11.6 | 130 | 88.4 |
| Participation for material incentives | Do you only participate in environmental protection and tourism resource preservation activities when receiving support or benefits? | 5 | 3.4 | 142 | 96.6 |
| Participation by consultation | Do you attend community meetings and have the opportunity to contribute ideas related to environmental protection and tourism resource preservation in the local area? | 128 | 87.1 | 19 | 12.9 |
| Participate in providing information | Are you willing to provide information or answer questions related to environmental protection and tourism resource preservation in the local area? | 139 | 94.6 | 8 | 5.4 |
| Passive participation | Are you informed about issues related to environmental protection and tourism resource preservation in the local area? | 101 | 68.7 | 46 | 31.3 |

Source : Author's survey results, 2024

The survey results show that the participation of Cam Thanh residents in environmental and tourism resource protection activities is primarily concentrated at the passive, information, consultation, and functional levels, with the highest being at the information level, reaching 94.6%.

In addition to contributing ideas during general community meetings, the authorities and departments of Cam Thanh commune have also organized specialized meetings where residents, along with local officials, discuss, analyze, and plan for the protection of the environment and tourism resources in the area. Currently, this practice is highly emphasized because Cam Thanh is well aware of the community's role in environmental protection and tourism resource preservation. As a result, the level of interactive participation has increased significantly compared to before, reaching 63.3%. However, opportunities for the entire community to participate in discussions and provide input remain limited, or they are focused on a few resident groups, such as leaders of community-based tourism groups, neighborhood leaders, and party secretaries, who represent the collective voice of the people.

Furthermore, most Cam Thanh residents participate in environmental and tourism resource protection activities with a high level of self-awareness and a voluntary spirit, so participation only when receiving support or benefits is minimal (3.4%). As a result, although the number of residents

involved in environmental and tourism resource protection groups is low at the functional level (11.6%), they still perform these tasks very well.

Currently, the authorities in Cam Thanh strongly encourage residents to take the initiative in proposing ideas related to environmental and tourism resource protection activities. Many good initiatives have been implemented. However, the capacity of the residents is still limited, and independent decision-making is challenging, as it requires agreement and consensus from relevant stakeholders, the level of proactive participation in this activity is only 3.4%. Although the percentage is still low, it is a positive sign.

4.2. Local community participation in tourism development in Cam Thanh commune

Recently, community-based tourism in Cam Thanh commune has achieved specific successes. The benefits from tourism have attracted an increasing number of residents to participate in activities such as accommodation, dining, travel, transportation, and souvenir sales. As a result, people's lives have gradually improved, and their quality of life has been enhanced.

The survey results on the level of local community participation in tourism development activities in Cam Thanh commune are presented in table 4:

Table 3. The level of local community participation in tourism development in Cam Thanh commune

| The level of community participation | | Yes | | No | |
|---------------------------------------|---|-------|------|-------|------|
| | | Votes | % | Votes | % |
| Self-mobilization | Do you have the authority to propose initiatives; independently contact external organizations for consultation; and invest, promote, and expand local tourism business activities? | 5 | 3.4 | 142 | 96.6 |
| Interactive participation | Are you involved in the process of analysis, planning, and decision-making related to local tourism development? | 16 | 10.9 | 131 | 89.1 |
| Functional participation | Are you a member of the community-based tourism organization providing local tourism services? | 28 | 19.0 | 119 | 81.0 |
| Participation for material incentives | Are you currently working at tourism businesses, providing tourism services, to earn an income? | 147 | 100 | 0 | 0 |
| Participation by consultation | Do you attend community meetings and have the opportunity to contribute ideas related to local tourism activities? | 133 | 90.5 | 14 | 9.5 |
| Participate in providing information | Are you willing to provide information or answer questions related to local tourism activities? | 143 | 97.3 | 4 | 2.7 |
| Passive participation | Are you informed about the local tourism development plan? | 32 | 21.7 | 115 | 78.3 |

(Author's survey results, 2024)

The survey results indicate that the level of material encouragement accounts for an absolute rate of 100%, as the subjects selected for the survey are residents involved in local tourism activities. The communication of plans for local tourism development is not widespread; it is often more word-of-mouth, and the information is frequently distorted because it originates from various sources. Consequently, the level of passivity is relatively high at 21.7%. Most residents actively participate in providing information and responses to questions related to local tourism activities

(97.3%). To develop community tourism sustainably, organizing meetings and listening to residents' opinions is very important and necessary. Therefore, Cam Thanh commune and Hoi An city have regularly conducted these activities, resulting in a high consultation rate (90.5%). The survey results show that only 19% of the community participates in community tourism groups providing local services. The level of functionality is relatively low because residents are no longer enthusiastic about participating in community groups; instead, they tend to operate individually or work for tourism businesses.

In recent years, to ensure effective planning and management of tourism development at the local level while minimizing top-down imposition, the participation components have been expanded to include representatives from community tourism groups, highly educated residents, and representatives from tourism enterprises. Authentic feedback from residents will be an important basis for management levels to formulate reasonable policies and directions. As a result, the level of interaction has improved significantly, although it remains relatively low at 10.9%. For the level of self-mobilization, it is currently being encouraged; however, due to limitations in the residents' education, skills, and capital, this level remains quite modest at 3.4%.

4.3. Local community participation in tourism promotion in Cam Thanh commune

Promoting tourism is a vital communication activity that significantly impacts the success of a tourist destination. Objectively assessing the situation, the tourism promotion activities in Cam Thanh commune are still weak and have not received much investment. The tourism website is quite simple, not much information and lacks updates. However, this activity has received active participation from residents through involvement in events and promotional programs organized by the city/province; proactively contacting travel companies to advertise services; posting advertisements on tourism websites, newspapers, and magazines; creating their websites; and participating in media product design competitions. The most commonly used platforms for promotion are social media, particularly Facebook and Zalo. Additionally, the service attitude of residents and the quality of services at the destination are among the most effective forms of promotion.

The survey results on the level of local community participation in tourism promotion activities in Cam Thanh commune are presented in table below:

Table 4. The level of local community participation in tourism promotion activities in Cam Thanh commune

| The level of community participation | | Yes | | No | |
|--------------------------------------|--|-------|-----|-------|------|
| | | Votes | % | Votes | % |
| Self-mobilization | Do you have the authority to independently choose, change, or participate in managing advertising channels and make independent decisions regarding local tourism promotion? | 4 | 2.7 | 143 | 97.3 |
| Interactive participation | Are you involved in discussions, providing ideas or suggestions about local tourism promotion activities? | 11 | 7.5 | 136 | 92.5 |
| Functional participation | Are you a member of any group or organization promoting local tourism? | 9 | 6.1 | 138 | 93.9 |

| The level of community participation | | Yes | | No | |
|---------------------------------------|--|-------|------|-------|------|
| | | Votes | % | Votes | % |
| Participation for material incentives | Do you only participate in local tourism promotion activities when receiving benefits or support? | 124 | 84.4 | 23 | 15.6 |
| Participation by consultation | Do you attend community meetings to provide input regarding local tourism promotion activities? | 41 | 27.9 | 106 | 72.1 |
| Participate in providing information | Are you willing to provide information or answer questions from advertising companies, tourism promotion departments, etc., regarding local tourism service promotion? | 132 | 93.9 | 9 | 6.1 |
| Passive participation | Are you informed about local tourism promotion activities? | 18 | 12.2 | 129 | 87.8 |

Source: Author's survey results, 2024

Regarding tourism promotion activities, residents are enthusiastic about providing information or answering questions related to local tourism promotion, with the highest participation rate at 93.9%. The level of material incentives also accounts for a significant portion (84.4%). This is because participation in events and promotional programs usually requires residents to rely on financial support and other necessary resources from stakeholders. On the other hand, the lack of proper attention to promotion activities means that residents do not commonly receive notifications about tourism promotion, leading to a passive participation rate of 12.2%. In meetings, soliciting opinions related to local tourism promotion is rarely implemented, resulting in a low consultation participation rate (27.9%). Promotion activities are primarily spontaneous, with individuals and tourism companies finding ways to introduce their services to tourists through social media, websites, or direct advertising during service provision. There has yet to be the establishment of a specialized group for tourism promotion, which is why the functional participation rate is low (6.1%). Meetings to discuss and provide input on local tourism promotion activities have not been conducted independently; they are primarily incorporated into other agendas, and the limited participation of stakeholders means that the community's interaction in this activity is not well reflected (7.5%). The commune's main official tourism communication channels, such as the website and fan page, are managed by commune officials. Additionally, the Cam Thanh government encourages residents, especially tourism businesses, to adopt innovative and breakthrough approaches in promotional activities while strictly adhering to regulations on promotional communication to avoid negatively impacting the local tourism image. Therefore, while the level of self-mobilization among the local community in this activity is evident, the rate remains low (2.7%). This depends on the funding and capacity of the community.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

The research results indicate that community tourism activities in Cam Thanh commune have attracted the participation of the local community. For each activity, the level of community involvement varies, primarily focusing on three main levels: providing information, consulting, and material incentives. Currently, environmental and tourism resource protection are the most effective activities in Cam Thanh, with community participation at a relatively high interaction

level (63.3%). The level of self-mobilization is also showing a slight upward trend. This demonstrates that the local government is genuinely concerned about this global issue and clearly identifies that the local community is the key factor in the success of this vital mission.

Compared to the past, the functional participation of the community in tourism activities has significantly decreased. This can be explained by the fact that when community tourism in Cam Thanh first started, establishing functional groups was mandatory. However, after a period of operation, due to various reasons such as a lack of interest from authorities, limited community management capacity, and insufficient economic benefits, most of the community has tended to abandon or not participate in specialized groups, instead opting to operate independently or work for tourism companies. This issue is a major concern for tourism managers in Cam Thanh due to the reality of “everyone is doing their own thing”, which leads to a lack of community cohesion.

Additionally, the survey results also indicate that the level of interactive participation is trending upward, particularly in environmental and tourism resource protection activities. The level of self-mobilization has improved but remains insignificant. Thus, the local community has yet to be a decisive factor in all issues related to community tourism development in Cam Thanh, even though the government has facilitated their participation in discussions, management, and planning within activities. This is due to various reasons, one of which is the limited capacity of the community. This highlights the need for additional support from local authorities and relevant stakeholders to enhance the community’s awareness and skills.

5.2. Recommendations

To enhance the level of local community participation in community-based tourism activities in Cam Thanh commune, the following measures are proposed:

Firstly, it is necessary to promote educational programs and raise awareness within the community about their role in sustainable tourism development and the benefits of participating in tourism.

Secondly, government levels need to create more opportunities for the community to participate in decision-making through meetings, open discussions, and local councils, allowing residents to contribute their opinions, discuss, and plan for tourism development.

Thirdly, training should be provided to equip community members with the necessary skills to engage effectively in tourism development and promotion.

Fourthly, incentive mechanisms that encourage active participation should be developed, ensuring community members receive tangible benefits from their involvement.

Finally, it is advisable to establish forums for regular dialogue between local authorities, tourism operators, and the community to foster collaboration and address participation barriers.

By implementing these strategies, it is anticipated that the local community’s engagement in community-based tourism activities will increase, contributing to the sustainable development of the Cam Thanh commune. This study is not only significant for Cam Thanh but can also be applied to other localities developing community-based tourism with the goal of sustainable tourism development.

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INTERDISCIPLINARY RESEARCH: OPPORTUNITIES AND CHALLENGES IN TOURISM STUDIES

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ABSTRACT

The objective of this review study is to analyze the interdisciplinary research in tourism studies, and to evaluate the opportunities and challenges of interdisciplinary research in current tourism science. The document analysis method was applied in this study using scientific discourse technique. It explores how the diversity of perspectives in tourism research contributes to solving practical issues in the tourism industry and promotes interdisciplinary collaboration. From there, it examines the opportunities and challenges of interdisciplinary research in tourism science in the current period. The findings reveal that the variety of theories and approaches in tourism science is crucial for advancing the field. The richness of theories and approaches in tourism research not only helps identify and solve practical issues in the tourism industry but also expands the potential for interdisciplinary collaboration across various sectors, both within and outside of tourism. It contributes to ongoing discussions, encouraging readers to reflect and share their perspectives, particularly on which disciplines should form the "interdisciplinary alliance" in Tourism Science.

Keywords: Interdisciplinary research, tourism science, theories, approaches, research collaboration.

1. INTRODUCTION

Tourism research advanced considerably over the past several decades. Beginning in the 1940s, it progressively gained recognition as an essential scientific domain. This development was marked by debates on whether "tourism science" should be classified as a distinct academic discipline or simply a field of study, and whether it belonged within the realm of business or non-business studies. These discussions were explored in specialized journals, university departments, and dedicated research centers, including the contributions of pioneering authors such as Hunziker and Krapf (1942), Jovicic (1975), Kaspar (1975), Freyer (1991) (Coles et al. 2006).

Following that, discussions continued on the issue of defining the subject of tourism research, and two potential issues had been identified. First, there is the issue of self-organization in science concerning existing definitions of tourism. If tourism is considered a self-organizing, autonomous, and delineated system (Cornelissen, 2005; Thevenot, 2001). However, at that point, discussing the existence of a field becomes meaningless, as it implies that tourism dimensions occur when agents engage in this specific relationship with the world. No subject boundaries are identified. This is illustrated by many anthropological studies, in which tourism itself is not analyzed as a subject, but rather society and how they deal with tourism. Therefore, what is at stake is tourism as a means or a perspective to investigate various social issues, rather than as a research subject in itself (Thevenot, 2005; Darbellay et al., 2012). The second issue is the interdisciplinary approach to tourism, which arises from sectoral approaches recognizing the

difficulties in providing satisfactory descriptions, explanations, and understanding of tourism. However, based on the results of tourism studies, the diversity in contexts and traditions of the field is clearly demonstrated through the work of multidisciplinary experts in tourism research (Kadri et al., 2006; Dann et al., 2009).

The rapid growth of tourism as a global phenomenon highlights its socio-economic significance. As a result, tourism has become a focus of extensive research, which has evolved significantly over the past few decades, incorporating diverse theories and approaches to address its complex nature as both an industry and a social phenomenon (Darbellay et al., 2012). This theoretical and methodological diversity not only aids in identifying and solving practical issues in tourism but also broadens the scope of research and fosters interdisciplinary collaboration, as demonstrated by the work of multidisciplinary experts in the field (Okumus et al., 2018).

At present there is no theoretical basis for further discussion on the establishment of a single independent academic discipline dealing with the whole field of knowledge of tourism (Liszewski, 2010). However, there is agreement on the value of an interdisciplinary approach, rather than merely a multidisciplinary one, in tourism research. This perspective suggests that tourism studies should be integrated across various academic disciplines.

This essay aims to provide an overview from the perspective of scientific discourse and analysis from an interdisciplinary epistemological viewpoint. It explores how the diversity of perspectives in tourism research contributes to solving practical issues in the tourism industry and promotes interdisciplinary collaboration. From there, it examines the opportunities and challenges of interdisciplinary research in tourism science in the current period.

2. BACKGROUND TO THE RESEARCH

Interdisciplinary research has garnered significant attention in academic circles, as it involves integrating methods, perspectives, and knowledge from different disciplines to address complex problems. While scholars may define "interdisciplinary research" in varying terms, their definitions consistently emphasize the collaboration of diverse fields to create new insights or solutions that go beyond the scope of a single discipline (Okumus et al., 2018).

As defined by Choi and Pak (2006), interdisciplinary research draws upon knowledge from various disciplines while remaining within their respective boundaries. It involves analyzing, synthesizing, and harmonizing connections between these disciplines to create a coordinated and coherent whole. This approach fosters innovation by bridging gaps between distinct areas of study, enabling researchers to tackle issues that cannot be adequately addressed through traditional, discipline-specific methods alone (Darbellay et al., 2012). Interdisciplinary research refers to an approach that integrates knowledge, methods, and perspectives from multiple academic disciplines to address complex problems or topics. Rather than focusing on a single field, interdisciplinary research combines insights from different fields to generate a more comprehensive understanding of an issue (Pechlaner et al., 2014). This approach encourages collaboration between experts from various domains to solve problems that cannot be fully understood or addressed by one discipline alone (Volgger et al., 2014).

Tourism as a field of study is challenged to identify a theoretical core and disciplinary boundaries. While the phenomena of tourism may be considered a system of interlinked parts, the scholarly body of knowledge of tourism may be described as a mosaic of knowledge (Laws et al., 2015). Interdisciplinary research in tourism refers to a research approach that integrates theories, methods, and insights from multiple academic disciplines to comprehensively understand and address the complex nature of tourism (Darbellay et al., 2012). Tourism is a multifaceted field that touches upon various aspects of human life, such as culture, economics, environment, technology, and social behavior. Given the complexity of the industry, relying on a single discipline to study tourism often provides a limited perspective (Laws et al., 2015).

The interdisciplinary approach to tourism research is an evolving epistemology that enriches the field by incorporating diverse perspectives. This type of research allows for a variety of approaches to studying tourism, with disciplines drawing on frameworks and methodologies from other fields to address tourism-specific issues (Okumus et al., 2018). The collaboration has emerged, linking specialized tourism knowledge with broader interdisciplinary insights. Although these approaches vary, spanning both business and scientific research, they contribute to a deeper understanding of various aspects of tourism (Pechlaner et al., 2014). When formulating research problems, the integration of interdisciplinary approaches is crucial in tourism research (Tsegaw et al., 2024). While researchers can often identify relevant issues, they frequently struggle to frame these problems within a broader, systematic context. This highlights the importance of interdisciplinary engagement in addressing tourism research challenges more comprehensively (Matteucci et al., 2017).

Interdisciplinary research, therefore, aims to combine expertise from different fields to generate a more holistic and nuanced understanding of tourism and its broader impact. Positioning tourism research within interdisciplinary approaches appears beneficial for its development as an academic discipline. By doing so, tourism research can engage with a variety of perspectives and methods while maintaining its independence as a field of study and practice (Pechlaner et al., 2014). Interdisciplinary research has been closely linked to the tourism field, where a strong attachment to familiar methodologies can sometimes create barriers. However, several studies have explored tourism as a fertile area for interdisciplinary research, offering valuable findings and discussions on how various disciplines can contribute to a deeper understanding of the field.

3. METHODOLOGY

The aim of this review study is to analyze the interdisciplinary research approach within tourism studies, focusing on how diverse perspectives contribute to addressing practical challenges in the tourism industry and fostering interdisciplinary collaboration. The study also seeks to evaluate the opportunities and challenges of interdisciplinary research in contemporary tourism science.

The research methodology used for this study is a document review method, which involves

the systematic collection, analysis, and interpretation of written materials relevant to the subject of scientific discourse. This method allows for an in-depth examination of existing literature, theoretical frameworks, and empirical findings related to the use of scientific discourse in various fields of research (Vrondou et al., 2017; Rahmi et al., 2021).

The initial step in the document review process involved identifying and selecting materials relevant to the search terms of *"tourism research"*, *"interdisciplinary research"*, and *"interdisciplinary approach"*. The primary focus was on gathering documents that specifically address *"interdisciplinary research in tourism"* ensuring a comprehensive exploration of the subject.

It was conducted using academic databases, such as Google Scholar and Scopus. Peer-reviewed journal articles from reputable academic publishers, and conference proceedings were prioritized to ensure the validity and reliability of the information. Only papers published from 2000 onwards were included to ensure the research reflected current trends in scientific discourse. This study after review received 157 relevant and suitable articles for discourse analysis on interdisciplinary research in tourism. The data collected through document review were analyzed using qualitative content analysis. This method allowed the identification of research themes, applied theories and research methods across different studies, highlighting common approaches and challenges in analyzing scientific discourse.

Although document review is a useful method for analyzing existing literature, it has certain limitations (Miralles et al., 2023). A significant limitation of this study is the potential for selection bias, where the range of documents reviewed may not fully capture the diversity of scientific discourse relevant to the research.

4. REVIEW FINDING

4.1. Diversity of theories and approaches in tourism research

Tourism studies encompass a wide range of disciplines and sub-disciplines, each examining different aspects of tourism. The use of the plural term highlights the complexity and multi-dimensional nature of the phenomenon, which inherently requires a multidisciplinary approach. This is often the result of specialized fields emerging from previously unified disciplines (Liszewski, 2010). They clearly share common origins and often focus on the same field of study.

Tourism as a relationship with other social institutions in contemporary societies and among people, exists for its survival. Tourism can be viewed as a scientific subject with a distinct nature, forming a unique complexity that differentiates it from other fields of study. This unique complexity in tourism arises from various elements, such as the heterogeneity of its participants, the multi-locality and cross-local relationships, the globalization of activities, places, and governance, and the diversity of leisure activities that shift from differentiation to transmission (Franklin, 2007). Consequently, tourism research employs a diverse array of theories and methods, reflecting its multifaceted and comprehensive approach. This includes studies on economic impact, cultural and social analyses, environmental assessments, and marketing strategies, all of which showcase the richness of tourism research (Darbellay et al., 2012; Matteucci et al., 2017).

(1) *The richness of research theories*

In tourism research, a diverse range of theories and approaches has been employed to comprehend and tackle the complex nature of tourism. These theories are drawn from various fields of study, including economics, sociology, psychology, and geography, among others. Below are some of the most prevalent theories and approaches used in this field:

Economic theories

Tourism Demand Theory: The theory of tourism demand examines the factors that shape people's desire and capacity to travel to specific destinations. It aims to explain the motivations behind individuals' travel decisions, taking into account a range of economic, psychological, and social variables. By analyzing influences such as income levels, pricing, personal preferences, and broader economic conditions, this theory provides insights into travel behavior. It is also useful for forecasting travel trends and preparing for shifts in demand (Divisekera, 2003; Song et al., 2023).

Tourism Supply Theory: Tourism supply theory focuses on the availability and provision of resources and services needed to meet the demand for tourism. It examines the various components that make up the tourism industry, including accommodation, transportation, attractions, and other services that cater to tourists. The theory considers how these elements are produced, distributed, and managed to create a tourism product, such as pricing, infrastructure, and the capacity of destinations. Ultimately, it helps in understanding how the tourism industry responds to market needs and how supply can be optimized to enhance the overall tourism experience (Wijayanti et al., 2017; Camilleri et al., 2018, Wiweka et al., 2019).

Input-Output Model: This model analyzes the interconnections between hotels, restaurants, travel agencies, and other economic sectors, providing insights into how changes in one area can impact the overall economy. It uses backward and forward linkages to explain how growth in the tourism sector drives increased demand for inputs from other industries, while also boosting supply to other sectors. These linkages offer a comprehensive view of how the tourism sector can contribute to and support broader economic growth (Surugiu et al., 2009; Klijs et al., 2012; Khoshkhoo et al., 2017).

Moreover, various other economic theories are applied to the study of tourism, including the Multiplier Effect Theory (Suryanata, 2019), Tourism Specialization Theory (Marsiglio, 2018), and Price Elasticity of Tourism Demand Theory (Nguyen, 2021), among others. Together, these theories provide insights into how tourism influences broader economic systems, driving growth, employment, and development.

Sociological theories

Social Exchange Theory: This theory explains the interactions between tourists and local communities based on a cost-benefit analysis. It suggests that individuals or communities engage in tourism activities if they perceive the benefits of economic, cultural outweigh the costs for environmental, social disruption. It helps researchers and policymakers assess the balance of

benefits and costs in tourism planning, ensuring that tourism growth is mutually beneficial for both tourists and host communities (Nunkoo, 2016; Jani, 2018; Dutt et al., 2023).

Acculturation Theory: Acculturation Theory in tourism refers to the process by which individuals or groups from one culture adopt the practices, values, and behaviors of another culture, often as a result of extended interaction, travel, or exposure. In tourism, this theory explores how both tourists and host communities influence and adapt to each other's cultures during their encounters. It is particularly important in managing sustainable tourism to ensure cultural preservation while fostering positive interactions (Sevim, 2018; Özekici et al., 2019; De-Juan et al., 2021).

Cultural Capital Theory: Cultural Capital Theory in tourism examines how people's cultural backgrounds shape their choices of destinations, activities, and the ways they experience and engage with travel. This theory helps explain why individuals from different socioeconomic and educational backgrounds might seek out varying types of travel experiences. It also underscores how tourism is a way for individuals to accumulate cultural capital by engaging in new cultural experiences, broadening their worldviews, and gaining social prestige (Carvalho, 2014; Njovo et al., 2018; Quaglione et al., 2020).

Additionally, several other sociological theories are frequently applied in tourism research, such as Cultural Identity Theory (Urošević, 2012), Postmodernism in Tourism (Minca et al., 2014), Ritual Theory (Sterchele, 2020), Theory of the Leisure Class (Hillman, 2009), Social Constructionism (Campanella, 2013), and Place Attachment Theory (Vada et al., 2019), among others. These sociological theories help researchers understand the complex social interactions, cultural exchanges, to understand the social dynamics and impacts of tourism on both individuals and societies.

Psychological theories

Abraham Maslow's Theory of Needs: In tourism, Abraham Maslow's Theory of Needs can be applied to understand why people travel and what they seek from their travel experiences based on their personal needs. These needs influence the type of tourism they engage in and how they prioritize travel. This theory helps explain the motivations behind why people travel. Different types of tourism correspond to different levels of needs, and travelers may seek to satisfy these needs in varying combinations depending on their personal circumstances and desires (Anish Yousaf et al., 2018; Pemayun et al., 2018; Hussain, 2021).

Push and Pull Motivation Theory: Push and Pull Motivation Theory explains the factors that influence people's decision to travel and choose specific destinations. It categorizes the motivations into two types to help explain why people travel (push factors) and what attracts them to specific destinations (pull factors). It's a useful framework for understanding tourist behavior and for developing marketing strategies that address both internal motivations and destination attributes (Nikjoo et al., 2015, Said et al., 2018; Prabawa et al., 2020).

Theory of Planned Behavior: The Theory of Planned Behavior in tourism explains how tourists' travel decisions are influenced by their attitudes toward travel, the social pressures they experience, and their perceived ability to carry out the trip, based on three key factors: attitudes,

subjective norms, and perceived behavioral control. This theory helps tourism professionals better understand and predict travel behavior, which is useful for marketing, destination management, and travel behavior research (Erul et al., 2020; Wang et al., 2020; Abbasi et al., 2021).

The several other psychological theories are widely used in tourism to understand the behaviors, motivations, and experiences of travelers, including motivation, decision-making, satisfaction, and emotional connection with travel experiences. They are essential tools for tourism researchers, marketers, and service providers to create meaningful and satisfying travel experiences for various types of travelers. These are theories Travel Career Ladder (Williams et al., 2011), Flow Theory (Huang et al., 2021), Expectancy Disconfirmation Theory (Zehrer et al., 2011), Leisure Constraints Theory (Zientara et al., 2024), Cognitive Dissonance Theory (Zhang et al., 2023) and more.

Environmental-Geographic theories

Theory of Tourism Geography: The Theory of Tourism Geography focuses on understanding the spatial aspects of tourism, examining how geographical factors influence tourist behavior, destination development, and the interaction between tourists and the environments they visit. This Theory provides a comprehensive framework for understanding the spatial dimensions of tourism. It analyzes tourism's impacts and develop effective strategies for sustainable tourism development and destination management (Gibson, 2008; Wenjing et al., 2019; Bordun et al., 2020).

Tourism Area Life Cycle: Tourism Area Life Cycle describes the evolution of a tourist destination over time. The model outlines the various stages that a destination typically goes through, from its inception as a relatively unknown area to its potential decline or rejuvenation. Tourism Area Life Cycle is widely used in tourism studies to understand how destinations develop, mature, and adapt to changing market conditions to adapt to changing tourist demands and preserve the integrity of the destination (Butler, 2006; Tang, 2017; Singh, 2021).

Sustainable Development Theory: Sustainable Development Theory provides a holistic approach to tourism development that prioritizes environmental protection, social equity, and economic viability. This theory emphasizes the importance of creating a tourism model that minimizes negative impacts on the environment and local communities while maximizing benefits for all stakeholders involved. By integrating these principles into tourism planning and management, stakeholders can work toward creating a more sustainable tourism industry that benefits present and future generations (Murphy et al., 2012; Henama et al., 2019; Sharpley, 2020).

These geographical theories help researchers understand the spatial, environmental, and developmental aspects of tourism, offering insights into destination management, tourist behavior, and the sustainable development of tourism. Additionally, the several other geographical theories are commonly applied in tourism research to understand spatial relationships, environmental impacts, and destination development, such as: Central Place Theory (Xu, 2021), Spatial Interaction Theory (Patuelli et al., 2016), Core-Periphery Theory (Agius et al., 2023), Carrying Capacity Theory (Marsiglio, 2017), Ecological Footprint Theory (Miralles et al., 2023), Environmental Determinism (Ivars-Baidal et al., 2013), etc...

Theories in tourism offer a robust framework for understanding the multifaceted and interconnected nature of tourism. Additionally, numerous other theories are applied in tourism research, such as tourism management theory, tourism marketing theory, and complex systems theory (Franklin, 2007; Darbellay et al., 2012; Matteucci et al., 2017). The selection of a particular theory depends on the specific objectives of the research. Researchers often integrate multiple theories to achieve a more comprehensive understanding of the tourism phenomenon.

(2) The diversity of methodologies

Analyze trends and issues of methodological diversity in tourism research. Initially, critical tourism and hospitality researchers may explore other related research questions to understand how and why such mechanisms prevail. These researchers were acceptance. Being dominated by methods of discourse. This has a perspective on the tourism economy which allows them to examine how and why some discourses are dominant while this period (Garner, 1996). *Discourse Analysis Methods* in tourism is a research method used to examine how language, communication, and narratives shape the understanding of tourism practices, experiences, and identities. It involves analyzing written, spoken, or visual texts - such as travel brochures, advertisements, social media, or interviews - to uncover underlying meanings, power dynamics, and cultural representations in tourism. By studying these discourses, researchers can explore how tourism is framed, how destinations are marketed, and how tourists and locals are portrayed, revealing the social, political, and economic influences embedded in tourism communication (Feighery, 2006; Li et al., 2018).

The change then, the dominant paradigm is found to be positivism in the study of tourism. Therefore, tourism studies often used quantitative research methods (Dann et al., 2001). *Quantitative research methods* were often used in fields like social sciences, economics, and health sciences to test hypotheses and make generalizations about larger populations. Quantitative research methods refer to techniques used to gather and analyze data in numerical form. This approach focuses on measuring variables and employing statistical, mathematical, or computational tools to uncover patterns, relationships, or trends in the data. Tourism research has used quantitative research methods provide a systematic, objective way to collect and interpret data through numerical analysis in study the field of tourism (Walle, 1997; Baggio et al., 2017).

However, the change is now underway with more reflective and critical paths of inquiry. Then there was a recent methodological shift is occurring in the field towards more qualitative approaches and away from pure quantification (Dann et al., 2001). *Qualitative Research Methods* in tourism focus on understanding human experiences, behaviors, and perceptions related to tourism by exploring the meanings and insights behind people's actions, decisions, and interactions. Unlike quantitative methods, which rely on numerical data, qualitative research seeks to capture the deeper, more subjective aspects of tourism through rich, descriptive data. Qualitative research methods in tourism offer deep insights into the human dimensions of travel and tourism by exploring behaviors, feelings, and social interactions, providing a rich, context-driven understanding of the tourism experience (Phillimore et al., 2004; Cheia, 2010).

In recent years, research findings in tourism have shown diversity in the approaches to tourism studies. This will inspire researchers to increasingly embrace the diversity in research

methods within tourism science, as well as the complexity of these methods in relation to interdisciplinary research (Tsegaw, 2024). Thus, three primary research methods - Discourse Analysis Methods, Quantitative Methods, and Qualitative Methods - have been widely utilized in tourism research. In addition, mixed methods research is beginning to receive more attention in tourism research (Truong et al., 2020). *Mixed methods research* in tourism involves combining both quantitative and qualitative approaches to gain a more comprehensive understanding of tourism-related phenomena. This approach allows researchers to collect and analyze numerical data (quantitative) alongside detailed, descriptive insights (qualitative), offering a richer, multi-dimensional perspective. By integrating these methods, tourism researchers can better explore complex issues, cross-validate findings, and address research questions that may be difficult to fully capture using a single method alone. Mixed methods are especially valuable in tourism studies due to the interdisciplinary and dynamic nature of the field (Khoo-Lattimore et al., 2019).

More recently, during and after the COVID-19 pandemic, digital methods witnessed unprecedented growth, opening up avenues while also generating new questions about access proximity and distance, digital divides, current global dimensions, patterns, trends and power. In the present study, results may be subject to an optimism bias due to self-selection and self-reporting (Tsegaw, 2024).

4.2. Expanding interdisciplinary research in tourism studies

The abundance of theories and approaches in tourism research not only addresses practical issues but also expands the potential for interdisciplinary research and collaboration. This is because tourism, by nature, intersects with many scientific fields (Laws, 2015). However, to develop tourism in a sustainable and effective manner, the support of scientific tourism research is essential. Expanding research and interdisciplinary collaboration in this field is extremely necessary for the following reasons:

First, the phenomenon of tourism is inherently complex, involving economic, social, cultural, environmental, and political aspects. Each of these aspects has traditionally been studied by different disciplines. For example, economics provides insights into the financial impacts and market dynamics of tourism, such as revenue generation, employment, and economic development (Darbellay et al., 2012). Sociology and anthropology explore the cultural and social impacts, including how tourism affects local communities, cultural exchange, and identity. Environmental science focuses on ecological impacts, assessing how tourism influences natural resources, wildlife, and sustainable practices (Laws et al., 2015). Political science and public policy examine legal and governance issues surrounding tourism, including policy development, implementation, and international relations (Hall, 2010). The integration of these diverse perspectives helps create a comprehensive understanding of tourism.

Second, interdisciplinary research fosters a comprehensive and cohesive approach to solving problems and driving innovation in tourism. Complex tourism-related challenges, such as climate change, demand the collective expertise of climatologists, urban planners, economists, and public health experts to devise effective adaptation and mitigation strategies (Bordun et al., 2020). For instance, tackling the effects of climate change on coastal tourism requires environmental

scientists' insights on rising sea levels, urban planners' expertise in building resilient infrastructure, economists' strategies for diversifying tourism, and public health measures to mitigate health risks (Gibson, 2008; Wenjing et al., 2019). Likewise, preserving cultural heritage in tourism calls for collaboration among historians, architects, and economists to ensure cultural sites are preserved while delivering economic benefits and maintaining accessibility for tourists (Lusetyowati, 2015).

Third, global challenges in tourism demand an interdisciplinary approach. Issues such as overtourism and the impacts of global health crises, like pandemics, transcend national borders and require coordinated responses (Arora et al., 2021). Overtourism, which can lead to environmental degradation and social strain, necessitates insights from environmental science to assess carrying capacity, urban planning to manage tourist flows, and public policy to implement sustainable tourism practices (Henama et al., 2019; Sharpley, 2020). The COVID-19 pandemic highlighted the need for interdisciplinary research to understand and manage its effects on tourism, involving public health experts, economists, and crisis management professionals to develop recovery strategies and enhance resilience (Napoli et al., 2022).

Fourth, interdisciplinary research enriches the methodological approaches in tourism studies. By leveraging methods, techniques, and models from various scientific fields, tourism researchers can achieve greater precision and depth in their analyses (Liszewski, 2010; Darbellay et al., 2012). For instance, geographic information systems (GIS) from geography can be utilized to map and assess spatial tourism patterns, while big data analytics from computer science can offer valuable insights into tourist behaviors and preferences (Wei, 2012). The combination of these diverse methodologies leads to more robust, well-rounded, and comprehensive findings.

Fifth, interdisciplinary research plays a crucial role in the educational and academic development of tourism studies. Equipping future researchers and practitioners with a broad, multidisciplinary education prepares them to tackle the diverse challenges facing the tourism sector (Coles et al., 2006; Darbellay et al., 2012). A well-rounded training program ensures they can adapt to emerging trends and apply relevant methods from various scientific disciplines, fostering innovation in tourism management and development (Vrondou et al., 2017). This approach cultivates professionals who are not only versatile but also capable of driving sustainable and forward-thinking solutions in the industry.

Finally, interdisciplinary research fosters meaningful stakeholder engagement, a critical aspect of tourism. Tourism impacts a wide range of stakeholders, including governments, businesses, local communities, and tourists (Rachmawati et al., 2020). An interdisciplinary approach encourages inclusive decision-making by incorporating diverse perspectives and expertise from all parties involved (Darbellay et al., 2012). It also aids in resolving conflicts, balancing competing priorities like economic development and environmental conservation, by providing well-rounded and informed solutions that consider all interests (Amerta, 2017).

4.3. Opportunities and challenges of interdisciplinary research in tourism science

The diversity of theories and approaches in tourism research offers both opportunities and challenges for the future. As tourism evolves, the methods and theoretical frameworks used to

study it must adapt and grow as well, ensuring that research remains relevant and capable of addressing emerging trends and complexities.

Emerging trends and technologies

Emerging technologies like big data, artificial intelligence, and virtual reality are opening new avenues for tourism research. These innovations enable the collection and analysis of vast amounts of data, offering deeper insights into tourist behavior and enhancing travel experiences (Costin et al., 2021). For instance, analyzing online reviews and booking data can reveal tourist preferences and market trends. Artificial intelligence plays a key role in crafting personalized marketing strategies and enhancing customer service. Meanwhile, virtual reality offers immersive pre-trip experiences, allowing tourists to explore destinations through virtual tours and simulations (Zelenka, 2009).

Interdisciplinary education and training

To fully leverage the potential of interdisciplinary research, education and training programs must be designed to equip researchers with the skills and knowledge necessary for cross-disciplinary work. This involves creating curricula that blend theories and methodologies from various fields while also nurturing collaboration and communication skills (Pechlaner et al., 2017). Interdisciplinary education fosters a more holistic understanding of tourism, enabling researchers to tackle complex challenges and devise innovative solutions. By dismantling traditional disciplinary boundaries and promoting interdisciplinary thinking, researchers can advance knowledge and contribute to the development of sustainable and resilient tourism practices (Volgger et al., 2014).

Ethical and social considerations

As tourism research becomes more interdisciplinary and technologically advanced, ethical and social considerations must be addressed. This includes issues related to data privacy, potential biases in research, and the impact of tourism on local communities and the environment (Frechtling, 2018). Researchers must adhere to ethical guidelines and engage with stakeholders to ensure that their research is conducted responsibly and benefits all parties involved. This involves obtaining informed consent from research participants, ensuring data security, and considering the social and environmental impacts of tourism development (Khoo-Lattimore, 2018).

Knowledge sharing and global collaboration

Knowledge sharing and global collaboration are essential for advancing tourism research and addressing global challenges. By working with researchers, practitioners, and policymakers from different countries and regions, tourism researchers can gain diverse perspectives and insights (Higuchi et al., 2017). International conferences, research networks, and online platforms provide opportunities for knowledge exchange and collaboration. These forums enable researchers to share their findings, discuss emerging trends, and develop joint research projects. By fostering a global research community, tourism researchers can contribute to the sustainable and equitable development of the tourism industry worldwide (Valeri et al., 2022).

5. DISCUSSION

The richness of theories and approaches in tourism research not only helps identify and solve practical issues in the tourism industry but also expands the potential for interdisciplinary collaboration across various sectors, both within and outside of tourism. This is a strategic and well-founded direction for the field of tourism research, positioning scientific inquiry as a key driver in guiding sustainable and efficient tourism development, while playing a critical role in the socio-economic growth of many countries.

The diversity of theories and approaches in tourism research offers several practical benefits. Firstly, it enables researchers to comprehensively identify tourism issues from multiple perspectives, leading to effective and tailored solutions for specific cases. Secondly, this theoretical diversity broadens the potential for collaborative research across different disciplines, bringing together expertise from fields such as economics, sociology, environmental studies, psychology, and information technology. This interdisciplinary cooperation enhances the quality of research, leading to more applicable results and more effective solutions to tourism challenges. Moreover, such collaboration fosters innovation in the tourism sector, creating new tourism products that attract visitors and improve the overall travel experience.

The findings of this study reveal that the variety of theories and approaches in tourism science is crucial for advancing the field. The findings in this review study once again confirm the similarities with previous studies, such as those of Darbellay et al., (2012), Laws et al., (2015), Pechlaner et al., (2014), Matteucci et al., (2017), Okumus et al., (2018) và Tsegaw et al., (2024).

Therefore, it is clear that the richness of theories and approaches in tourism science plays an essential role in advancing the field. Researchers' proactive engagement in interdisciplinary research is crucial for addressing diversity, driving innovation, tackling global challenges, enhancing methodologies, improving education, and effectively engaging stakeholders. By integrating insights from various fields, tourism research can develop comprehensive solutions to the multifaceted issues in the industry, ensuring sustainable and efficient tourism development.

6. CONCLUSION

That the diversity of theories and approaches in tourism research is essential for addressing practical issues, fostering interdisciplinary collaboration, and driving innovation in the tourism industry. This richness enables researchers to develop tailored solutions, enhance methodologies, and create sustainable and efficient tourism development. Interdisciplinary cooperation across fields like economics, sociology, psychology, and environmental geography studies also contributes to socio-economic growth, improves the overall tourism experience, and ensuring sustainable tourism development.

Discourse analysis in this study has several limitations, particularly when reviewing interdisciplinary research in tourism science. It often relies on subjective interpretation of language and texts, which can vary based on the researcher's perspective or context. Moreover, its focus on specific cases limits generalizability. Nonetheless, the author views the opinions presented as contributions to the ongoing debate, encouraging readers to reflect on and share their own views.

The discussion remains open regarding which disciplines should form the "interdisciplinary alliance" in Tourism Science.

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UNDERSTANDING THE COMPLEXITY OF TOURISM IN RURAL AREAS AND SUSTAINABLE DEVELOPMENT: A SCIENTOMETRIC REVIEW OF GLOBAL RESEARCH TRENDS

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ABSTRACT

Sustainable development has been recognized as an essential and indispensable field in Tourism in Rural research and has received widespread attention. Our study was based on 795 publications over two decades (2000-2024), which were extracted from the Web of Science and visualized through bibliometric analysis. Furthermore, the "Triple bottom line" theory was applied in the content analysis of 28 high-quality articles to analyze the content and clarify the impact of rural tourism on sustainable development based on three pillars: economy, society, and environment. This study aims to explore existing studies to identify the laws, analyze research content development, and predict research trends in tourism-based sustainable development. The results revealed explicitly that (1) the number of publications in this field has increased rapidly, which can be divided into three stages. (2) Most research is developed in major developed countries and tends to cooperate with developing countries. (3) The trend of sustainable research in tourism has gradually changed firmly based on conservation, environmental ecology and technology. Research provides intellectual resources for sustainable rural development. Research helps stakeholders, policymakers, and tourism enterprises create appropriate strategies for tourism development and keep up with the trend of comprehensive and sustainable development in rural areas.

Keywords: Sustainable development; Triple Bottom Line; Tourism, Rural, bibliometric.

1. INTRODUCTION

In the context of increasingly emphasized sustainable development, the methods and roles of rural development are gradually being shaped and rebuilt, spreading to all industries, including tourism (Germanovich et al. 2020; Ibănescu et al. 2018). To promote comprehensive rural development, the combination of Tourism in Rural Areas - agritourism, rural tourism and ecotourism - plays a crucial role in sustainable development. This model not only brings sustainable economic benefits but also contributes to preserving and promoting cultural values and agricultural heritage, protecting the environment and enhancing the participation and cohesion of people in the local community (Abadi & Khakzand 2022; Widawski et al. 2023). Agritourism will help visitors understand agricultural products' origin, process, and value based on the connection between production and experience, contributing to farmers' income generation (Broccardo et al., 2017; Chase, 2019; Tugade, 2020). In the work of (Yanan et al., 2024; Zhao, 2024), rural tourism, which focuses on cultural conservation and development, job creation and infrastructure development, provides opportunities to explore life and preserve traditions to improve the quality of life and increase the livelihood of local people. Meanwhile, ecotourism focuses on environmental protection and sustainable education development, allowing visitors to explore natural ecosystems and raise awareness of the importance of conservation (Stronza et al., 2019), creating a breakthrough strategy for sustainable development (Xu et al., 2023). Although

there are many publications on Tourism in Rural Areas and sustainable development (An & Alarcón, 2020; Ćurčić et al., 2021; Ibănescu et al., 2018; Xu et al., 2023), there is still little knowledge of scientific measurement methods to comprehensively illustrate the research structure with the benefit of visualizing and analyzing large volumes of data. In this study, we aim to explore a broader approach to sustainable tourism-based development in rural areas using 795 articles for bibliometric analysis and 28 articles with high-quality articles for content analysis to conduct a comprehensive and systematic bibliometric analysis of studies related to the relationship between rural tourism and sustainable development. To achieve this goal, the study addresses the following issues.

- (1) Our study provides a detailed insight into the current state of relevant research
- (2) Illustrate academic trends and developments based on statistical and content analysis
- (3) Reveal future research trends to provide scientific references for further research directions.

2. CURRENT STATE OF RESEARCH

Sustainable tourism-based development in rural areas is a multifaceted approach that leverages local resources, culture and community participation to promote economic growth while preserving cultural, environmental and social integrity (Hwang et al., 2012; Tong et al., 2024) . This approach is increasingly recognized as a viable strategy for rural revitalization, providing diverse benefits such as job creation, cultural preservation, entrepreneurship, infrastructure development and sustainable practices (Chase, 2019; Tugade, 2020; Widawski et al., 2023; Xu et al., 2023). Some previous studies have shown similar results on sustainable tourism-based development in rural areas based on the three main pillars: economic, social and environmental (Hwang et al., 2012; Murphy & Price, 2012). However, others have not yet agreed on how they impact sustainable development. Typically, Agro-ecotourism in China illustrates how local culture and resources can be used for sustainable development, preventing resource exploitation through appropriate (Djuwendah et al., 2023; Meng et al., 2024) suggested local involvement in promoting traditions and crafts. Nevertheless, sustainable development theory and the triple bottom line framework are considered core to understanding and promoting sustainable development in rural areas. These frameworks provide a comprehensive approach to addressing the multifaceted challenges faced by rural communities, integrating economic, social and environmental aspects. Given the important role of rural sustainable development in maintaining a balance between economic development, environmental protection and social development, studies on tourism and sustainable development have increased steadily over the past decade, both in number and scope. However, existing studies have not yet painted a comprehensive picture of the level and trend of development from an overall perspective. Most previous reviews have focused on a small number of studies, a short period of time, specific cases, or a single type of tourism. The core question of generalizing, summarizing, and theorizing research results to promote academic progress in rural tourism remains a significant challenge for researchers. To address this issue, the current study uses bibliometric analysis to clarify the knowledge system of existing studies and integrate, analyze and predict the progress and legacy from a more comprehensive perspective.

3. RESEARCH METHOD AND DATA COLLECTION

Bibliometric analysis is the use of statistical methods to analyze data on a specific topic for scientific publications (Donthu et al., 2021; Passas, 2024). These bibliometric databases contain bibliometric information such as title, author, publisher, year of publication, page number, abstract, keywords, and different documents and formats. Bibliometric analysis's main advantage is ensuring objectivity and minimizing subjectivity in the author's arguments (Ardito et al., 2019; Piwowar-Sulej et al., 2021). This study was based on the rigorous PRISMA (2022) process, aiming to evaluate the implementation of a scientific, systematic document method including 4 steps (Page et al., 2022):

Step 1: *Data retrieval*: Documents were collected from research sources from Web of Science (WOS), which is a bibliographic database containing influential, wide-ranging and relevant scientific articles in the field of tourism research and is often chosen as a data source for bibliometric analysis (Caicedo-Barreth et al., 2024; Salouw et al., 2024). In addition, WOS data is considered suitable and compatible with many bibliometric analysis tools. After establishing the research data source, it is necessary to determine the retrieval strategy to consider the scope and precision of the formula to optimize search results (Birkle et al., 2020). After several attempts at different keyword phrases, the study identified a keyword string consisting of ("rural tourism" OR "agricultural tourism" OR "agricultural tourism" OR "ecotourism") AND "sustainable development". A search strategy was established, the initial search results yielded 1027 research papers. To collect a range of articles relevant to the topic and convincing in the research directory, the authors continued to filter the documents based on the criteria in Table 1, resulting in 810 documents ready for further Literature screening.

Table 1. Category and specific standard requirements

| CATEGORY | SPECIFIC STANDARD REQUIREMENTS |
|------------------------|---|
| Research database | Web of Science |
| Citation indexes (Wos) | SSCI, SCIE |
| Language | English/ |
| Searching keywords | ("rural tourism" OR "agrotourism" OR "agritourism" OR "ecotourism") AND "sustainable development" |
| Document types | Article |
| Data extraction | Export with complete records and cited references in plain text format (Wos); full records and cited references in Bibtex format(Scopus) |
| Sample size | 1027 (Before manual screening) and 795 (Before manual screening) |

Step 2: *Literature screening*: Although the research footprint was identified, it was not related to the important topic. Therefore, the research team members conducted a tool screening after removing duplicates and non-English articles. Next, the research team removed studies not aligned with the focus based on the title and abstract. This phase lasted about 10 days, resulting in 795 articles that met the requirements to create a set of content-focused announcements and serve as a database for the next step.

Step 3: *Data standardization*: To analyze the research content in depth, the author continued the screening step, selecting high-quality articles linked to the research topic. This phase lasted about 07 days. The results obtained were 28 articles that could be analyzed in depth with quality criteria on content, methods, and journal sources based on the data standardization process of Taskin and Al (2019).

Step 4: *Data synthesis*: Finally, to synthesize the data, the study used 795 articles for the analysis directory and 31 articles for the analysis content. The study used quantitative and qualitative methods and employed a combination of two tools for bibliometric analysis, VOSviewer and Biblioshiny, to answer the research questions through a systematic data review system.

4. RESULT AND DISCUSSION

4.1. Number of publications

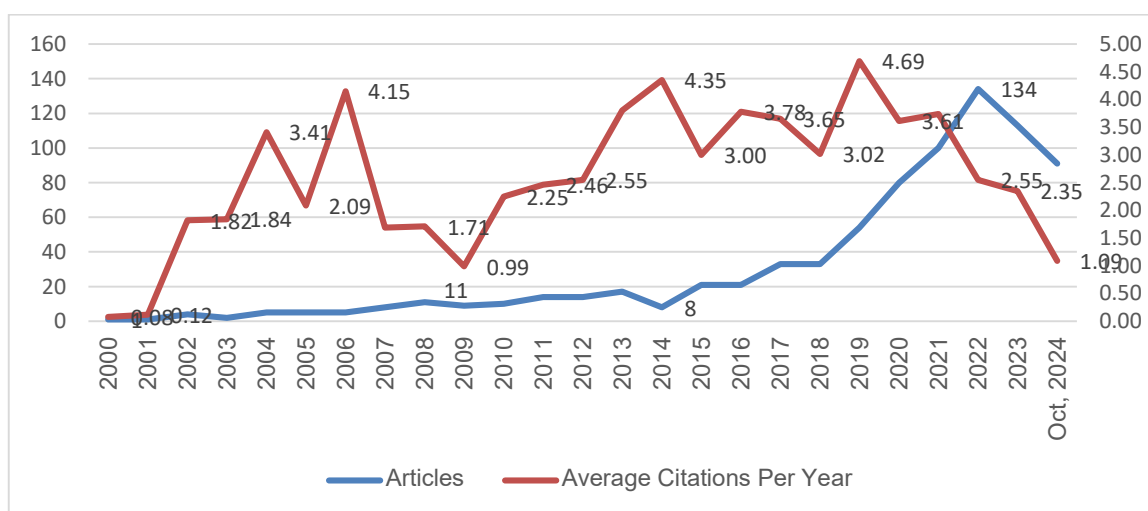


Fig.1. Number of publications and average citations by year

The number of publications tends to increase and is divided into three stages (Fig.1). First, From 2000 to 2005, the seed stage for research, the number of articles was still limited and had a slow increase from 5 to nearly 20. Indeed, the average citation increased dramatically from 0.12 to 4.15. This shows that the academic community's interest is gradually increasing, and the level of influence with average citations tends to increase dramatically. However, the limited number of publications also makes average citations high in this period. Second, from 2006 to 2015, the number of articles increased each year. However, the speed was slow and even, while the citation fluctuated in the range of 2-4.35, reflecting a moderate level of influence and somewhat more stable than the previous period. From 2016 to 2024, the number of articles increased sharply, reaching more than 120 articles in 2021 and reaching a peak of 134 articles in 2022. However, the average citations tended to decrease, which shows that although many studies were published, their scientific impact gradually decreased, possibly due to saturation or lack of breakthroughs and less novelty. The results show that the increase in articles does not go hand in hand with maintaining or increasing scientific impact, especially in the current period.

4.2. Cooperation of countries

Scientific cooperation and global cooperation are constantly expanding (fig 2). Typically, (the People's Republic of China) and the United States (USA) are two central countries with large bubble points, with large, dense networks of connections with many other countries in the world. With the early appearance of the US in the research network, it is easy to understand the process of building extensive relationships globally, especially in European countries. In contrast, China appears to have a prominent yellow bubble size, showing an emerging trend since 2021, but it also has an important role in leading global scientific research, with sustainable cooperative relationships with developed and developing countries. In addition, developing countries are also making efforts to build significant scientific links, especially with China and Southeast Asian countries. The results demonstrate the efforts of countries worldwide to participate in international scientific networks.

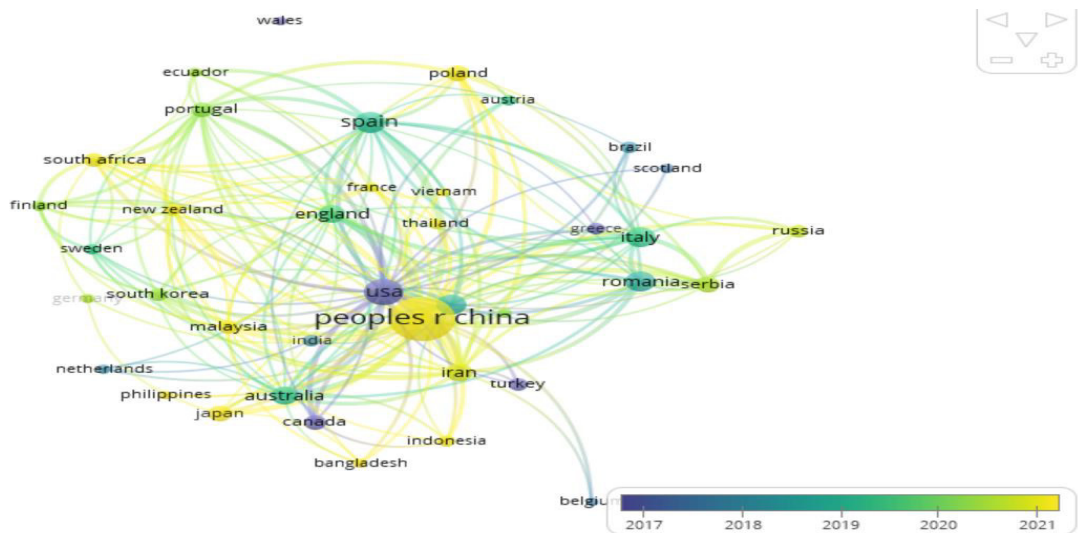


Figure 2. Global Scientific Collaboration Network

4.3. Keyword analysis and Evolution of the theme over time

Keyword analysis: Figure 3 graphically depicts the keyword network; different colours are shown for clusters representing representative research groups, each carrying different topics related to development. sustainable tourism, with a focus on ecotourism development, rural tourism, agritourism, and policy management

- (1) Red cluster - Sustainable development and ecotourism: This cluster reflects the global trend of environmental protection through sustainable tourism and is also the largest cluster in the network. The core content focuses on sustainable development goals based on conservation, biodiversity development, and community-based ecotourism developed graphically depicts the keyword network, different colours based on natural resource exploitation and restoration, which are significant in development strategies and coping with climate change and resource depletion.
- (2) Green cluster - Rural tourism: With the meaning of representative keywords such as perception,

satisfaction, and loyalty, reflecting destination experiences and sustainability based on experiential feelings through satisfaction and long-term attachment. This result is meaningful in sustainable development based on job creation, increased income attachment, and heritage conservation.

(3) Blue Cluster – Agritourism and sustainable

Agritourism is becoming a strong development trend and is significant in sustainable development, diversifying income, and enhancing agricultural value. It creates a reciprocal relationship between agriculture and tourism. It helps people increase income from agricultural activities and protects and promotes heritage. In particular, these tourism activities also play an important role in building development policies for local communities and tourists to participate in economic development and resource management.

4. Yellow Cluster - Policy and Governance

Representative keywords demonstrate the contribution of policy and governance as key factors to ensure sustainable development in the tourism sector. Building appropriate policies and development strategies is the basis for establishing positive actions in tourism development in rural areas towards sustainable development.

Table 2. Summary of Co-Word analysis in cluster

| Cluster No and colour | Cluster label | Number of keywords | Representative keywords |
|-----------------------|--|--------------------|---|
| Red and Purple | Sustainable Development and Ecotourism | 28 | sustainable development, ecotourism, conservation, biodiversity, landscape, community-based ecotourism. |
| Green | Rural tourism | 22 | Rural tourism, perception, satisfaction, loyalty, residents, destination, rural area, motivation. |
| Yellow | Policy and Governance | 20 | governance, rural development, framework, challenges, strategies, agriculture governance, empowerment, perception |
| Blue | Agritourism and sustainable | 24 | Agritourism, heritage, participation, rural development, support, sustainability, policy, area, heritage |

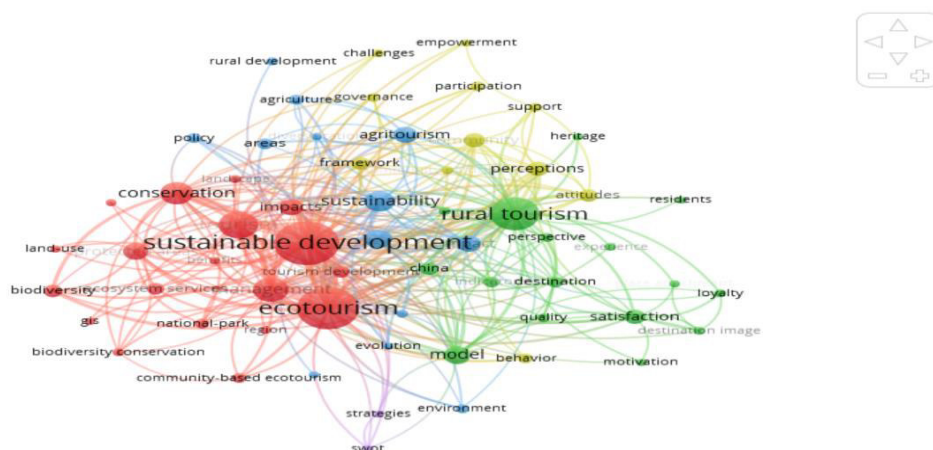


Figure 3. Keyword network visualization

Evolution of the theme over time: In the initial phase (2000-2005), research mainly focused on ecotourism and conservation, while rural tourism and agritourism were only beginning to receive attention. From 2006 to 2015, sustainable development became a major theme, especially with a significant increase in attention paid to China and developing regions. Finally, from 2016-2024, research became more diverse, focusing on sustainability, protected area conservation, and rural tourism development. The research focus has shifted from ecotourism towards sustainable tourism and rural development. At the same time, research has become more specific, focusing not only on conservation but also on protected areas, specific regions like China, and the participation of rural communities in development sustainability. Over time, research topics have become more diverse, involving many different aspects of tourism, from sustainability and ecology to rural and agricultural, demonstrating the increasingly close links between tourism and sustainable development. This image shows a clear progression in sustainable tourism research topics, shifting from ecotourism and conservation to a diverse combination of sustainable tourism, agritourism, and preserving the area. This reflects a growing awareness of the importance of sustainable development in the global tourism landscape.

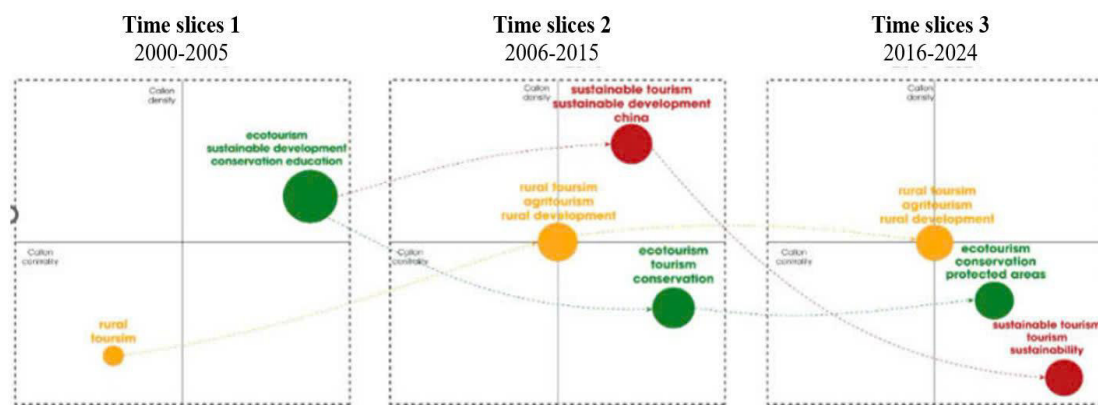


Figure 4. Evolution of the theme over time

4.4. Trends in sustainable development and tourism in rural area

Figure 5 shows research trends from 2008 to 2024, as shown by the size of the points (bubbles) and the length of the horizontal bars. Terms related to the environment, sustainable development, ecotourism, rural tourism, and agritourism are tracked throughout this period. From 2010 to 2017: Sustainability, ecotourism, rural development, protected areas, and conservation tend to grow, but they became more popular around 2014. In particular, the emergence of factors related to remote sensing shows a strong shift related to technology.

Blooming development phase (from 2018 to 2024): Land use, ecology, climate change, sustainable tourism, rural tourism, and sustainable development goals (SDGs) are the most developed and mentioned terms in this period, showing the trend and interest in sustainable development, especially on issues of climate change and land use. In particular, the keyword China emerged, showing that the country's research connection and interest in development is growing strongly. In addition, terms that have only appeared since 2020 include rural revitalization, agribusiness, market segmentation, and biodiversity conservation. This indicates

the emergence of new or renewed themes in research related to the environment, business and rural development related to marketing and value.

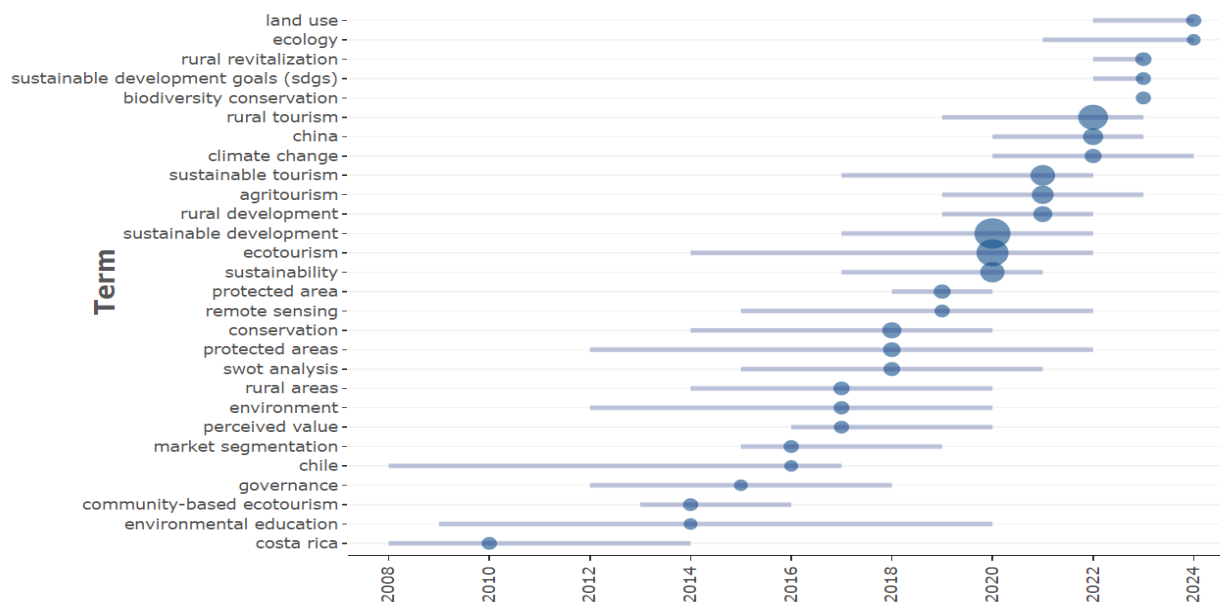


Figure 5. Trend topic

4.5. Tourism Triangle for Sustainable Rural Development

This study used qualitative methods to analyze the outstanding characteristics of each type of tourism and its impact on sustainable development.

In terms of economic impact, these types of tourism all contribute to creating more jobs, diversifying and increasing income for local people (Goncharova et al., 2021), through activities such as providing tourism-agriculture services, selling agricultural products (Wei et al., 2024). Additionally, various types of economic and startup business models appear and develop rapidly (Nematpour & Khodadadi, 2021).

In terms of social impact, Rural tourism and agricultural tourism contribute to improving lives, enhancing livelihoods, preserving traditional culture and creating connection and "cultural tolerance" between people, residents and tourists (Nematpour & Khodadadi, 2021). At the same time, the combined relationship of these three types of tourism aims to increase interaction and connection in the local community (Nematpour & Khodadadi, 2021). Rural tourism combined with eco-tourism creates connections with local communities. Develop and improve rural infrastructure and public works in rural areas (Heshmati et al., 2022).

Regarding the environment, these types of tourism focus on preserving and regenerating natural resources, ecosystems and biodiversity (Tranchenko, 2015); (Vuković & Roljević-Nikolić, 2022). Raising awareness about environmental protection, organic agricultural methods and organic farms are invested and applied systematically, and high technology is applied to production processes to minimize environmental impacts (Sihombing et al., 2022).

Regarding sustainable development, the above types contribute to rural development based on improvements in infrastructure, investment in the development of public works, preservation of agricultural and cultural heritage, and maintenance of agricultural and cultural heritage. Maintain traditional agricultural beauty (88). Combining these three types of tourism helps balance economic development, environmental protection and preservation of local cultural identity (Tang & Xu, 2023), which contributes to improving rural development. Appropriate planning and management are needed for comprehensive, sustainable rural development—aspect towards sustainable development (Paul & Patil, 2022). In addition, some scholars also point out some potential negative impacts, such as appropriate planning and management needed for sustainable rural development, such as cultural erosion due to the influence of tourism, overexploitation of resources, and environmental pollution (Bookbinder et al., 1998)(Seguí & Aldana, 2023). Therefore, appropriate planning and management are needed for sustainable rural development to develop rural tourism sustainably and comprehensively. In general, the above summary table has comprehensively analyzed all aspects of different types of tourism in rural areas, pointing out the economic, social, and environmental impacts in detail and, specifically, from That has a perspective on the impacts on sustainable rural development. Developing tourism towards sustainable development is an inevitable trend, requiring synchronous and smooth coordination of relevant parties (Ghazi & Ghadiri, 2012). Based on the analyzed aspects, the research presents Figure 6, representing this relationship in sustainable rural development.

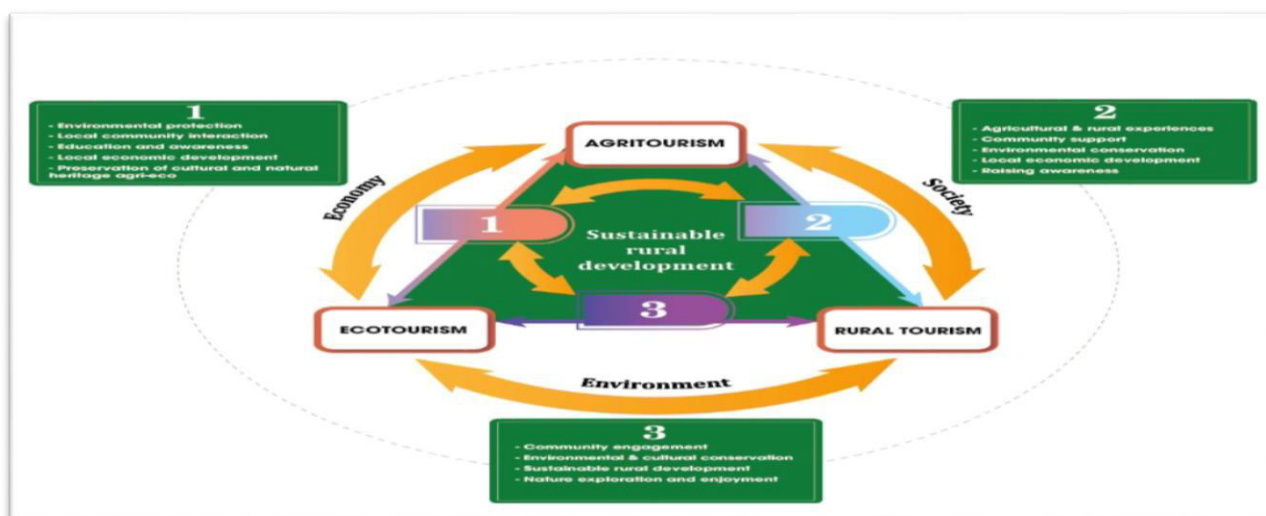


Figure 6. Sustainable Development: Interactions between agritourism, ecotourism and rural tourism

4.6. Research gap and research direction

Currently, research on sustainable development is increasing in quantity and scope. Rural tourism and sustainable development are research fields with great potential and have been studied by many scholars, but many research gaps still need to be exploited. Based on the research analysis results in the previous sections, we aim to provide a basis for identifying existing research gaps and orienting future research to create more sustainable rural tourism strategies (Table 3)

Table 3. Research trends and research gaps of Tourism in Rural Areas and sustainable development

| Trend topic | Research gap | Research direction |
|---|--|--|
| 1. Ecotourism and local community-based development | There is a lack of quantitative research measuring factors for ecotourism development. Ecotourism development strategies with the community are needed. A unified set of sustainable development standards must be built. | Research to improve the impact of ecotourism on livelihoods, quality of life, and communities. Develop strategies, create circular economic models, green productivity towards sustainable development; Research to build cooperation models between tourism businesses and local communities to share benefits and responsibility for environmental protection. |
| 2. Integrating tourism development and technology | Lack of studies assessing the role of digital technology in enhancing tourism experiences; Solutions and scenarios for specific applications of artificial intelligence (AI) and big data in predicting tourist consumption behaviour; the impact of readiness of businesses and local communities in applying digital technology. | Research on how to integrate digital technology (AI, Big Data, VR) into improving tourist experience and optimizing tourism management; Research on solutions on accessibility and application of digital technology of ecotourism businesses, especially small and medium enterprises |
| 3. Land use and land management issues land management | Lack of comprehensive assessment studies on land use conflicts between tourism and nature conservation; Impacts of land use change for tourism on local ecosystems. | Research on long-term impacts of tourism development on land resources and propose measures to restore resources and ecosystems. Research on sustainable land management models, balancing tourism development and nature conservation, improving and restoring land. |
| 4. Climate change adaptation and resource conservation tourism | There is a lack of clear research on the specific impacts of climate change on tourism destinations, Tourism solutions and methods that can contribute to mitigating the effects of climate change, and sustainable adaptation and recovery strategies for tourism destinations affected by climate change. | Develop sustainable adaptation strategies for ecotourism destinations affected by climate change, especially vulnerable destinations; research solutions and development strategies to minimize the impact of greenhouse gas emissions and conserve natural resources; ways to cope with climate change risks and resilience. |
| 5. Develop a chain of marketing strategies and enhance business value | Lack of research on comprehensive marketing strategies for tourism products combined with conservation and value chain assessment in tourism development. Strategies to enhance sustainable value for tourism destinations through digital marketing in rural | Develop a marketing strategy based on conservation and sustainability values, appropriate to the characteristics of the destination. Develop and build effective cooperation in the value chain from the roles of the participants |

5. CONCLUSION

The study is based on a comprehensive bibliometric analysis over the period (1975-2024), the results of which serve as a “department store” for current issues and future trends of development strategies for Agricultural tourism, ecotourism, rural tourism in sustainable rural development from the perspective of bibliometric analysis. By recognizing and analyzing the contributions of meaningful types of tourism to sustainable rural development through the Triple Bottom Line (social, economic, and environmental) approach in the bibliometric analysis section, the study pointed out research demonstrating new perspectives on sustainable rural development. At the same time, the research content also highlights and clarifies new trends and the historical evolution of the research problem analyzed from 2000-2024, thereby making the research problem even more proven. Intelligence is new and tends to move the present into the future. The research also points out the impacts of agricultural tourism, rural tourism, and eco-tourism, which are always associated with sustainable development, clearly shown in the economic, social, and environmental impacts. The content analysis and research also revealed:

Firstly, Analyses of economic, social, and environmental impacts in content analysis and research contribute to recreating the overall picture of concepts and characteristics as impacts on

the development of rural sustainability. This provides a multi-dimensional and holistic view of a panoramic rural picture.

Secondly, the research has proposed a cycle in the relationship between three types of tourism: agricultural tourism, eco-tourism, and rural tourism in sustainable rural development. Outstanding characteristics for each type of tourism are clarified for each combination of types. This helps stakeholders and tourists understand appropriate development goals and strategies.

Thirdly, the research also points out the types of tourism that have trends and future potential in sustainable rural development. This meets the diverse needs of tourists, increasing the competitiveness of destinations; the study highlights trends in the tourism sector and the sustainability of neighbouring areas.

6. LIMITATION

This study further demonstrates the lack of current research on incorporating all three types of tourism in sustainable rural development. However, the limitation of the research is that the research samples include journals and book chapters in English up to the latest version (2024). Still, the author only chose English and limited the research to a few fields. Future research could, therefore, address these limitations by carefully considering collecting new data with a greater diversity of text types and different linguistic diversity. Scholars can discern differences in new findings by using a new combination of databases and multilingual formats. This research will be essential for managers, local communities, business people, scholars, and policymakers. The previous section provides a comprehensive view of the management literature and highlights potential research gaps for future trends. For the latter, the study reveals potential trends of new and potential future tourism types and suitable audiences, which helps businesses, stakeholders, and local communities. The method offers appropriate and trendy development strategies.

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PERCEPTION OF LOCAL COMMUNITY ON RESPONSIBLE TOURISM: A CASE STUDY IN DA BAC DISTRICT, HOA BINH PROVINCE, VIETNAM

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ABSTRACT

Responsible tourism development is a new trend in the tourism industry in many countries, including Vietnam. Responsible tourism is a form of tourism that minimizes negative economic, environmental, cultural and social impacts at destinations, creates direct economic benefits for local communities and ensures the harmony of stakeholders participating in tourism activities. Primary data collected through interviews with 148 people including: state management officials, tourism service businesses, tourists and local people in Da Bac district, Hoa Binh province. The article analyzes the perception of local communities on responsible tourism; at the same time, proposes solutions to raise awareness of local communities about responsible tourism in Da Bac district, Hoa Binh province, Vietnam.

Keywords: Perception, local community, responsible tourism, Da Bac District, Hoa Binh province.

1. INTRODUCTION

Tourism is one of the fastest growing industries in the world and has a direct impact on many aspects such as economy, society, culture and environment. Statistics from the World Travel and Tourism Council (WTTC), In 2023, the tourism industry contributed 9.1% to global GDP and will reach 11,000 billion USD in 2024 (up 12.1% compared to 2023), providing about 348 million jobs worldwide. Besides the positive aspects, if tourism develops massively and uncontrolled, it also poses negative problems such as resource depletion, environmental pollution, social evils, etc. To solve these problems, one of the effective solutions proposed is to approach and practice responsible tourism development.

Responsible tourism development is a new trend in the tourism industry in many countries, including Vietnam. Responsible tourism is a form of tourism that minimizes negative economic, environmental, and social impacts at destinations, creates direct economic benefits for local communities and ensures the harmony of tourism stakeholders' interests. Good responsible tourism practices help minimize negative impacts and increase positive impacts of tourism, distribute benefits fairly to local people as well as contribute to environmental and cultural protection, enhance tourist satisfaction and loyalty, create competitive advantages for tourist destinations, promote sustainable development of tourism activities and improve the quality of community life (Nguyen Trong Nhan & cs, 2021).

Da Bac district is one of the attractive and potential tourist destinations of Hoa Binh province. In recent times, tourism development in Da Bac has contributed to increased household income, helped develop infrastructure, landscapes and created jobs for rural workers. However, this has also put pressure on local resources, environment and security and order. Therefore, it is necessary to study the awareness of local communities about responsible tourism. The objective of the study is to analyze the awareness and actions of local communities about responsible tourism in Da Bac district, Hoa Binh province, Vietnam; at the same time, propose some solutions to raise awareness of local communities about responsible tourism in the coming time. The research results will be useful for sustainable tourism development in the locality and other tourist destinations in Hoa Binh and Vietnam.

2. RESEARCH METHODOLOGY

Overview of Responsible Tourism

According to researchers, mass tourism can cause a series of social and environmental problems in an area. Therefore, the concept of responsible tourism was built to meet the expectations of humanity about the need for an alternative form of tourism to mass tourism, less negative to the environment and more responsible to the community (McCabe et al, 2012; Wheeller, 1994; Nguyen Trong Nhan et al, 2021).

Responsible tourism is any form of tourism development or activity that respects and conserves natural, cultural, and social resources and contributes positively and equitably to the development and well-being of people who live, work and spend their holidays in the destination (Manente et al, 2014). According to Sariskumar & Bhavan (2018), Responsible tourism includes the socio-economic, cultural, and environmental sustainability of destinations. A three-pronged strategy, including economic responsibility, social responsibility, and environmental responsibility, is what Mathew & Kumar (2014) define as responsible tourism. Responsible tourism is not a tourism product or brand but it represents the way tourism planning and development policies ensure optimal distribution of benefits to residents, authorities, tourists and investors (Spencely, 2008; Debicka & Oniszczyk Jastrzabek, 2014; Lee et al, 2017).

In the Cape Town Declaration at the United Nations World Conference on Sustainable Development in Johannesburg in 2002, responsible tourism has the following characteristics: (i) Minimizing negative economic, environmental and social impacts; (ii) Generating greater economic benefits for local people and enhancing the well-being of local communities, improving working conditions and access to the tourism industry; (iii) Local people are empowered to participate in decisions affecting their lives and opportunities; (iv) Contributing positively to the conservation of natural and cultural heritage to maintain the world's diversity; (v) Providing a more enjoyable experience for visitors through more meaningful connections with local people and a greater understanding of the cultural, social and environmental issues of the destination; (vi) Providing accessibility for people with physical disabilities; (vii) Creating respect between tourists and the host country, building local pride and trust.

Like sustainable tourism, responsible tourism can benefit many stakeholders such as tourism operators, businesses, tourists, local people, etc. However, the significant difference between responsible tourism and sustainable tourism is that responsible tourism emphasizes actions that encourage respect for nature, culture and people, while bringing welfare to local people where tourist destinations are located. Meanwhile, sustainable tourism mainly focuses on planning development policies and destination management strategies to bring benefits to many stakeholders (Manente et al, 2014; Nguyen Trong Nhan, 2021).

In the study on local community awareness of responsible tourism in Da Bac district, the analyzed contents include: the level of hearing/knowing about responsible tourism; information channels for hearing/knowing about responsible tourism; the level of understanding about responsible tourism; beneficiaries of responsible tourism; and activities that local communities are carrying out to develop responsible tourism. The local community is identified to include state management officials on tourism, tourism service businesses, and local people.

3. RESEARCH METHODS

3.1. Data Collection

Secondary data was collected from the system of documents, policies, and reports published by professional agencies of Da Bac district such as: Department of Culture and Information, District People's Committee and communes and towns. In addition, the study collected other data and information related to the topic published in magazines, articles, research works of experts, scientific reports and other reference sources on the Internet.

Primary data were collected in 03 communes including Hien Luong, Cao Son and Tien Phong. These are localities with strongly developed tourism models (community, ecology, agriculture) and are in the planned national tourist area of Hoa Binh Lake.

The study used a questionnaire to interview 148 samples, specifically: (i) 8 state management officials on tourism at district and commune levels (District People's Committee, District Department of Culture and Information, District Center for Culture, Sports and Communication, Commune Cultural and Social Officials); (ii) 30 local tourism service businesses: food, accommodation, sightseeing services, entertainment, etc. (Cooperatives, enterprises, households); (iii) 60 local people living at tourist destinations; (iv) 50 tourists who have been to Da Bac district.

3.2. Data Analysis

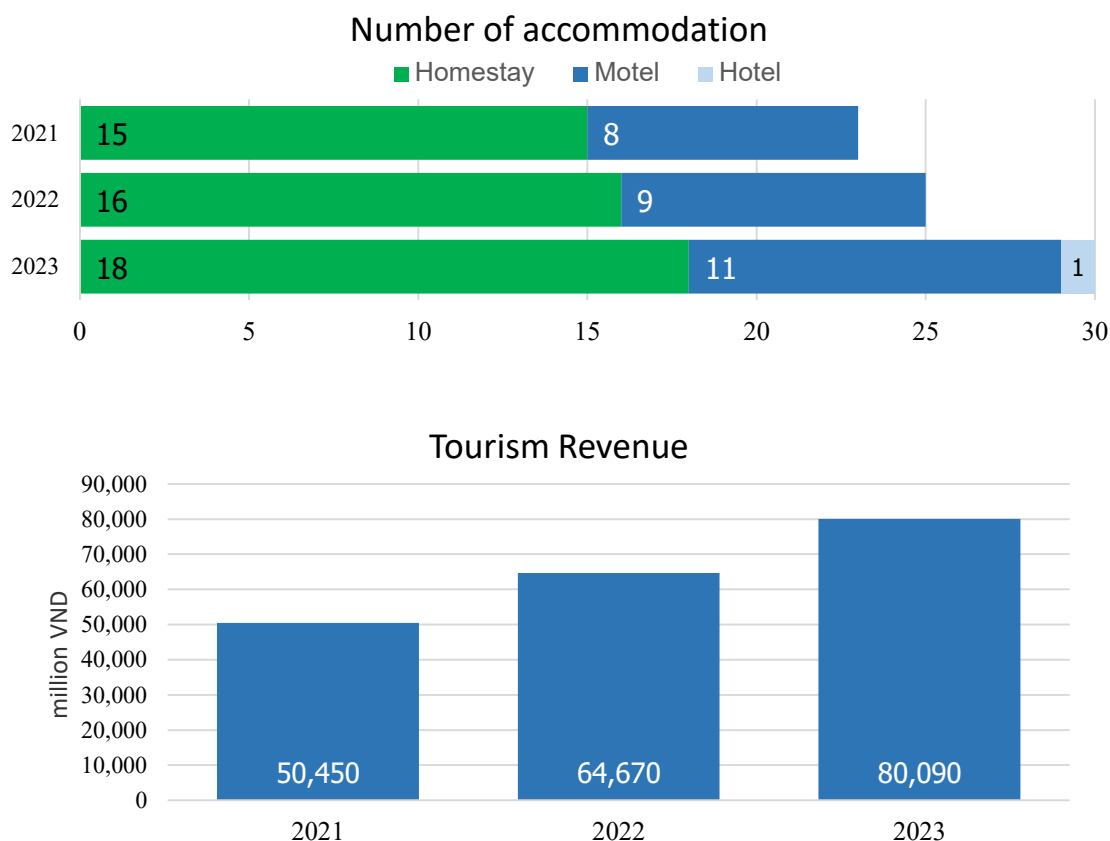
The study used descriptive statistics, comparison methods (comparison over time, by survey group), scoring and priority ranking methods (using a 5-level Likert scale: 1 = Very dissatisfied to 5 = Very satisfied) and calculating the average score to analyze the research indicators. The analysis results aim to propose some solutions to raise awareness of the local community about responsible tourism in Da Bac district in the coming time.

4. RESULTS AND DISCUSSION

Current Status of Tourism Development in Da Bac District, Hoa Binh Province

Da Bac is a mountainous district of Hoa Binh province, consisting of 1 town and 16 communes with a population of about 56,046 people (2022). The district is home to many ethnic minority groups (89.72% of total population), including 4 main ethnic minority groups such as Muong, Tay, Kinh, and Dao. Each ethnic group has a diverse culture, with its own identity. The likelihood of local people in Da Bac district depends on agriculture, forestry, fishing, aquaculture, and service business (tourism, small-scale industry, etc.).

Da Bac district has pristine natural landscapes, majestic primeval forests, especially the poetic Da River, with exciting potential to develop resort tourism products, community based tourism, sports tourism, entertainment on the water, exploring the ecosystem, visiting scenic spots on both banks. In addition, the ethnic people here still preserve their indigenous customs, lifestyles, and cultural nuances... which is an opportunity for domestic and foreign tourists to explore and experience.



Source: Department of Culture and Information of Da Bac district (2024).

Figure 1. Number of accommodation establishments and tourism revenue in Da Bac district (2021-2023)

In recent times, along with the development of transport infrastructure, people in Da Bac district have built homestay models and community tourism destinations such as: Ke hamlet (Hien Luong commune), Sung hamlet (Cao Son commune); Da Bia hamlet (now Duc Phong hamlet, Tien Phong commune). In particular, Da Bia hamlet is one of three community tourism hamlets nationwide that was voted and received the ASEAN Community Tourism Award in 2019. In addition, a number of businesses that have attracted investment are building and putting into operation lakeside eco-tourism resorts (Song Thu & Ngoc Bich, 2024).

To date, Da Bac district has 30 establishments operating in tourism business. The total number of visitors in 2023 is 170,100 of which domestic tourists are 166,060 people, and international tourists are 4,040 people; total revenue reaches over 80 billion VND. Most tourists come from within the province and some neighboring localities such as Hanoi, Bac Ninh, Hai Phong, Thanh Hoa... who travel with family, groups of friends or schools, classes organizing picnics, extracurricular activities. Tourists mostly concentrate in the summer, holidays and weekends. However, the number of days tourists stay is still low, averaging 1-2 days due to the lack of diversity in tourism products.

4.1. Local community’s perception of responsible tourism

Level of local community’s knowing about responsible tourism

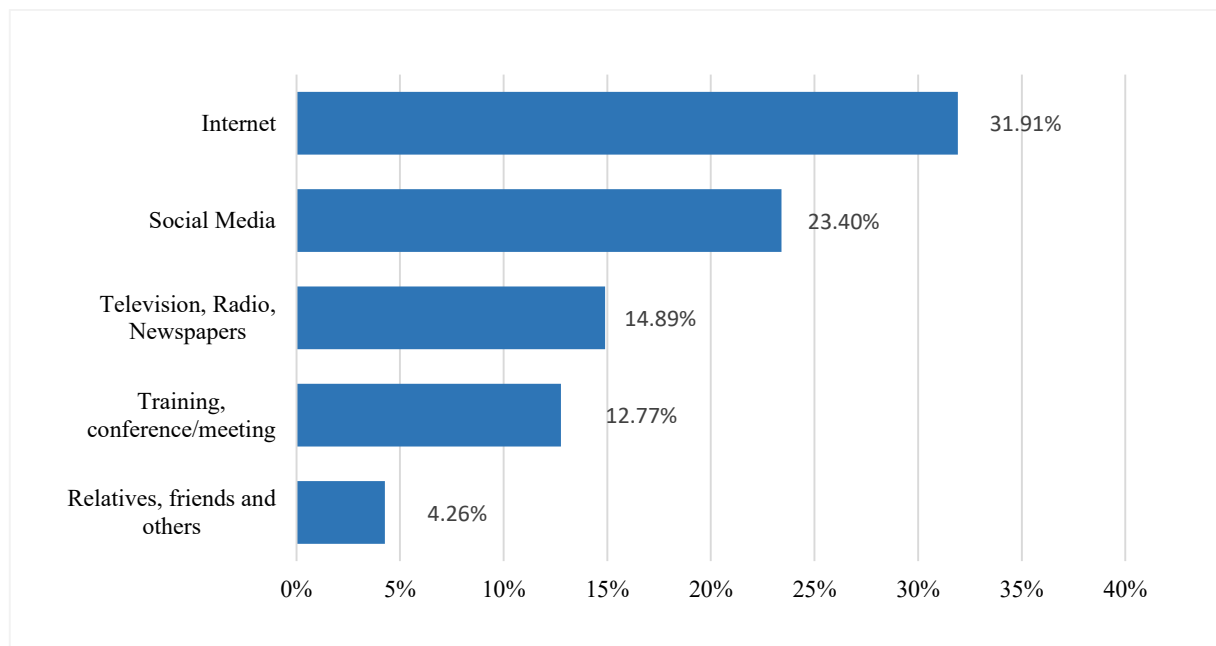
The perception of local community in Da Bac district about responsible tourism is the knowledge, understanding and implementation of responsible tourism by people living here. At the lowest level of knowledge, among 98 survey participants (including managers, residents and tourism service businesses), when asked if they had ever heard/known about responsible tourism, 51 people (52.04%) answered that they did not know and 47 people (47.96%) answered that they knew (Table 1).

Table 1. Survey results on the level of knowing about the concept of responsible tourism

| | Total (person) | Known people (person) | Percentage |
|---------------------------|-------------------|--------------------------|--------------|
| State management officers | 8 | 7 | 87,50 |
| Local people | 60 | 24 | 40,00 |
| Tourism business unit | 30 | 16 | 53,33 |
| Total | 98 | 47 | 47,96 |

Source: Data collected in 2023

Among those who knew about the term “responsible tourism”, the main means by which they access it are through the Internet (31.91%), social networks (23.40%), through television, radio and newspapers (14.89%) and through training programs (12.77%) (Figure 2). Thus, it can be seen that the Internet and social medias are very effective communication channels about responsible tourism, accessible to many people, widespread and highly applicable.



Source: Data collected in 2023

Figure 2. Information channel to help the local community know about responsible tourism (n=47)

Level of local community's understanding about responsible tourism

Although many people have heard and known about responsible tourism, not all of them understand this term. Local communities need to fully understand the nature and role of responsible tourism to have great significance for destinations, because only when they understand, the community will be interested in and actively implement responsible tourism, bringing many benefits to resources, the environment and stakeholders.

The survey results show that many people still do not understand the nature of responsible tourism and are confused with other concepts such as ecotourism or community tourism. Out of 47 people who know about responsible tourism, only 21 people understand this concept correctly, specifically: 5/7 local managers have correctly identified the concept of responsible tourism; Meanwhile, despite having been trained, in tourism service businesses, not many people understand this concept correctly (7/16 people - 43.75%); And local people have the lowest rate of correct answers about responsible tourism (9/24 people - 37.50%).

Those who understand responsible tourism believe that responsible tourism development is reflected in the following aspects: economic responsibility, social responsibility, environmental responsibility and cultural responsibility. Responsible tourism will help develop sustainable tourism, bring economic benefits to local people and businesses, create jobs, preserve natural landscapes, protect the environment and preserve indigenous cultures. In general, the community's awareness of the benefits of responsible tourism development is relatively consistent with the world's common view.

Local community attitudes and actions towards responsible tourism

The survey results also showed that although the local community in Da Bac does not know and fully understand responsible tourism, when asked the question “Who will benefit from responsible tourism?”, most people answered: local people (88.78%), tourists (69.39%), local authorities (56.12%) and tourism service businesses (41.84%). However, people are misperceiving personal responsibility in developing responsible tourism when the majority of opinions understand that “responsible tourism is only responsibility of tourism business units” and this responsibility mainly belongs to tourism service businesses (82.65%) or local authorities (73.47%) (Table 2).

Table 2. Local community opinions on the benefits and responsibilities of implementing responsible tourism (n=98)

| Stakeholders | Benefits belong to | | Responsibility belongs to | |
|-------------------------------|--------------------|------------|---------------------------|------------|
| | Amount (person) | Percentage | Amount (person) | Percentage |
| Local people | 87 | 88,78 | 26 | 26,53 |
| Tourists | 68 | 69,39 | 32 | 32,65 |
| Tourism service business unit | 41 | 41,84 | 81 | 82,65 |
| Local government | 55 | 56,12 | 72 | 73,47 |

Source: Data collected in 2023

When hearing the explanation about responsible tourism, the benefits and responsibilities of the stakeholders, 100% of the local community in Da Bac agreed that "Da Bac should develop responsible tourism in the future". In the past, the community in Da Bac has also carried out many activities towards developing responsible tourism such as:

- *Responsible tourism management*: is the organization, control and implementation of activities to ensure the harmony of interests for many stakeholders at tourist destinations. Recently, Da Bac has issued an Action Plan on enhancing district-level competitiveness (DDCI), focusing on improving the capacity of tourism staff, reforming administrative procedures, supporting investment loans, creating a healthy and equal competitive environment for tourism businesses. Encourage businesses to innovate, create, and diversify tourism products suitable for the characteristics of mountainous areas. Regularly open short-term training courses such as: weaving, brocade embroidery, tour guides, food processing techniques, etc. In 2022-2023, 7 tour guide classes were organized with 215 participants. Deploying the application of information technology in tourism development; ensuring a safe, quality and friendly tourism environment. Regularly check food hygiene and safety; propagate people to maintain security and order and protect the environment, culture and develop tourism in a green and sustainable direction (Song Thu & Ngoc Bich, 2024).

- *Responsible tourism product development*: It is the exploitation of available resources to meet the needs of tourists at destinations, turning them into tourism services and products. In Da Bac, current tourism products include: sightseeing, trekking, boating on the lake, fishing, relaxation, experiencing local cuisine, participating in folk cultural activities (dancing, singing,

playing gongs, etc.); ... all are exploited on the basis of available natural and cultural resources, organized and served by local people. The assessment of 50 tourists shows that they are quite satisfied with these types of tourism (3.9 points), it meets their needs and desires (3.6 points), brings many benefits to the local community (4.3 points) and is environmentally friendly (3.8 points). However, there are still many opinions that Da Bac's tourism products have not developed commensurate with the district's potential, entertainment activities are not yet diverse, and need to be better exploited in the coming time.

- *Responsible operation of tourism services:* in tourism, accommodation and catering services are an indispensable part of destinations. Responsible operation of tourism services means that the owners of the establishments must perform well on issues such as: ensuring security and safety, environmental sanitation, food hygiene and safety, using local products and food, using local labor, etc. In Da Bac, the owners of tourism service establishments have paid attention to encouraging tourists to maintain general hygiene, protect the environment, and save electricity and water, etc. through rules and notices posted on the wall. Tourists are also quite satisfied with the quality of accommodation facilities (3.5 points); The premises of the dining establishments are clean, ensuring food hygiene and safety (3.6 points). In addition, tourism service establishments also showed that they regularly use local products and foods (63.33%) and employ local labor (76.67%) (Figure 3).

- *People's actions on responsible tourism:* To the question "What do you support the development of responsible tourism in the community?", the answers with high frequency include: keeping the common landscape in the community clean (86.67%), being friendly and hospitable (71.67%); not overcharging tourists (78.33%); participating in providing good tourism products such as cooking, dancing, singing, etc. (56.67%).

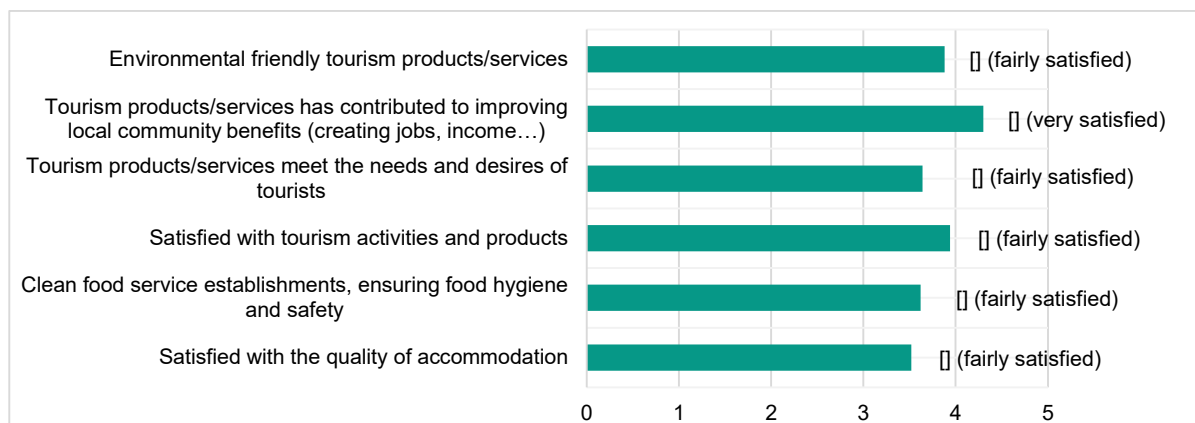


Figure 3. Tourist satisfaction level with responsible tourism products in Da Bac district (n = 50)

Scale: 1- Very dissatisfied to 5- Very satisfied. Measurement level: 1.00 -1.80: very dissatisfied; 1.81-2.60: weakly satisfied; 2.61-3.40: average satisfaction; 3.41-4.20: fairly satisfied; 4.21-5.00: very satisfied.

Source: Data collected in 2023

5. CONCLUSIONS AND RECOMMENDATIONS

In the future, responsible tourism will be the development trend of the tourism industry, aiming at sustainable tourism development of destinations, ensuring benefits for the community and preserving the natural, cultural and social environment. As an emerging tourist destination, Da Bac district still has a lot of potential and prospects for tourism development in the future. However, tourism development will create double impacts on economic, social, cultural and environmental aspects. To minimize negative impacts and maximize positive impacts of tourism, Da Bac district needs to develop responsible tourism.

The results of the analysis of local community awareness of responsible tourism in Da Bac district show that, due to limited access to information, many people have never heard or known about the term responsible tourism, or are confused with other concepts such as: ecotourism, community tourism, etc. However, the majority of the community in Da Bac has been aware of the benefits and has a very positive attitude towards the development of responsible tourism in the locality. The district has also carried out many activities that are beneficial to the development of tourism in general and responsible tourism in particular, towards the sustainable development of the tourism industry.

To create a positive change in the awareness of the local community towards responsible tourism in Da Bac district, it requires local authorities, state management agencies on tourism, and tourism service businesses to take the lead in receiving knowledge, directing, taking action and providing guidance to create a stronger influence on local people and tourists. At the same time, synchronously implement a number of solutions to raise awareness of the community about responsible tourism in the coming time such as: opening training courses on responsible tourism knowledge for the community; promoting propaganda activities to relevant parties on the content of responsible tourism; issuing a code of conduct, enhancing interpretation activities (regulation boards, information boards) at destinations.

Acknowledgement

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GREEN TOURISM ASSOCIATED WITH THE PRESERVATION OF THE GONG CULTURE SPACE IN THE CENTRAL HIGHLANDS OF VIETNAM

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ABSTRACT

This study aims to explore and analyze the relationship between the development of green tourism and the preservation of the Gong culture space in the Central Highlands of Vietnam. The research employs a mixed-method approach, combining quantitative and qualitative methods through semi-structured surveys of 256 questionnaires with village elders, village leaders, tourism business households/enterprises, local residents, tourists, and cultural tourism experts. The data collected are then processed using SPSS software. The research results show that green tourism, associated with the preservation of the gong cultural space in the Central Highlands, has had specific economic impacts, such as generating sustainable income for local communities, developing tourism products linked to culture, and providing financial support to artisans. In addition, green tourism has also had positive effects on cultural aspects, such as raising awareness of cultural values, restoring and maintaining traditional festivals, and minimizing the cultural intrusion caused by mass tourism. The research contributes to shaping sustainable tourism development strategies in the Central Highlands, while also providing specific recommendations for management agencies and policymakers.

Keywords: Green tourism, cultural preservation, cultural space, Gong culture, Central Highlands, Vietnam.

1. INTRODUCTION

Green tourism is a novel and highly promising concept in modern tourism, emphasizing sustainable development and environmental protection. Green tourism not only aims to minimize negative impacts on nature but also encourages the participation of local communities in protecting and maintaining traditional cultural values. In this context, the preservation of the Gong culture in the Central Highlands plays a crucial role. The Gong culture of the Central Highlands is an intangible cultural heritage recognized by UNESCO, not only as a distinctive cultural symbol of the nation but also as a valuable asset contributing to the development of cultural tourism in the region.

The Gong culture of the Central Highlands is one of the unique cultural features of ethnic minorities in Vietnam. Gongs are not just musical instruments; they are also means of conveying the emotions, sentiments, and beliefs of the indigenous communities of the Central Highlands. The preservation and promotion of the Gong culture in the Central Highlands is not only culturally significant but also economically valuable when combined with green tourism. Green tourism aims at sustainable development, not only protecting the environment but also preserving and enhancing local cultural values. Integrating green tourism with cultural preservation is a crucial strategy to ensure sustainable development in culturally rich areas like the Central Highlands. Green tourism

not only helps protect the environment but also creates sustainable income sources for local communities. When tourists visit the Central Highlands, they not only experience the pristine nature but also learn about the unique Gong culture. This not only enriches the tourists' experience but also contributes to the promotion and preservation of the Gong culture in the Central Highlands.

In fact, many studies have shown that preserving and promoting local cultural values can make significant contributions to the socio-economic development of the region. According to a study by Smith (2019), cultural tourism can create job opportunities and promote sustainable economic development for local communities. The preservation of the Gong culture in the Central Highlands through green tourism activities not only helps maintain traditional cultural values but also creates economic development opportunities for indigenous people.

The Central Highlands, with its majestic natural beauty and diverse culture, is facing many challenges in preserving and promoting the value of the Gong culture. The development of unsustainable economic activities has put considerable pressure on the environment and local culture. Forests have been deforested, land has been eroded, and natural resources have been depleted. Along with this, the Gong culture is gradually fading due to a lack of attention and protection from authorities and the community. One of the prominent issues in the Central Highlands is the decline in the number and quality of Gong festivals. According to a study by Nguyen and colleagues (2019), the number of Gong festivals has significantly decreased in recent years due to the impact of unsustainable economic activities and a lack of resources for conservation work. Many elderly Gong artisans do not have successors, and traditional Gong music pieces are gradually being forgotten. This poses a significant challenge to the preservation and promotion of the Gong culture in the Central Highlands.

Another study by Le and colleagues (2019) also pointed out that the development of unsustainable tourism has caused many negative impacts on the environment and local culture. Uncontrolled mass tourism has reduced the value of tourist destinations and adversely affected the lives of indigenous people. Unsustainable tourism activities have caused environmental pollution, destroyed natural landscapes, and impacted community health. To address these issues, specific strategies and solutions are needed to harmonize tourism development with cultural preservation. Green tourism, with its principles of sustainable development, can be an effective solution. Promoting green tourism not only helps protect the environment but also contributes to maintaining and enhancing the value of the Gong culture in the Central Highlands. Specific policies and measures need to be put in place to support local communities in preserving the Gong culture and developing sustainable tourism.

Green tourism and the preservation of the Gong culture in the Central Highlands are two crucial factors that can mutually support the sustainable development of this region. Integrating green tourism with cultural preservation not only helps protect the environment but also contributes to preserving and enhancing traditional cultural values. However, to achieve this, close cooperation is needed among all stakeholders, from government agencies and non-governmental organizations to local communities. Only with collective effort and commitment can we protect and promote the value of the Gong culture in the Central Highlands in the context of sustainable green tourism development.

This study makes unique contributions to the field of green tourism and cultural preservation, particularly by emphasizing two important aspects that have been rarely explored in depth in previous research. First, it highlights the role of local communities in cultural preservation. The participation of local communities not only helps preserve traditional cultural values but also generates sustainable income for the people. Green tourism is designed to fit the local context, encouraging communities to take an active role in protecting and promoting the cultural heritage of gong culture.

Second, the long-term sustainability of the model that combines green tourism and cultural preservation is discussed in detail. The study shows that green tourism not only protects the environment but also fosters sustainable economic and cultural development for the community. This helps maintain the cultural identity of gong culture and prevents commercialization and intrusion by mass tourism.

Thanks to these findings, the research makes important contributions by proposing specific solutions to ensure the sustainable development of the gong cultural space in the Central Highlands, a topic that has rarely been explored comprehensively in previous studies.

2. LITERATURE REVIEW

Green tourism is a concept that emphasizes sustainable tourism development, including elements of environmental protection, cultural preservation, and local economic development. Globally, green tourism has been widely adopted and has become an important trend in the tourism industry. According to TIES (The International Ecotourism Society), green tourism is 'responsible travel to natural areas that conserves the environment and improves the well-being of local people' (TIES, 2019).

In Vietnam, green tourism has also begun to gain attention and development. Many ecotourism and community tourism projects have been implemented to protect natural resources and promote local cultural values. For example, Cuc Phuong National Park, nature reserves, and ecotourism programs in the northern mountainous provinces are specific examples of the development of green tourism in Vietnam. According to Nguyen (2019), green tourism in Vietnam not only helps protect the environment but also contributes to raising community awareness about the importance of nature conservation. The cultural space of Gong in the Central Highlands is an intangible cultural heritage of Vietnam, recognized by UNESCO in 2005. Gong culture is an indispensable part of the life of ethnic minorities in the Central Highlands, such as the Ede, Ba Na, Gia Rai, M'Nong, and Xo Dang. Gongs are not only musical instruments but also cultural symbols, reflecting the spirituality and beliefs of the people in the Central Highlands.

The history of the Gong is closely linked with rituals, festivals, and community activities. According to Nguyen *et al.* (2019), Gongs play an important role in maintaining unity and community spirit among the ethnic minorities in the Central Highlands. Gong festivals are not only occasions for people to express their cultural identity but also opportunities to promote the image of the Central Highlands to tourists both domestic and international. The importance of preserving the cultural space of Gong in the Central Highlands lies in its ability to not only preserve cultural identity but also contribute to economic development through cultural tourism. Organizing

festivals and events related to Gongs attracts tourists, generates income for local people, and contributes to the sustainable development of the region.

Various methods have been applied to preserve the cultural space of Gong in the Central Highlands, including:

- Education and awareness-raising: Educational and promotional programs about the value of Gong culture have been implemented in schools and communities. This helps raise awareness among people about the importance of preserving Gong culture.

- Organizing festivals and events: Gong festivals are regularly organized to maintain and promote cultural values. These festivals not only attract tourists but also provide opportunities for locals to express their cultural identity.

- Economic support for artisans: Gong artisans receive financial and technical support to sustain and develop Gong art. This helps them continue to teach and preserve Gong culture for future generations.

- Research and documentation: Scientific research and documentation projects on Gongs are conducted to record and preserve the music, rituals, and cultural elements related to Gongs.

According to Le *et al.* (2019), these methods have yielded positive results, helping to maintain and promote the value of the cultural space of Gong in the Central Highlands. However, there are still many challenges that need to be addressed to ensure the sustainability of conservation activities.

Although much research has been conducted on green tourism and the preservation of Gong culture in the Central Highlands, there are still many gaps that need to be explored. Some areas that have not been fully researched include:

- Impact of climate change on Gong culture: Climate change may affect the living environment and cultural activities of the people in the Central Highlands. However, there has been little research focused on this issue.

- Evaluation of conservation policy effectiveness: Many conservation policies and programs have been implemented, but there has been little research evaluating the effectiveness and impact of these policies on the preservation of Gong culture.

- Community participation in green tourism and cultural preservation: The local community plays an important role in cultural preservation and the development of green tourism. However, more research is needed on how and to what extent the community participates in these activities.

- Impact of green tourism on Gong culture: Although green tourism is considered a sustainable solution, more research is needed on the specific impact of green tourism on Gong culture in the Central Highlands.

The literature review on green tourism and cultural preservation shows that, although there have been significant studies, there are still gaps and limitations that need to be clarified. First, most current research focuses primarily on the economic benefits and environmental protection aspects of green tourism, but pays little attention to the close relationship between cultural preservation and long-term sustainable development for local communities (TIES, 2019).

Specifically, the aspect of preserving the gong culture in the Central Highlands lacks a detailed assessment of the long-term impact of tourism activities on the preservation of cultural values (Nguyen *et al.*, 2019).

Another limitation is that many previous studies have primarily focused on cultural preservation from the perspective of government management, without emphasizing enough the role of local communities in participating in cultural preservation and green tourism development (Le *et al.*, 2019). Community participation in conservation and tourism activities is crucial but has not been fully researched, particularly regarding the level and ways in which communities can take on a more active role (Dangi & Jamal, 2020).

Additionally, another important gap is the impact of climate change on gong culture and related tourism activities. There is still very little specific research assessing this issue, even though climate change could cause significant changes in the environment and local culture (Binh *et al.*, 2021).

Therefore, this study is significant as it not only proposes solutions to combine green tourism with cultural preservation but also focuses on further clarifying the role of local communities and the long-term impact of green tourism on the gong culture of the Central Highlands.

3. METHODOLOGY

The mixed-method approach used in this study aims to explore both quantitative and qualitative aspects, providing a more comprehensive and in-depth understanding of the relationship between green tourism and the preservation of gong culture. The combination of surveys and interviews is significant because surveys provide quantitative data from a large number of participants, helping to assess general trends and test hypotheses. Meanwhile, interviews offer qualitative insights by gathering in-depth opinions from key individuals such as village elders, community leaders, and experts, thus complementing the survey data.

The selection of 256 participants was based on the diversity of the involved groups, including local residents, businesses, and experts. This sample size is large enough to ensure reliability and representativeness, and it also meets statistical requirements for data analysis using SPSS.

The selection of research locations in the Central Highlands was based on the prominence of the Gong cultural space and the richness of traditional cultural activities in this region. The research locations include Buon Don, Dak Lak, known for the Gong performances of the Ede and Mnong people; Kon Klor Village, Kon Tum of the Ba Na ethnic group, with Gong performances and traditional festivals; Pleiphun Village, Gia Lai, where many Gong cultural activities of the Jrai people are held; Buon Jun, Lak, Dak Lak, a Mnong village with Gong performances and traditional rituals; K'Bang Town, Gia Lai, where large Gong festivals of the Bahnar people take place; Buon Ma Thuot City, Dak Lak, the Gong cultural center of the Central Highlands with many rich cultural activities; and Yang Tao Village, Lak, Dak Lak, where the Mnong people engage in cultural activities and Gong performances. These locations not only strongly reflect the Gong culture but also offer tourists the opportunity to experience and learn about the lifestyle and customs of the ethnic minorities in the Central Highlands. The survey period was conducted in July 2024.

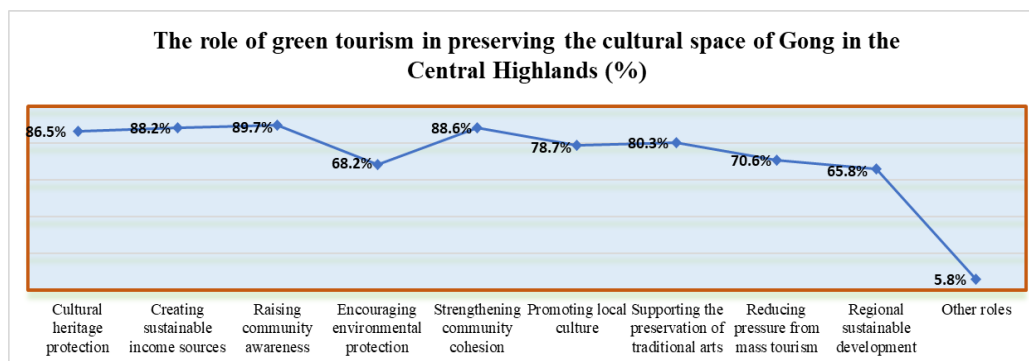
The data collection process was carried out by combining quantitative and qualitative methods. Specifically, the research employed a semi-structured survey with 256 questionnaires sent to village elders, village chiefs, tourism business households/enterprises, local residents, tourists, and experts in cultural tourism. Additionally, interview and observation methods were also applied to collect detailed and comprehensive data. The survey data were then processed and analyzed using SPSS (Statistical Package for the Social Sciences). SPSS enables the execution of descriptive and inferential statistical analyses, helping to check the reliability and validity of the collected data, thereby providing appropriate conclusions and recommendations for the research.

4. FINDINGS

4.1. The role of green tourism in preserving the cultural space of Gong in the Central Highlands

Green tourism plays an extremely important role in preserving and promoting the value of the Gong cultural space in the Central Highlands, a valuable intangible cultural heritage of Vietnam. Based on survey data on the effectiveness of promoting and managing Gong tourism in the Central Highlands through e-commerce platforms, it can be seen that green tourism not only brings economic benefits but also contributes to environmental protection and raises community awareness about cultural preservation. With 86.5% of survey participants rating it highly, the protection of cultural heritage is the most prominent role of green tourism, helping to maintain and develop the values of the Gong culture through the creation of tourism activities closely linked to tradition. Additionally, green tourism also provides sustainable income for local communities, with 88.2% agreement from the survey, thanks to the development of cultural tourism activities, helping to improve livelihoods and promote regional economic growth.

Raising community awareness is also an important role of green tourism, with 89.7% of survey participants agreeing. Green tourism helps local communities and tourists better understand the value of the Gong cultural space, encouraging active participation in cultural preservation activities. Furthermore, encouraging environmental protection is a crucial factor, with 68.2% of survey participants agreeing that green tourism not only protects culture but also contributes to the preservation of the natural environment of the Central Highlands through environmentally friendly tourism activities.



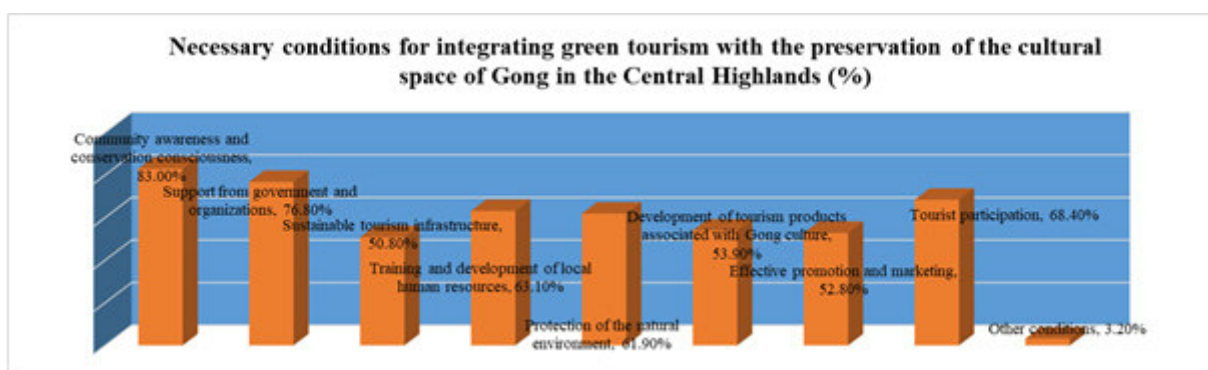
Source: Survey results.

Chart 1. The role of green tourism in preserving the cultural space of Gong in the Central Highlands

Strengthening community cohesion, with 88.6% agreement from the survey, is another role of green tourism, encouraging cooperation among community members to jointly preserve culture and develop tourism, thereby increasing solidarity. Green tourism also plays an important role in promoting local culture, with 78.7% agreement from the survey, as it helps introduce the Gong culture of the Central Highlands to international tourists, contributing to the promotion of the region's image globally. Supporting the preservation of traditional arts is another benefit of green tourism, with 80.3% of survey participants agreeing, as it creates opportunities for artisans and the community to continue maintaining and promoting the Gong art, ensuring its existence for the future. Reducing pressure from mass tourism is also an important factor, with 70.6% agreement, as green tourism helps mitigate the negative impacts of mass tourism, protecting the Gong cultural space from encroachment and excessive commercialization. Finally, sustainable regional development, with 65.8% of survey participants recognizing this, is an important role of green tourism. Green tourism supports the sustainable development of the Central Highlands by combining cultural preservation and environmental protection, thereby creating a sustainable living and economic environment for the local community. These roles affirm that green tourism is not only a modern tourism development trend but also an important tool in preserving and promoting traditional cultural values, while also supporting the sustainable development of the Central Highlands.

4.2. Necessary conditions for integrating green tourism with the preservation of the Gong cultural space in the Central Highlands

Integrating green tourism with the preservation of the Gong cultural space in the Central Highlands requires many necessary conditions to achieve optimal effectiveness. According to the survey, community awareness and conservation consciousness are the most important factors, with 83% of participants agreeing that the local community needs to have a deep understanding of the importance of preserving Gong culture and actively participate in preservation activities. This not only helps maintain cultural heritage but also lays the foundation for the sustainable development of green tourism.



Source: Survey results.

Chart 2. Necessary conditions for integrating green tourism with the preservation of the cultural space of Gong in the Central Highlands

Additionally, support from the government and organizations also plays a key role, with 76.8% of survey participants rating it highly. Supportive policies and incentives from the government and non-governmental organizations are necessary to promote the integration of green tourism with cultural preservation. Sustainable tourism infrastructure, with 50.8% agreement, is also an important factor, ensuring that the developed infrastructure does not harm the environment and local culture. Training and developing local human resources was considered a necessary condition by 63.1% of survey participants. Providing training programs in green tourism management and cultural preservation helps local people independently develop and protect their heritage. Meanwhile, protecting the natural environment is an indispensable factor, with 61.9% of survey participants agreeing that protecting natural landscapes and living environments is a prerequisite for the sustainable development of green tourism.

Developing tourism products associated with Gong culture is also an important requirement, with 53.9% of participants agreeing. Creating unique tourism products that strongly reflect Gong culture not only attracts tourists but also maintains interest in this culture. Effective promotion and marketing also need to be focused on, with 52.8% of survey participants emphasizing the importance of using digital platforms and media to promote Gong culture and green tourism activities in the Central Highlands. Finally, tourist participation is an essential condition, with 68.4% of survey participants recognizing that tourists need to be encouraged to participate in Gong cultural preservation and environmental protection activities. This not only raises tourists' awareness and responsibility towards cultural heritage but also contributes to the sustainability of green tourism in the region. If these conditions are implemented comprehensively and effectively, they will make a significant contribution to the preservation and sustainable development of the Gong cultural space in the Central Highlands.

4.3. Challenges and opportunities in integrating green tourism with the preservation of the Gong cultural space in the Central Highlands

Integrating green tourism with the preservation of the Gong cultural space in the Central Highlands presents both challenges and opportunities. One of the biggest challenges is the lack of sustainable tourism infrastructure, with 86.7% of survey participants agreeing.



Source: Survey results.

Chart 3. Challenges and opportunities in integrating green tourism with the preservation of the cultural space of Gong in the Central Highlands

The current infrastructure does not meet the requirements of green tourism, making it difficult to sustainably develop tourism activities in the Central Highlands. The encroachment of mass tourism is also a serious issue, with 88.8% agreement, indicating that uncontrolled tourism can diminish the cultural and natural value of the Central Highlands, threatening the sustainability of the Gong cultural space. Furthermore, the lack of professional human resources is a significant challenge, with 79.5% of participants indicating that the local community lacks the necessary skills to effectively manage green tourism and cultural preservation. Economic pressure was also rated as a negative factor by 78.5% of survey participants, as the demand for rapid income growth may lead the local community to prioritize mass tourism over sustainable green tourism development.

However, alongside these challenges, integrating green tourism with the preservation of the Gong cultural space in the Central Highlands also brings many opportunities. Raising community awareness is an important opportunity, with 78.9% agreement that green tourism helps increase awareness among the community and tourists about cultural and environmental preservation. Sustainable economic development was also considered a significant benefit, with 85.6% of survey participants believing that this integration could create stable and sustainable income for the local community.

Another opportunity is the preservation and promotion of traditional culture, with 89% of participants agreeing that green tourism can support the maintenance and development of Gong cultural values, ensuring that this heritage is passed on to future generations. Finally, promoting the culture of the Central Highlands was also highly valued, with 83.2% of participants recognizing that this is an opportunity to introduce Gong culture to international tourists, thereby enhancing the position and image of the Central Highlands on the world tourism map. These challenges and opportunities show that, although integrating green tourism with the preservation of the Gong cultural space in the Central Highlands faces many difficulties, if done correctly, it can bring significant benefits to both the community and the unique culture of the Central Highlands.

The research findings indicate that green tourism plays a crucial role in preserving the Gong cultural space in the Central Highlands. Specifically, 86.5% of survey participants highly valued the role of green tourism in protecting cultural heritage, contributing to the preservation and promotion of cultural values. Notably, 89.7% agreed that green tourism raises community awareness of the value of the Gong cultural space. The high level of agreement demonstrates that the community is clearly aware of the importance of preserving cultural heritage in conjunction with tourism development.

Additionally, green tourism not only supports environmental protection but also brings economic benefits, with 88.2% of participants recognizing the sustainable income generated from cultural tourism. However, a major challenge is the lack of sustainable tourism infrastructure, as agreed upon by 86.7% of respondents. Current infrastructure development does not meet the requirements for both cultural and environmental protection.

Another important factor is community participation, with 83% acknowledging the role of cultural preservation. Active community involvement is a key condition for the sustainable development of green tourism, combined with support from government organizations (76.8%

agreement). Developing tourism products linked to gong culture was considered essential by 53.9% of participants, while environmental protection was deemed a prerequisite for sustainable development by 61.9%.

Additionally, charts and graphs visualizing this data would help readers easily see the connections between economic, cultural, and environmental factors in the development of green tourism in the Central Highlands.

5. DISCUSSION

Another aspect that policymakers should pay attention to is the participation of the local community. With 83% of survey participants highly valuing the role of the community in preserving cultural heritage, it is clear that community participation is a prerequisite for sustainable green tourism development. According to Dangi & Jamal's (2016) theory, community participation is essential to ensure that the benefits of tourism are shared equitably and sustainably. Therefore, policies should encourage local communities to actively participate in cultural preservation and tourism development activities.

Based on the findings, several policy recommendations have been proposed to ensure the sustainable development of green tourism and the preservation of the gong cultural space in the Central Highlands. First, there must be strong investment in sustainable tourism infrastructure. Policies should encourage the construction of environmentally friendly infrastructure, such as eco-resorts, sustainable transportation systems, and waste management systems. This not only protects the environment but also maintains the integrity of local culture.

Second, local workforce training and development programs are necessary. As indicated in the research, one of the major challenges that local communities face is the lack of professional human resources to manage green tourism and cultural preservation. Local governments should collaborate with educational and non-governmental organizations to implement training courses on sustainable tourism management and cultural preservation, helping local people acquire the necessary skills and knowledge to participate in tourism activities.

Third, effective promotion and marketing through digital platforms must be enhanced. As Brown (2019) emphasized, creative communication campaigns through social media and online platforms can help attract international tourists' interest in the gong culture of the Central Highlands. Policymakers need to invest in digital marketing strategies to promote the Central Highlands as a green tourism destination, thereby generating additional tourism revenue and contributing to cultural heritage preservation.

Finally, encouraging tourists to participate in cultural preservation activities is also necessary. Creating hands-on experiences for tourists, such as participating in gong festivals or learning to play the gong, not only enriches the tourism experience but also helps tourists better understand the cultural value of the Central Highlands. This not only raises tourists' awareness but also strengthens their connection with the local community, helping to preserve culture more sustainably.

This study has clearly demonstrated the important role of green tourism in preserving and developing the gong cultural space of the Central Highlands. The research findings are consistent with existing theories on sustainable tourism, but they also highlight challenges that need to be addressed to ensure long-term sustainable development. Policymakers need to invest in sustainable infrastructure, encourage community and tourist participation, and develop marketing and workforce training strategies. If implemented comprehensively and effectively, these solutions will not only help preserve the gong cultural heritage but also promote economic and sustainable development for the Central Highlands region.

6. CONCLUSION AND RECOMMENDATIONS

This study has highlighted the important role of green tourism in preserving and promoting the Gong cultural space in the Central Highlands, while also demonstrating how green tourism can contribute to the sustainable development of the region. The combination of cultural preservation and tourism development not only brings economic benefits but also enhances the awareness of the community and tourists about the value of cultural heritage. To effectively develop green tourism, tourism managers and cultural organizations need to implement strategies such as investing in sustainable infrastructure, training local human resources, and utilizing digital platforms to promote the Gong culture internationally. Close coordination among stakeholders is a key factor for success. Future research should focus on evaluating the long-term impact of green tourism on the community and environment, as well as improving community participation in cultural preservation. Additionally, it is essential to study the application of successful green tourism models from other regions to the Central Highlands to create more sustainable solutions for preserving the Gong cultural space in the context of climate change and economic development.

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ASSESSMENT OF TOURISM CARRYING CAPACITY OF BEACHES FOR MANAGING SUSTAINABLE TOURISM DEVELOPMENT IN HA LONG BAY - CAT BA ARCHIPELAGO, VIETNAM

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ABSTRACT

On September 16, 2023, the UNESCO World Heritage Committee officially recognized Ha Long Bay - Cat Ba Archipelago as a World Natural Heritage Site. This designation elevates the status of the Cat Ba Islands on the global tourism map, highlighting its rich natural resources, diverse ecosystems, and stunning features such as beautiful beaches, spectacular caves, and pristine forests. However, this increased recognition has led to a surge in visitors, placing significant pressure on the resources and environment of popular beaches like Cat Co 1, Cat Co 2, Cat Co 3, Tung Thu, Cat Dua 1, and Cat Dua 2. To address this issue, the carrying capacity calculation method known as tourist carrying capacity was used to determine the physical carrying capacity (PCC): real carrying capacity (RCC): and effective carrying capacity (ECC) of these beaches. Based on our calculations, the total physical capacity for the six beaches is 14,384 visitors per day. However, the real capacity is only 6,208 visitors per day, and the effective capacity in the area is just 5,157 visitors per day. The threshold for effective and safe capacity in the area is 5,157 visitors per day. The research findings provide valuable insights for managing sustainable tourism development in archipelagos like the Cat Ba archipelagos.

Keywords: Sustainable Tourism; Tourism Carrying Capacity (TCC); Cat Ba archipelago.

1. INTRODUCTION

Starting in the 1960s, outdoor recreation research used the concept of Tourism Carrying Capacity (TCC) to address the resource and social effects of visitor use (Lawson *et al.*, 2003; Manning *et al.*, 1996). The concept has been adopted by researchers and managers in the context of tourism and environmental sciences to address financial resources and avoid negative social impacts (Manning *et al.*, 1996). It mainly includes ecological and social parameters, such as environmental quality and visitor experience.

By the early 1990s, the concept of TCC was largely replaced by the idea of sustainable tourism. Still, many of the challenges outlined for this new concept are similar to past issues concerning TCC in terms of the definition of objectives, practices, utility, and diversity of types (Navarro Jurado *et al.*, 2012). Sustainable tourism is defined as “tourism which is economically viable but does not destroy the resources on which the future of tourism will depend, notably the physical environment and the social fabric of the host community” (Swarbrooke, 1999). The concept of TCC occupies a key position in sustainable tourism (Tribe *et al.*, 2000). It is interpreted as an application of sustainable tourism, implying that the two can coexist and could be useful frameworks for analyzing the impacts and limits of development (Butler, 1996). Over the years, TCC has been evaluated for individual tourist destinations around the world (Barančok & Barančoková, 2008; Lone *et al.*, 2013; McCool & Lime, 2001; Nghi *et al.*, 2007; Sayan & Atik,

2011;Malik & Bhat, 2015). It is suggested that destinations should not be developed beyond their innate capacities for tourism. Despite the limitations associated with the TCC concept, it has been described as an appropriate tool for management, as it enables the preservation of resources (Queiroz *et al.*, 2014).

The concept is particularly important in the coastal zone which is undergoing rapid change as a result of demographic changes and industrialization in the context of global climate and sea-level change. In its broadest sense, carrying capacity refers to the ability of a system to support an activity or feature at a given level. The definition from UNWTO (1981)states TCC is “the maximum number of people who can visit a tourist destination at the same time, without destroying the physical, economic and socio-cultural environment and an unacceptable deterioration of the quality of visitors”. TCC can also be defined as “the maximum number of people that use tourism site without unacceptable effect on environmental resources while meeting the demand” (Hens, 1998). It is the highest bearing capacity of a natural, environmental, and socio-economic system beyond which facilities are saturated (physical carrying capacity): the environment is degraded (environmental carrying capacity) or visitor enjoyment is diminished (perceptual or psychological carrying capacity) (Pearce, 1989). Harry Coccossis & Mexa (2004) indicated that despite several criticisms, carrying capacity assessment remains a powerful concept that can be used for planning and managing sustainable tourism. (Segrado Pavón *et al.*, 2007) reported that apart from outlining all factors that limit tourism growth, the concept of carrying capacity also indicates a compensatory tool to manage tourism flows to a destination; while Manuel López Bonilla Luis Miguel López Bonilla RESUMEN *et al.*, (2009) suggested that this concept should be seen as a positive and dynamic prism contemplating the temporal space as a basic value for the implementation of sustainable beach management principles.

The Cat Ba Archipelago, famous for its rich natural resources and diverse ecosystems, is a prime example. With its stunning beaches, Cat Ba attracts millions of tourists each year. This is especially evident during peak season when the influx of visitors surges, leading to overcrowding. The overcrowding at the beautiful beaches of the Cat Ba Archipelago not only puts pressure on tourism infrastructure such as hotels, restaurants, and tourism services but also negatively impacts the natural environment and the lives of residents. Environmental pollution, including tourist waste and water pollution, has become a serious issue. The marine ecosystem is adversely affected, and the quality of tourism services declines as businesses struggle to meet the increasing demand. Tourists face overcrowding at attractions, which reduces the quality of tourism services. This not only diminishes the travel experience but also affects the tourism image of Cat Ba and Vietnam as a whole. Therefore, establishing the tourism carrying capacity for the five main beaches in the Cat Ba Archipelago: Cat Co 1, Cat Co 2, Cat Co 3, Tung Thu, Cat Dua 1, and Cat Dua 2 becomes a tool to serve effective environmental planning and management for Cat Ba tourism in the future.

Author Cifuentes used three indicators to calculate tourism carrying capacity, including Physical Carrying Capacity (PCC): Real Carrying Capacity (RCC): and Effective Carrying Capacity (ECC). These indicators were also applied to assess the tourism carrying capacity of beaches at the Cat Ba archipelago.

2. METHODOLOGY

To conduct this research, the author utilized secondary data collection and analysis methods, field surveys, capacity methods, and Multi-Criteria Analysis (MCA). The capacity calculation method and MCA were the two primary approaches used in this study. Capacity Calculation Method: The study applied tourism capacity formulas by Cifuentes & M.A (1992) and Ceballos-Lascuráin (1996) to determine the following indicators: 1. Physical Capacity (PCC): This represents the maximum number of tourists that a tourist site can accommodate. It aims to determine the maximum number of visitors a tourist site can support under normal conditions. The criteria and data used to calculate natural capacity include the area of the site, the standards for a usage unit, and the turnover rate or frequency of use of the tourist area. 2. Real Capacity (RCC): This considers the influence of environmental conditions and the actual circumstances during the period of tourism activity. 3. Effective Capacity (ECC): This represents the maximum number of visitors that can be served in the best possible way, ensuring satisfaction with the quality of service.

The Multi-Criteria Analysis (MCA) method is a useful tool for evaluating management capacity at a destination. Step 1: Identify the evaluation criteria based on the "Destination Criteria" of the Global Sustainable Tourism Council (GSTC). Step 2: Determine the weight of each criterion using the Analytic Hierarchy Process method (AHP). Step 3: Collect data and assess each criterion, which the author compiles through interviews are expecters and reviewing research documents. Step 4: Score each criterion (with a maximum of 10 points).

3. STUDY AREA

The Cat Ba Archipelago consists of 367 islands, with Cat Ba Island located in the southern part of Ha Long Bay, outside of Hai Phong Province and Quang Ninh Province. It is about 30 km from the center of Haiphong City and approximately 25 km from Ha Long City. Administratively, the archipelago belongs to Cat Hai District, Hai Phong Province. To the east and northeast, it borders Ha Long Bay, separated by the Ngạn and Đâu Xoài Rivers of Quang Ninh Province. To the west, it adjoins Cat Hai Town and Dong Bai Commune of Cat Hai District, separated by the Huyen River. To the southwest, it faces Cat Ba Bay, and to the east and southeast, it borders Lan Ha Bay. The Cat Ba Archipelago is located at coordinates 106°52'-107°07' East and 20°42'-20°54' North. The total area of the Cat Ba Archipelago heritage site is 33,670 hectares, including 13,478 hectares of land and 20,192 hectares of sea.

The Cat Ba Archipelago captivates visitors with its pristine and majestic natural beauty, along with impressive activities such as exploring its enchanting caves, visiting various large and small rocky islands, exploring Cat Ba National Park, or experiencing the ancient charm of its fishing villages. However, what impresses and delights every visitor the most in Cat Ba are its golden sandy beaches and the crystal-clear, refreshing waters of the expansive beaches that stretch across the archipelago.

The Cat Ba Archipelago has six beaches that frequently welcome visitors: Cat Co 1, 2, and 3 Located in the center of Cat Ba town, these three beaches are the most popular among tourists. Although they are not very large, they are surrounded by the clear and gentle waters of the bay, with calm waves and a breezy atmosphere. These beaches are connected by long wooden bridges

that beautifully follow the mountainside. Tung Thu Beach is situated 2 km from the center of Cat Ba Island, towards the Cat Ba forests, Tung Thu Beach is larger than Cat Co 1, 2, and 3. The waves here are gentle and soothing, with a long, white sandy beach that curves gracefully along the island's terrain. It features modern tourist facilities and is surrounded by a range of green, shaded hills. Cat Dua Island about 2 km from Cat Ba town, this small island features two beautiful beaches, Cat Dua 1 and Cat Dua 2. Although the beaches are not very long, measuring about 1 km, they are among the most stunning in Lan Ha Bay.

Tourism in Cat Ba is highly seasonal, with over 50% of the annual visitors arriving during the four summer months. On peak days such as April 30th, May 1st, public holidays, and summer weekends, the number of tourists to Cat Ba increases excessively, leading to localized congestion at transportation points (bridges, Tan Vu - Lach Huyen road, the cross-island road): piers (Binh Pier, Cai Vieng Pier): and the Gót ferry terminal. Visitors are crowded at tourist spots, beaches, restaurants, and hotels. During the holiday on April 30th and May 1st, 2024, the number of tourists visiting Cat Ba was estimated at 81.500, an increase of 22,2% compared to the same period last year. The phenomenon of overcrowding at the Cat Ba tourist area occurs sporadically at certain times of the year, repeating and showing a tendency to increase.

Table 1. Average number of visitors at certain times during the peak season in the Cat Ba tourist area

| Year | Average number of visitors/days | | | | |
|------|--|-----------------------|------------------------|------------------------|--------------------------|
| | Time Holiday on April 30 th and May 1 st | 8 days weekend in May | 8 days weekend in June | 8 days weekend in July | 8 days weekend in August |
| 2022 | 58.570 | 159.305 | 164.600 | 169.100 | 131.705 |
| 2023 | 63.407 | 182.505 | 185.400 | 173.708 | 142.590 |
| 2024 | 81.500 | 198.600 | 187.920 | | |

Source: Hai Phong Department of Tourist.

4. RESULTS AND DISCUSSION

4.1. PCC- Physical carrying capacity

The formula for Physical Carrying Capacity (PCC) is as follows:

$$PCC = A \times D \times Rf$$

Where:

A: Available area for use (m²);

D: Tourist density (tourists /m²); Apply the popular beach type according to the WTO in 1981 (10m²);

Rf: Rotation factor (number of visits per day).

Particular conditions of the considered area determine a. In natural areas, this parameter can be determined by natural boundaries such as mountain ranges, rivers, streams,... or safety demand. In conservation areas, where tourism is developed, the available area can be estimated from the

length of the track or the total area where tourists can go camping. The tourist density or the area required per tourist D is the area needed for a tourist who can undertake activities comfortably. The rotation factor is the number of permissible visits over a specified time (usually calculated by daily open hours) and expressed by:

$$Rf = \text{Open period/average time of visit,}$$

$$Rf = 12 \text{ hours}/3 \text{ hours} = 4.$$

Area of beaches: The area of beaches is determined through measurement using the GIS method.

Table 2. Areal coverage of beaches of Cat Ba Archipelago

| Beach | Total are (m ²) | Beach | Total are (m ²) |
|----------|-----------------------------|-----------|-----------------------------|
| Cat Co 1 | 8.038 | Tung Thu | 8.419 |
| Cat Co 2 | 6.015 | Cat Dua 1 | 4.641 |
| Cat Co 3 | 6.175 | Cat Dua 2 | 2.670 |

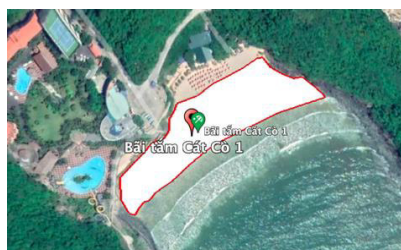


Fig. 1: Cat Co 1 beach

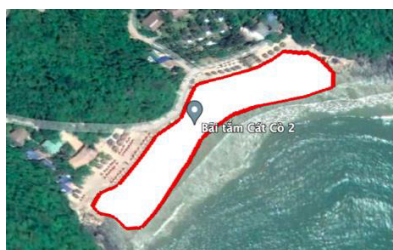


Fig. 2: Cat Co 2 beach



Fig. 3: Cat Co 3 beach

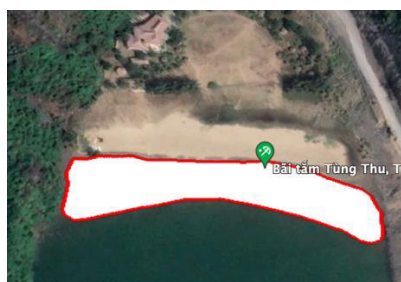


Fig. 4: Tung Thu beach



Fig. 5: Cat Dua 2 beach



Fig. 6: Cat Dua 1 beach

4.2. RCC - Real carrying capacity

The formula for Real Carrying Capacity (PCC) is as follows:

$$RCC = PCC \times (Cf_1 \times Cf_2 \times Cf_3 \times \dots Cf_n)$$

Where:

RCC: Real Carrying Capacity;

PCC: Physical carrying capacity;

Cf: Correction factors

Correction factors are calculated using the following formula:

$$Cf_x = 1 - Lm_x/Tm_x$$

Where :

Cf_x: Correction factors of variable x;

Lm_x: Limiting magnitude of variable x;

Tm_x: Total magnitude of variable x.

Correction factors are so important for estimating the Real Carrying capacity. The correction factors are obtained by considering the biophysical, environmental, ecological, social, and management variables. Tourism is dependent on nature, so some variables are considered as correction factors for this study. Rainfall, excessive sunshine, and storms are the correction factors that can limit tourism activities and decrease tourists' satisfaction at certain places. Therefore, correction factors are also known as limiting factors of tourism. The calculation of correction factors for different limiting variables is described below:

4.2.1. Rainfall (Cf₁)

The Cat Ba Archipelago, located in Cat Hai District, has a tropical monsoon climate influenced by the ocean. As a result, the average temperatures, humidity levels, and rainfall are similar to those in the surrounding areas. The average annual rainfall for the province and city ranges from 1700 to 1800 mm. The rainy season occurs mainly in May, June, July, and August, featuring heavy rainfall, numerous rainy days, and lower temperatures, which limits the number of tourists visiting the beaches.

Table 3. Average number of rainy days by month in Cat Ba Islands (1999-2019)

| Month | Rainy day | Month | Rainy day |
|---------------------------------------|-----------|-------|-----------|
| I | 8 | VII | 15 |
| II | 7 | VIII | 17 |
| III | 8 | IX | 14 |
| IV | 7 | X | 10 |
| V | 12 | XI | 7 |
| VI | 14 | XII | 6 |
| <i>Total 12 months: 125 days/year</i> | | | |

Source: The European Centre for Medium-Range Weather Forecasts (ECMWF)

$$Cf_1 = 1 - (125 \text{ days}/365 \text{ days}) = 0,6576.$$

4.2.2. Excessive sunshine (Cf₂)

Sunlight is the most important factor for beach tourism. The climate of the Cat Ba Archipelago has the tropical characteristics of a coastal limestone island, with summer extending

from May to September and average temperatures ranging from 27°C to 28°C, similar to the nearby province of Hai Phong. (The European Centre for Medium-Range Weather Forecasts). The three hottest months are June, July, and August, with average temperatures of 29.2°C, 29.1°C, and 28.6°C, respectively. The intense midday sun from 11 AM to 3 PM discourages tourists from going to the beach for swimming and leisure activities. Therefore, the intense summer sunlight, especially when combined with the influence of the Southwest monsoon, which brings very hot and humid weather, is a limiting factor for beach tourism. The intensity limit for this parameter is determined to be 92 days x 4 hours = 368 hours of excessive sunshine per year. The total magnitude was determined as the total day of the year: 365 days x 12 hours = 4380 hours. Therefore, the correction factor for excessive sunshine was determined as follows :

$$Cf_2 = 1 - (368 \text{ hours} / 4380 \text{ hours}) = 0,916.$$

4.2.3. Storms, tropical depression (Cf₃)

In Hai Phong province, and specifically in the Cat Ba archipelago, around 1.38 typhoons make landfall each year (The National Oceanic and Atmospheric Administration). Some years may experience only one typhoon, while others may face 3 to 4 consecutive typhoons. Typhoons in the Cat Ba archipelago typically occur in July and August, bringing severe damage, especially from strong winds and heavy rain. According to The National Oceanic and Atmospheric Administration, the average duration of a typhoon in a month is 7 days, so the intensity limit for this parameter is set at 28 days. The total duration is 365 days, with an adjustment factor for typhoons and tropical depressions:

$$Cf_3 = 1 - (28 \text{ days}/365 \text{ days}) = 0,923.$$

4.3. ECC – Effective carrying capacity

The formula for Effective Carrying Capacity (PCC) is as follows:

$$ECC = RCC \times Mc$$

Where :

ECC: Effective carrying capacity;

RCC: Real carrying capacity;

Mc: Management capacity.

Management capacity (Mc) refers to the development conditions that support coastal tourism management. However, quantifying this criterion can be quite challenging. The assessment of management capacity (Mc) involves evaluating factors: management responsibility, economic and social management mechanisms, and environmental management using field methods, expert interviews, and multi-criteria analysis (MCA).

Step 1: Identify the evaluation criteria based on the "Destination Criteria" of the Global Sustainable Tourism Council (GSTC). The criteria include:

- Management responsibility: Evidence of stakeholder consultation, meetings with stakeholders during the planning process related to the destination's carrying capacity;

Management of tourist numbers and activities at the destination; The strategy/plan specifically references policies on carrying capacity.

- Economic and social management mechanisms: Well-organized and actively operating health and security services at the destination; Support for local entrepreneurs and fair trade; Systematic surveys of residents and tourism facilities to gather feedback, covering various tourism-related issues.

- Environmental management: There is a system for waste collection, recycling, and sorting; Monitoring and controlling the sources, volume, and quality of water used for tourism purposes; There is a regular risk assessment program for water resources.

Step 2: Determine the weight of each criterion using the Analytic Hierarchy Process (AHP) method through pairwise comparisons between the criteria.

Step 3: Collect data and assess each criterion, which the author compiles through interviews are expecters and reviewing research documents.

Step 4: Score each criterion (with a maximum of 10 points).

Table 4. Assessment table of beaches management capacity

| Evaluation criteria | Weighted value | Cat Co 1 | Cat Co 2 | Cat Co 3 | Tung Thu | Cat Dua 1 | Cat Dua 2 |
|---|----------------|----------|----------|----------|----------|-----------|-----------|
| Management responsibility | 0,31 | 7 | 7 | 7 | 7 | 6 | 6 |
| Economic and social management mechanisms | 0,23 | 7 | 7 | 6 | 6 | 6 | 5 |
| Environmental management | 0,46 | 5 | 6 | 7 | 6 | 8 | 7 |
| Mc | | 0,608 | 0,654 | 0,677 | 0,631 | 0,692 | 0,623 |

4.4. Tourism carrying capacity of six beaches of Cat Ba Archipelago

Tourist capacity (TCC) at a beach is determined through physical capacity (PCC): but the value of PCC is theoretical. Real capacity (RCC) is adjusted by natural environmental factors and natural hazards, and effective capacity (ECC) depends on local tourism management capabilities. Therefore, the calculated tourist capacities for the beaches of Cat Co 1, Cat Co 2, Cat Co 3, Tung Thu, Cat Dua 1, and Cat Dua 2 tend to decrease from physical capacity to real capacity, and finally to effective capacity.

The total physical capacity for the six beaches in the Cat Ba Archipelago is 14,384 visitors per day, while the real capacity is 6,208 visitors per day. The threshold for effective and safe capacity in the area is 5,157 visitors per day.

The results of the tourism capacity calculations show that PCC is always higher than RCC and ECC. Among these, ECC is more widely accepted and is very useful for developing beach tourism management policies. The current situation shows that during the peak season from April to August, the demand for beach tourism increases significantly, and the number of visitors to the beaches in the Cat Ba Archipelago is continuously rising. According to the data in Table 1, the Cat Ba Archipelago receives an average of over 20,000 visitors per day, with the number reaching about 40,000 visitors per day during the holidays on April 30th and May 1st. Compared to the total

physical carrying capacity of the six beaches, which is 14,384 visitors per day, the number of tourists has exceeded the physical carrying capacity. Particularly, the three beaches: Cat Co 1, Cat Co 2, and Cat Co 3, located in the town area with a high density of resorts and tourism services, attract a large number of visitors, leading to severe overcrowding. This can negatively impact service quality, diminish the visitor experience, and put pressure on the natural environment, potentially leading to pollution and a reduction in marine resources.

Table 5. Tourism carrying capacity of six beaches of Cat Ba Archipelago

| Beach | Physical Carrying Capacity (visitors/day) | Real Carrying Capacity (visitors/day) | Effective Carrying Capacity (visitors/day) |
|-----------|---|---------------------------------------|--|
| Cat Co 1 | 3.216 | 1.788 | 1.087 |
| Cat Co 2 | 2.406 | 1.338 | 875 |
| Cat Co 3 | 2.470 | 1.373 | 930 |
| Tung Thu | 3.367 | 1.872 | 1.181 |
| Cat Dua 1 | 1.857 | 1.032 | 714 |
| Cat Dua 2 | 1.068 | 593 | 370 |
| Total | 14.384 | 6.208 | 5.157 |

Based on effective capacity calculations, managers need to implement strict policies to control the number of tourists, invest in infrastructure improvements, and apply environmental protection measures to minimize negative impacts. Additionally, developing and promoting tourism in other areas to distribute visitor flow can help ensure sustainable development for the beach tourism sector in the Cat Ba Archipelago.

5. CONCLUSION

The study on the tourism carrying capacity of beaches in the Cat Ba Archipelago provides critical insights into managing sustainable tourism development. Utilizing a combination of secondary data analysis, field surveys, and multi-criteria analysis (MCA): the research employed well-established methods for calculating tourism carrying capacity. These include Physical Carrying Capacity (PCC): Real Carrying Capacity (RCC): and Effective Carrying Capacity (ECC): based on the methodology of Cifuentes and Ceballos-Lascuráin. The research revealed significant discrepancies between physical and real capacities, highlighting the pressures on the environment from high tourist numbers.

Key findings show that the total physical carrying capacity across six main beaches: Cat Co 1, Cat Co 2, Cat Co 3, Tung Thu, Cat Dua 1, and Cat Dua 2 is 14,384 visitors per day. However, the real carrying capacity is reduced to 6,208 visitors per day, while the effective capacity, factoring in management limitations, stands at just 5,157 visitors per day.

This indicates that while the beaches can physically accommodate a large number of tourists, environmental, climatic, and management constraints significantly reduce the number of visitors that can be sustainably supported. The use of correction factors such as rainfall, excessive sunshine, and storm frequency was pivotal in refining the real carrying capacity, while multi-criteria analysis

provided a comprehensive assessment of management capacity at these tourist sites. Notably, environmental management remains a critical factor in ensuring the sustainability of these tourism destinations, and improvements in waste management and water usage monitoring are crucial.

The research offers a strategic foundation for sustainable tourism management in the Cat Ba Archipelago. By adhering to the established limits of carrying capacity, local authorities can mitigate negative environmental impacts, prevent overcrowding, and ensure the long-term viability of the region's natural resources. Furthermore, these findings serve as a model for other coastal regions facing similar challenges, demonstrating the effectiveness of carrying capacity assessment as a tool for responsible tourism planning and environmental conservation

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AGRICULTURAL ARCHITECTURE ADAPTING TO CLIMATE CHANGE

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ABSTRACT

Climate change is directly affecting the lives of all humanity, impacting every industry and all aspects of social life. In particular, agriculture is one of the most heavily affected sectors because its production processes largely depend on climate and weather conditions. High temperatures, droughts, diseases, and water shortages for crops and livestock have reduced the efficiency of agricultural production. This makes food security a top concern for countries. In addition, rapid urbanization and population growth in urban areas have reduced the space available for agricultural production.

To ensure the sustainability of agricultural production, integrating agriculture with architecture to create ecological and environmentally friendly urban buildings is a viable solution. This approach contributes to climate change mitigation and promotes sustainable food and food resource development for the future. The article proposes architectural solutions to innovate agricultural production methods and develop ecosystems in harmony with natural fluctuations.

The article uses research methods, including document analysis and synthesis, data collection, comparison, and contrast, to clarify the content and research results.

Keywords: Architecture, agricultural architecture, climate change

1. INTRODUCTION

Climate change with its manifestations of increasing global temperatures, melting ice, and rising sea levels causes extreme weather events such as storms, floods, and droughts, greatly affecting ecosystems and agricultural production. Agricultural architecture needs to develop solutions to adapt to these changes, in order to protect the environment and ensure food security. According to Agronomy, sources of greenhouse gas emissions include agriculture (14%), forestry (17%), energy (26%), transport (13%), construction (8%), and industry (19%) [4]. The agricultural sector is both a source of environmental pollution and is affected by climate and weather conditions. The risk of disease and crop failure significantly affects the quality and output of the agricultural sector, leading countries to prioritize the issue of “food security.”

Vietnam is an agricultural country that is strongly affected by climate change. According to a report by Germanwatch (2020), Vietnam is one of the six countries most vulnerable to climate change [8].

In addition to rapid urbanization, the population in urban areas in Vietnam is also increasing. Economic development and population growth have led to the formation of new urban areas and the construction of housing and apartment buildings, which are narrowing the area of agricultural land. The rapid urbanization and construction investment have resulted in increased environmental pollution, the greenhouse effect, and global warming, all of which directly impact quality of human

habitats . In the context of a developing society and increasing demand for green, clean, and beautiful living environments, solutions such as ecosystem conservation, water saving, and energy saving will be crucial in environmental protection and in responding to global climate change. Therefore, research on integrating architecture and agriculture to create environmentally friendly architectural works not only helps minimize negative impacts on the environment but also contributes to ensuring food security in the future. Additionally, agricultural architecture promotes tourism development, creates livelihoods for local people by leveraging land benefits, and contributes to the conservation of the ecological environment and biodiversity, while enhancing the ability to adapt to climate change.

2. LITERATURE REVIEW

The term “Agricultural architecture” (Agritecture) first appeared in 2011 and was popularized by Henry Gordon-Smith. His research focuses on how urban areas can use agricultural practices to address environmental, social and economic challenges while promoting climate-resilient food systems.

According to Gordon-Smith (2011), Agritecture encompasses the art, science, and business of merging agricultural practices with the built environment [3]. From this definition, we can understand that agricultural architecture is the application of architectural thinking to the design of agricultural structures in an urban context. The product of agricultural architecture is a collaboration between architects, farmers, and investors. Architects develop concepts for urban agriculture and vertical farming, designing structures that meet both technical and aesthetic requirements. Investors and farmers develop urban farms by combining effective farming solutions to improve production efficiency and increase product value. Therefore, agricultural architecture is the integration of agriculture and architecture so that urban "farms" become green, environmentally friendly buildings that both exploit agricultural products and are resilient to climate change.

Currently, countries around the world, including Vietnam, are prioritizing sustainable development to protect the environment for future generations. Agricultural architecture contributes to creating green buildings, integrating nature into the design. In addition, agricultural architecture also connects urban residents with agriculture, allowing people to grow food right in the buildings for family use or to share with the community. At the same time, agricultural architecture uses environmentally friendly materials and saves water and energy, becoming a sustainable development trend for current and future urban areas.

Vietnam, a developing country where agriculture still plays an important role in the economy [1], has begun to apply smart agricultural production models such as “unmanned livestock farms,” “automatic farms,” and “e-commerce platforms” to the production process of goods. Agricultural architecture has been invested in construction in several provinces in the country, such as VinEco Nam Hoi An Farm, Chimi Farm Moc Chau Farm, and An Nhien Farm Da Nang. These works, with beautiful and impressive architectural designs combined with smart agricultural production technology, have become attractive tourist destinations. Agricultural architecture, including farms, greenhouses, and farm stays (which combine accommodation and resorts), is

developing in Vietnam and contributing to tourism activities, promoting the growth of agricultural tourism, eco-tourism, community-based tourism, and more.

3. METHODOLOGY

The article uses the following research methods to clarify the research problem:

Document analysis and synthesis method: Research, compare, and contrast documents, data, and information from domestic and international sources related to the topic. Thereby, the article provides an overview of the impact of climate change on architecture and agriculture, as well as agricultural development policies to adapt to climate change in Vietnam.

Survey method: Survey and assess the current status of agricultural architecture in some provinces and cities such as Hanoi, Son La, Da Nang, and Quang Nam. From there, the article proposes architectural solutions suitable for agriculture in Vietnam.

Inheritance approach: Using previous studies related to climate change, architecture, and agriculture to clarify the importance of applying adaptive architectural solutions in agriculture.

4. RESEARCH RESULTS AND DISCUSSION

Agricultural architectural design solutions have been researched and proposed based on theoretical foundations and practical experiences from agricultural architectural development in various countries around the world, including Vietnam.

These solutions aim to ensure that the agricultural production environment meets the requirements of aesthetics, safety, and suitability with local climatic conditions, while also addressing environmental pollution, promoting sustainable development, and responding to climate change. Agricultural architecture adapting to climate change includes six main solutions:

(1) Ecological conservation: Focus on protecting and maintaining natural ecosystems in agricultural architectural design.

(2) Friendly materials: Use local, environmentally friendly materials that are recyclable or biodegradable.

(3) Renewable energy integration: Use solar energy or wind energy and energy-saving equipment.

(4) Efficient water management: Build a water management system to collect, store, and use water efficiently, including reusing rainwater.

(5) Apply artificial intelligence technology (AI): Use artificial intelligence to optimize agricultural production processes, from monitoring environmental conditions to managing crops and livestock.

(6) Community and Social Participation: Encourage community involvement in the design and management of agricultural facilities to enhance sustainability and create social value.

Apply the following six solutions for agricultural architecture design adapted to climate change:

4.1. Ecological conservation

4.1.1. Master plan design

Site selection: Choose a site that is separate from residential areas and convenient for public transport to minimize air pollution caused by personal vehicles.

Site characteristics study: The master plan of the project should carefully study the site's characteristics and natural conditions to minimize the impact on the surrounding environment.

Integrated design: The design of the project must be in harmony with the landscape and architecture of the surrounding area. This includes creating areas to protect flora and fauna, maintain biodiversity, and minimize pollution.

Flexible space design: Create spaces that can be adjusted or expanded to adapt to the changing needs of agricultural production, from planting to raising livestock. Organize production space and barns to ensure spacious areas. Between service areas and production spaces, lawns or flower beds should be planted to reduce reflected radiation.

Space optimization: Use methods such as a system of floors to optimize the land area and land use coefficient, especially in urban areas or areas with limited space.

4.1.2. Architectural form

Agricultural architectural design has many different forms, suitable for methods such as greenhouse production, vertical agriculture, aquaponics, hydroponics, etc.

Greenhouse: Greenhouses are designed to optimize natural light, regulate temperature, and manage humidity to create ideal growing conditions for plants. This is done by adjusting light, and ventilation, and controlling air quality in greenhouses or growing facilities. These controlled environments allow farmers to extend the growing season and cultivate a wider variety of crops [7].

Vertical farming: Vertical farms save space by stacking crops vertically. The indoor environment is tightly controlled for microclimate. These farms often use hydroponics or aeroponics, which allow plants to grow without soil and use less water than traditional farming and production methods.



Figure 1. High-tech strawberry greenhouse and agricultural landscape at Chimi Farm

Chimi Farm is an agricultural farm system combined with experiential tourism services [2]. Chimi Farm stands out with its high-tech strawberry greenhouse and beautiful agricultural landscape. Chimi's strawberry growing area has expanded to more than 10 hectares, with three facilities in Moc Chau and Hanoi, showing that agricultural architecture can harmonize high-efficiency farming and sustainable tourism landscapes (Figure 1).



Figure 2. Dome House, VinEco South of Hoi An Farm

The Dome House at VinEco *South of Hoi An Farm* has an area of over 1,000 m² with a diameter of 36 m and a height of 14 m [6]. This project applies greenhouse technology and a climate control system (temperature, humidity, and light) to create optimal conditions for plants, regardless of external climate conditions (Figure 2).

4.2. Friendly materials: Use local, recyclable, and environmentally friendly materials. For yards and walkways, choose non-slip materials such as perforated bricks with grass interspersed, which help drain water well, reduce surface heat absorption, and protect the underground ecosystem.

4.3. Renewable energy integration : Use solar energy or wind energy and energy-saving equipment. Solar panels and wind turbines are used in agricultural areas to reduce carbon emissions and provide clean, cost-effective energy.

4.4. Efficient water management: Design smart and modern irrigation systems to save water and improve efficiency. Innovative irrigation systems use sensors and data analysis to control watering . This is an effective solution to reduce runoff in agricultural production and protect water resources in the future. Rainwater harvesting and water reuse systems should also be applied. Good drainage systems help avoid waterlogging and protect crops from moisture-related diseases.

4.5. Application of artificial intelligence technology (AI): AI technology enhances the design and management of agricultural architecture by analyzing environmental data such as temperature, humidity, and light to propose optimal design solutions. AI automatically monitors and adjusts elements in greenhouses and production areas, including water and nutrient management, helping plants and animals grow best and save resources. AI also predicts diseases, creates interactive visitor experiences, manages visitor traffic, and supports building prediction and maintenance, helping reduce costs and optimize operations. Thanks to these applications, AI increases productivity, reduces waste, and ensures food security for future generations.

Nordic Harvest CEO Anders Riemann started the high-tech farm in an industrial area in the Danish capital, Copenhagen (Nordic Harvest, 2020) [5]. The farm is located inside a giant aircraft hangar with an area of about 7,000 m². Vegetables such as kale, lettuce, and herbs are grown in large aluminum trays, arranged on a 14-story hanging system. The farm uses 100% clean energy from windmills and has about 20,000 specialized LED lights that illuminate day and night. This is an environmentally friendly farm because it does not use pesticides and recycles all water, nutrients, and fertilizers (Figure 3).

Agricultural architecture with community and social participation: This solution not only focuses on production needs but also aims to improve the livelihood of local residents by creating employment opportunities and promoting social participation, thereby connecting and developing a sustainable community.



Figure 3. Vertical Farming at Nordic Harvest (Image source: Getty images)



a. Project perspective

b. Vertical garden

Figure 4. Homefarm Project, Singapore

Homefarm is a project that combines apartments with agricultural facilities, using a vertical urban farming model [9]. Residents can work on vegetable farms located directly on the project premises, showcasing the potential for a model that integrates both living and urban crop cultivation.



a. Vertical garden

Figure 5. Pasona Urban Farm, Japan, Kono Designs, New York (2010). (Source: TOTO Information Center, according to Dezeen)



b. Harvesting rice right in the main hall of the building



c. Food crops are grown inside the building

Pasona Urban Farm is a 9-story office building in Tokyo where employees can grow and harvest their crops right at work. This unique work environment not only increases productivity and encourages social interaction, but also ensures long-term sustainability by integrating urban agriculture into the architecture, while strengthening community ties in Tokyo (Figure 5).

5. CONCLUSIONS

Agricultural architecture with the integration of agriculture into urban architecture is a sustainable development trend for the present and the future. Agricultural architecture solutions not only improve production efficiency but also protect the environment and improve living conditions for the community. The main solutions include (1) ecological conservation; (2) environmentally friendly materials; (3) renewable energy integration; (4) effective water management; (5) application of AI technology; and (6) community participation. These solutions help create green architecture, connect urban residents with agriculture, and allow people to grow food for their use or to share with the community. Developing agricultural architecture will improve the ability to respond to climate change and conserve biodiversity while innovating agricultural production methods to meet increasing food demand and develop ecosystems that are compatible with natural fluctuations.

To promote the development of agricultural architecture, governments, and relevant agencies should issue policies to support and invest in agricultural architecture projects, including tax and financial incentives for green buildings. At the same time, it is essential to raise awareness among the public and investors about the benefits of agricultural architecture through educational programs and seminars.

International cooperation and technological innovation are also important factors. Countries should increase knowledge and technology sharing in the field of agricultural architecture to apply the most effective solutions. Encouraging experimentation and innovation in design and technology will help to discover creative solutions and improve the efficiency of the project. Finally, the active participation of local communities in agricultural architecture projects will ensure that the projects meet the real needs of the people, create long-term benefits for the community, and protect the environment.

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THE IMPORTANCE OF EDUCATION AND DEVELOPMENT OF SUSTAINABLE DESIGN CAPACITY (GREEN DESIGN) IN THE TRAINING OF GRAPHIC DESIGN IN VIETNAM TODAY

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ABSTRACT

Education and capacity development for sustainable design, also known as green design, is becoming an essential need in specialized graphic design training. In the context of globalization and climate change, integrating sustainable principles into the training process not only helps raise environmental awareness but also creates a generation of responsible and creative designers. Previously, solid design education helped students better understand the impact of design solutions on the environment, solid graphic design products not only conveyed messages about environmental protection but also encourages action change in society. Through this, they will be able to create designs that are not only beautiful but also minimize negative impacts on the environment, contributing to building public awareness of the importance of sustainability. An advertising campaign using green designs can raise public awareness about saving energy, reducing waste and protecting natural resources. This not only benefits the environment but also creates positive brand value for businesses. Through this article, the author mentions the current situation and urgency of educating and developing sustainable design capacity in graphic design training in our country today. Because of its importance, it not only helps students develop professional skills but also equips them with a sense of responsibility and appropriate creativity to face current and future environmental challenges future.

Keywords: Environment, graphic design, responsibility, sustainability, students, training.

1. INTRODUCTION

The problem of environmental pollution has been having a strong impact on the lives of people around the world, especially in developing countries. Vietnam is also suffering from severe consequences after the period. explosive development of industrialization and modernization. According to the World Health Organization (WHO) and UNICEF, Vietnam is facing serious environmental challenges due to air pollution, with the situation getting worse in recent years. According to WHO data, more than 60,000 deaths each year in Vietnam are related to air pollution, with fine dust particles (PM2.5) being the main concern. These pollutants, which originate from traffic, industrial production, waste burning and improper agricultural practices, cause many health risks, especially to vulnerable populations such as children and the elderly. Air pollution levels in urban centers such as Hanoi and Ho Chi Minh City often exceeds the safety threshold recommended by WHO, UNICEF. To address this problem, action is needed from individuals to systems, from improving air quality monitoring systems and reducing vehicle emissions, to transitioning to cleaner energy sources.

Graphic design is an industry that has many impacts on the living environment. Training competent graphic designers in green design not only meets these requirements but also enhances the competitive position of Vietnam's design products and services in the international market. Because Graphic design in today's context, is not only limited to creating visual products, but can also influence consumer behavior and attitudes. Promoting sustainable design ideas will contribute to changing community awareness about environmental protection and more effective use of resources. This approach aims to minimize the environmental impact of the design of projects while maximizing their positive impact on society and the planet.

2. METHODOLOGY

To affirm the scientific nature and practical value of the arguments and hypotheses presented, this article employs the following basic research methods:

- Interdisciplinary research method: The development of graphic design in Vietnam occurs within a specific social context, including the economic and political landscape, the effects of globalization, and the serious impacts of climate change and environmental pollution. The research draws on a multi-disciplinary theoretical basis from fields such as Fine Arts, Design, Aesthetics, and Sociology to provide a multidimensional analysis and argument, supplementing the system of arguments and hypotheses in the article.

- Synthesis and analysis method: This is used to affirm the role that sustainable graphic design brings to the field.

- Case study method: The study analyzes specific exemplary cases to identify the key role of sustainable design education in graphic design students.

3. RESEARCH THEORY

The article applies social art theory to show the important impact of specialized graphic design in the context of climate change and environmental pollution in Vietnam.

Using the perspective of design history and fine arts to demonstrate the values that specialized graphic design brings to society. From there, it affirms the importance of the game in improving sustainable design capacity for specialized graphic design students in the context of protecting environmental resources and responding to global climate change.

4. RESULTS AND DISCUSSION

4.1. The role of the Graphic design industry in the context of climate change response and environmental protection

Nowadays, we often hear the phrase "sustainable development" appearing quite a lot in most daily forums from Science, Economics, Politics, Culture, Education, etc. In the field of design, Sustainable design (also known as green design) is a design method to create products and solutions that minimize negative impacts on the environment and resources. The goal of sustainable design is to ensure that the production, use, and recycling of products does not harm

ecosystems and communities. Key elements of sustainable design include: using recycled or environmentally friendly materials, optimizing product life cycles, reducing energy consumption, enhancing recycling and reuse, ensure social justice... Sustainable design has become a global trend, forcing the Graphic design industry to change the way it operates to contribute to protecting the environment and maintaining the long-term development of the planet. The world today is gradually moving away from products and services that are harmful to the living environment. Consumers are willing to pay more to use green, clean and environmentally friendly products. They understand that if the environment is clean, their health will be guaranteed. Not only that, wise consumers always aim for a better society for future generations. More than ever, the issue of sustainable development is of special concern today. Conferences, seminars and forums of organizations as well as countries around the world are always interested in sustainable development.

According to statistics from the Design Council, an independent organization and advisor to the UK government on design, up to 80% of a product's environmental impact is determined at the design stage, 40% of carbon is emitted by the construction industry, 45% of the need to reduce global greenhouse gases needs to come from everyday products, 33% of cost-effective climate change mitigation can come from nature-based solutions.¹⁸

Along with promoting sustainable design projects, research and projects on sustainable design are increasingly appearing in advanced education systems in countries such as the UK, Germany, the US, and the Netherlands, for example: the project "Architecture after Architecture"¹⁹, "Fashion Societal, Economic and Environmental Design-led Sustainability"²⁰, "Bacoa - biodegradable packaging" by Designer: Laia Aviñoa from EINA, Escola de Disseny i Art (Spain) and many other studies that the author cannot list in the scope of this article²¹. Through these examples also demonstrate the importance of sustainability education for design students, so that from here we can begin a process of transition from thinking to action.

Sustainability helps ensure harmonious and balanced development of the economy, society, resources and environment. From a design perspective, we clearly see that advances in science and technology have been playing an important role in promoting sustainable design. Exploiting these

¹⁸ Source: <https://www.designcouncil.org.uk/>

¹⁹ Architecture after Architecture examines how spatial practices might respond to such challenges, going beyond technical fixes, by addressing the cultural and socioeconomic factors that influence how we make, occupy, and share space.- Source: <https://www.arts.ac.uk/>

²⁰ The project aims to develop a holistic framework for a design-led approach for fashion sustainability education, and a construct of related graduate skills & capabilities. A learning resource repository and sustainability teaching materials will enable educators to adapt and apply the framework to a range of Higher Education Institutions (HEI) - space.- Source: <https://www.arts.ac.uk/>

²¹ This project helps reduce plastic waste and protect the environment by using biodegradable materials and environmentally friendly inks. Source: <https://packagingoftheworld.com/>

strengths can be seen clearly in designers offering design solutions to optimize production processes to minimize waste, and creating communication messages to promote awareness about environmental protection. In the era of digital communication, online publications are gradually replacing print publications, which are traditional products of the graphic design process. One of the equally important advances is the development of printing technology, allowing graphic designers to convert computer designs into printed products directly and quickly. This not only reduces production time but also opens up opportunities for products printed in small quantities or printed on demand, meeting customers' personalized needs. Easy editing and quick proofing help designers test a variety of creative ideas without worrying about costs. Besides, the introduction of 3D Printing Technology also brought significant changes in Graphic design. Designers can create intricate and detailed three-dimensional models, which bring a more intuitive and vivid look to their products. 3D printing is not only limited to traditional materials such as plastics, metals, ceramics, but also extends to biological materials, recycled materials opening up many new possibilities in product design and art. In addition, the development of new printing inks such as UV inks, insoluble inks, and eco-friendly inks has also facilitated designers to explore new printing surfaces and materials, from paper and fabric to recycled materials. This not only improves image quality but also contributes to protecting the environment and changing consumer behavior. Sustainable solutions in the graphic design industry have achieved great success, having a strong spread in the community, proving the power of design in promoting social responsibility for environmental protection. Sustainability trends are becoming increasingly important in all sectors.



Chairs made from plastic waste using 3D printing technology, nguồn <https://thenewraw.org/>

Applying sustainable principles to graphic design is not only an option but also an important criterion for a sustainable future. Taking ecological balance as a core value, designers can turn design into a powerful driving force in protecting the environment and building a sustainable world. Designers, as part of providing innovative solutions through products and services, play an important role in reducing the consumption of natural resources and raw materials, increasing the life cycle of products, replacing obsolete products with new sustainable innovations. All these

efforts are aimed at bringing about effective economic development, social justice and environmental protection. This can be considered as a dedicated commitment, towards the harmony between the designer's creativity and the urgent requirements of environmental protection.

4.2. The current situation of the Graphic design training program in Vietnam

The Graphic Design in Vietnam with about 20 training units across the country every year, the number of graduates with a scale of up to a few hundred or even a few thousand, but the big question is whether the number of graduates has really met the requirements of today's market, which is highly demanding in terms of sustainability and eco-friendliness still has no exact answer. Design training schools today still mainly train in traditional graphics, mainly print graphics, in fact, digital media graphics are increasingly on the rise, because of their convenience and environmental friendliness. One of the biggest benefits of digital media is reducing paper consumption, which means reducing fuel consumption and CO₂ emissions, reducing waste and pollution from the printing process. This issue is of little concern in design training schools in Vietnam, because not all lecturers have in-depth knowledge in this field, because sustainable design is still an emerging topic and has not been officially included in the training program, books, documents, and textbooks are also very sketchy, the 4-year program structure is framed with many compulsory subjects that are not closely related to the major, so there are many obstacles in updating, allocating content and time for new subjects according to contemporary trends. On the other hand, in terms of internal strength, due to weak foreign language proficiency, lecturers and students are often hindered in acquiring advanced knowledge of the world. From a macro perspective, graphic design today is not simply a beautification step to change product value, but also a solution to cultural and social issues. Graphic design plays a role, important in conveying messages about environmental protection through communication campaigns and product designs. The importance of education and developing sustainable design capacity in training Graphic design students is undeniable. Aware of the problem, some schools have also begun to integrate sustainable principles. Firmly relying on training programs, many training units have been wanting to innovate and pursue solutions to increase training quality by inviting foreign lecturers and applying advanced programs in the world. In addition, there are also study tours and internships for lecturers and students abroad. During their studies, students are encouraged to use recycled materials, consider the life cycle of products and energy-efficient production methods. These projects are often required to design products or communication campaigns related to environmental issues, such as reducing waste, protecting nature, or promoting green products, which helps Students have the opportunity to exchange, learn, and understand themselves better from thinking, awareness to practical skills. However, it still has many limitations and is heavily formalistic in sustainable design education. Besides, not all lecturers and students are fully aware of the importance of sustainable design that the widespread communication characteristic of graphic design can bring. As modern design products become more diverse with more features, the new generation of designers will not only frame their work within the scope of processing static images (graphic design, decoration, interior design and exterior, electronic publishing techniques, monitoring the quality of printed products...) but also must create friendly and sustainable design products. That is a new challenge, a new opportunity and also a new task in the goal of raising green design awareness for Graphic design students in Vietnam.

4.3. Some proposed solutions

Vietnam is in the process of deeply integrating into the world economy, international standards on sustainable development are becoming common standards, including the Graphic design industry, which must take steps to change. important changes to meet practical needs to enhance the competitive position of Vietnam's products and services in the international market. In this context, graphic design students need to be equipped with knowledge and skills to enhance adaptability and creativity in the modern world. To educate and develop sustainable design capacity (green design) in graphic design training, design schools need to take the following measures:

- Social responsibility and cognitive transformation

Sustainable design education not only helps students develop professional skills but also enhances their sense of social responsibility. With this mindset, design is not only a tool to create aesthetic products but also a means to help change public awareness about the importance of sustainable development.

- Developing the domestic creative industry

Sustainable design will be an inevitable trend in the creative industry. Research on sustainable design education will help Vietnam's creative industry develop in a sustainable direction, promoting the search for design solutions with the least environmental impact. Because the goal of sustainable design is to eliminate negative impacts on the environment through design, the resources used must be renewable and enhance the relationship between humans and nature, thereby contributing to long-term economic development, therefore, achieving sustainable design must be considered one of the top and long-term tasks.

- Integrate sustainable design into the curriculum

Raise students' awareness of social responsibility in protecting the health, safety, and welfare of people as well as the living environment. The designer's role should be to start thinking about design drawings early in the product development and evaluation process, analyzing consumer feedback. Through each process, the designer considers sustainability in a thoughtful and useful way. Schools need to include sustainable design in the curriculum as an important part of the graphic design industry. This content should be applied not only in theory but also in practical projects, so that students become familiar with applying green principles to the creative and production process. Develop thematic, short-term and long-term courses on sustainable design, focusing on issues such as resource management, environmentally friendly materials, recycled sustainable materials, and system design circularity, product life cycle design.

- Collaborate with sustainability experts and organizations

Invite experts in the field of green design or environmental researchers to teach, organize seminars or be guest speakers to provide practical and updated knowledge to lecturers. At the same time, organize field trips to businesses and companies applying sustainable design, helping lecturers have a clear and practical view of green design solutions.

- Encourage scientific research on sustainable design

Encourage lecturers to participate or carry out research projects on sustainable design, regularly organize seminars and scientific conferences so that lecturers can share knowledge, research results, and learn each other on the topic of sustainable design, combined with establishing cooperative relationships with foreign universities and organizations with expertise in green design, thereby providing opportunities for academic and research for teachers. Through this, lecturers can learn more about how to develop curriculum that integrates sustainable thinking into all stages of the design process. This may include developing lessons on material reuse, energy consumption reduction, and environmental impact analysis.

- Establish a community of green design instructors

Build a community of lecturers specializing in sustainable design through clubs, discussion groups or internal forums. Create a common repository of documents on sustainable design for lecturers to refer to and update regularly.

- Cooperate with sustainable businesses

Create cooperative relationships with businesses and organizations that have sustainable development criteria, provide internship opportunities and project collaboration for students to provide modern facilities and technology. Advanced technology helps students work with environmentally friendly materials and production processes. Learning through innovative technology will help students more easily access sustainable and green design solutions.

- Measure the impact and effectiveness of student design projects

Schools need to continuously evaluate and adapt sustainable design curricula to ensure that teaching content is up to date with the latest trends and meets real industry needs. This evaluation should be based on feedback from students and faculty, as well as the participation of industry experts. To promote education and develop sustainable design capabilities in the graphic design industry, schools need to create conditions for students to access cutting-edge knowledge, experiment with creativity, and participate in real-world projects. This not only helps students acquire necessary professional skills but also equips them with a sense of responsibility towards the environment and society. Encourage students to evaluate and measure the environmental impact of the design projects they undertake. Because measuring the impact and effectiveness of a sustainable design project is an important process to ensure that environmental, economic and social goals are achieved.

- Integrate sustainable design into interdisciplinary projects

Graphic design not only stands alone but can also be combined with other fields such as architecture, urban planning, or technology. Organizing interdisciplinary projects will help students broaden their horizons and better understand how green design can impact entire systems in society. Accordingly, by developing sustainable design capacity for students, design schools will not only improve the quality of their teaching staff but also help them become pioneers in promoting design. sustainable, positively contributing to the development of the graphic design industry and the environment. Therefore, sustainable design is completely practical for the design profession to guide people towards a sustainable future and maintain what is best for life.

5. CONCLUSIONS

In short, education to raise awareness of sustainable development among students strives to build a design system that is more responsible to the community and the environment, design training institutions need to start from the truth of change. basic training methods for students, from updating the curriculum, to equipping students with relevant skills and technology. Members need to be guided in how to recognize and evaluate the negative impacts that traditional design can have on the environment and to receive their critical expression in this change and seize the opportunities that it will bring about, from which to develop creative solutions and encourage the reduction of such activities. Students, who will become the main energy workers in the future, have the ability to improve the quality of life of individuals and society, contributing to building a balanced and harmonious world, ensuring ensuring long-term development for future generations.

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REASONABLE AND SUSTAINABLE USE OF FOREST RESOURCES: A CASE STUDY AT DONG CHAU – KHE NUOC TRONG (QUANG BINH PROVINCE)

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ABSTRACT

Building sustainable forest management (SFM) is a principled and mandatory task for all forest owners to organize the management, conservation, protection, development, and sustainable use of forest resources based on the main pillars of society, environment, and economy. Dong Chau - Khe Nuoc Trong nature reserve (Quang Binh province) has an area of over 20,000 hectares, is a place with high biodiversity value from tropical evergreen closed forest ecosystems to subtropical forest ecosystems, limestone mountain forests... In addition, this place also has rich flora and fauna resources with many endangered species that need to be preserved. By approaching the main methods: document analysis and secondary data, investigation methods, interviews, and the Delphi method, this article has clarified the current status of sustainable forest management in Dong Chau - Khe Nuoc Trong in terms of conservation, natural forest management, afforestation, non-timber forest product management, and animal rescue. From there, this study proposes several solutions in terms of management, monitoring, and livelihood models to support local communities living on forests and improve management capacity, thereby protecting forests, conserving biodiversity, enhancing forest value, and rationally using forest landscapes and environments.

Keywords: Sustainable forest management, reasonable using, Dong Chau - Khe Nuoc Trong nature reserve, Quang Binh province.

1. INTRODUCTION

General overview of sustainable forest management (SFM)

In the context of increasing urbanization and population growth, the unreasonable and unsustainable use of forest resources causes forests to degrade and cannot regenerate completely. In addition to the great contributions of forest resources to the natural environment (land, air, water, ...), forests also provide many values for livelihoods and sustain human life. So, the urgent issue for humans, especially groups of people related to the benefits of forests: Is it necessary to protect and develop forests in a sustainable direction? The proportion of forested land in each country is also considered an important index of sustainable development goals and environmental quality. The recommended forest area for a country should be 45%, but in recent decades, the world's forest resources have been seriously exploited and more than 30% of the global forest area is degraded (Phung Van Hien *et al.*, 2020). The main cause of forest area decline comes from limited awareness of people's community in protecting natural resources, on the other hand, there is also a part of the population in developing countries (or low-income countries) that still depends on forest resources (FAO, 2011). In addition, some countries lack strong sanctions in punishing and managing existing forest areas.

As forest resources in countries were declining and depleting at an alarming rate, the issue of sustainable development and management of forest resources became a concern in the 1980s (Tajbar, 2008). Sustainable development is defined as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (Brundtland, 1987). Sustainable forest management (SFM) was considered an indispensable content in the sustainable development goals of the 1992 UNCED Conference in Rio de Janeiro, also known as the Earth Summit (UN, 1992). Forest and land resources have to be managed sustainably to satisfy and serve social, economic, ecological and cultural needs while maintaining aspects of biodiversity and environmental sustainability. In recent years, approaches, criteria and indicators have been developed as tools to assess, monitor and report on the sustainability of forest resources. Sustainable forest management encompasses all three components of sustainability, namely ecological, economic and socio-cultural well-being.

Sustainable forest management (SFM) is considered as actions, practices, and solutions that help to use forest resources sustainably and rationally, without degradation, and ensure long-term sustainability for local and national areas with forest-based economies. Through SFM, the forestry sector also contributes to climate change mitigation by increasing carbon sequestration in crops and soils and planting more trees to increase carbon storage capacity. SFM also contributes to climate change adaptation by enhancing the resilience of forest ecosystems to future climate risks and reducing the risk of land degradation by stabilizing soils and water retention ability. Furthermore, SFM helps to provide many valuable ecosystem services and protect biodiversity, such as wildlife habitat, recreational amenity value, and a variety of non-timber forest products (European Investment Bank, 2022b). In addition, specially designed agroforestry systems also make important contributions to food security.

2. LITERATURE REVIEW

Sustainable forest management (SFM) aims to maintain a balance between the three aspects of economic, social and environmental. When SFM is sustainable, the production of forest goods and services not only meets the needs of the present but also those of future generations while preserving nature (UN, 2016). Furthermore, social and environmental issues can be resolved through the determination and efforts of the community and stakeholders involved in management (Que *et al.*, 2018). Within the framework of SFM, the sustainable supply of goods and services will be met through forest management planning.

An example of sustainable forest management and empirical results of the forestry sector in Mongolia relates to institutional management and human resource capacity. Burmaa N. *et al.* (2021) argue that the forestry sector will be sustainable when there is a good policy institution, a highly educated workforce, increased forestry employment, and accountability of relevant agencies and departments. The integration of these factors is the key point for sustainable forest management in Mongolia.

Similarly, in Mexico, Torres-Rojo *et al.* (2016) found that new approaches are needed to replace traditional approaches to achieve sustainable value for forest resources. New approaches

must include a greater emphasis on community-based forestry, considering markets for forest products and services. In addition, sustainable forest resource development must be holistic while minimizing the hazards, risks, and vulnerabilities of forests and the communities that depend on them.

In China, many research groups have found that the liberalization of forest rights under the collective forest rights reform, implemented in 2003, and the transfer of forest management and control to local people have had a positive impact on sustainable forest management incentives (Wu. C *et al.*, 2021).

Another approach based on community and government management, payment for ecosystem services (PES), is considered a useful policy tool to influence land use decisions (Pham Thu Thuy *et al.*, 2015). In recent years, PES has emerged as a promising tool for the parallel success of ecosystem conservation and poverty reduction for forest-dependent communities (Landell-Mills and Porras, 2002), and the Payment for Forest Environmental Services program in Vietnam is one of the most prominent examples (Duong Ngoc T.B, 2020). After more than 10 years of implementation, the payment for forest environmental services policy has had a huge impact on all three economic, social, and environmental aspects (Nguyen Khac Lam *et al.*, 2020) and through the financial mechanism, forest beneficiaries are responsible for contributing to forest protection and development.

The diversity in ecological, socio-cultural and economic contexts in forested areas has created different strategies and methods for sustainable forest resource management in each country around the world. Therefore, sustainable forest development must recognize the important role of forests in the context of global climate change, the increasingly changing human living environment, and in order to achieve sustainable goals, there must be a combination of many factors from institutions, policies, efforts of management levels, awareness of local people and support of science, technology.

3. RESEARCH METHODOLOGY

3.1. Secondary data-collection method

We synthesized data from documents such as reports, scientific journals, domestic and international studies related to SFM in Vietnam as well as in Dong Chau - Khe Nuoc Trong nature reserve.

The issues in this article revolved around: i) Forest protection and development; ii) Conservation of biodiversity values; iii) Organization of human resource training; iv) Environmental education and communication in forest protection. We also used some reports from organizations such as the Vietnam Forest Inventory and Planning Institute, the Ministry of Agriculture and Rural Development of Vietnam, etc.

Table 1. Document used in this article

| No | Type of document(s) |
|----|---|
| 1 | <p><i>Documents, data, decisions on the establishment, planning, and development of Dong Chau - Khe Nuoc Trong:</i></p> <ul style="list-style-type: none"> - Project to establish Dong Chau - Khe Nuoc Trong nature reserve in 2020; - Land use plan of Dong Chau - Khe Nuoc Trong from Management Board in 2022; - Research documents on forest flora and fauna resources by the Institute of Forest Inventory and Planning; project experts by the Viet Nature organization; |
| 2 | <p><i>Special reports 2022:</i></p> <ul style="list-style-type: none"> - Assessing natural and socio-economic characteristics related to B&D forest protection and development in Dong Chau - Khe Nuoc Trong; - Assessing the land use and forest status in Dong Chau - Khe Nuoc Trong; - Report on the establishment of profiles of wildlife species proposed to be included in the list of endangered, rare, and prioritized for protection by the Management Board of Dong Chau - Khe Nuoc Trong; |
| 3 | <p><i>Projects, plans and schemes:</i></p> <ul style="list-style-type: none"> - Project to establish Dong Chau – Khe Nuoc e in Quang Binh province in 2011; - Project to establish Dong Chau – Khe Nuoc Trong in Quang Binh province in 2020; - Project for SFM and Biodiversity Conservation (VFBC). |

3.2. Field investigation and interview methods

The field surveys trip and conducting survey questions were carried out on March 21, 2023 and these works lasted nearly 1 months, till 15th April, 2023. The tasks in the field deployment work were divided 3 periods.

- Phase 1: From March 21, 2023, to March 23, 2023, our research teams came to work directly with the People's Committees of communes: Kim Thuy and Lam Thuy; District People's Committee and some functional departments of the district (Department of Natural Resources and Environment and Department of Culture, Sports and Tourism) with the number of interviewees being 20 people. The purpose of this working trip was to collect more socio-economic development indicators of the locality, information on the current status of land use and planning, and local land use plans...

- Phase 2: From March 28, 2023, to April 11, 2023, coordinate with the technical staff of Dong Chau - Khe Nuoc Trong Nature Reserve to conduct a field survey in the forest area. The purpose of the field survey is to collect silvicultural indicators to determine the scale and measures for future forest restoration; record the current status of infrastructure...

- Phase 3: From April 12, 2023, to April 15, 2023, we surveyed and consulted with the buffer zone community, mainly the Bru - Van Kieu ethnic community village. This trip aimed to collect information about necessary community services (especially suitable livelihood models), and other necessary information according to the pre-developed collection form. These discussions aim to clarify issues related to the characteristics of natural resources, livelihoods, the role of forest resources in the livelihoods of people in the buffer zone, and solutions for sustainable use of forest resources associated with improving people's livelihoods.

3.3. Delphi method

This study also has the participation of experts in natural resource management, agriculture, forestry, economics, policy,... to propose solutions for sustainable use of forest resources and improving people's livelihoods in the Dong Chau - Khe Nuoc Trong area.

4. RESULTS AND DISCUSSIONS

4.1. General introduction to Dong Chau - Khe Nuoc Trong nature reserve

Dong Chau - Khe Nuoc Trong nature reserve is located in the administrative boundary of Kim Thuy commune, Le Thuy district, Quang Binh province. Geographic coordinates span from 16°55'19" to 17°4'55"N; from 106°32'50" to 106°48'26"E.

The entire forest and forestry land area of the nature reserve is located in the administrative boundary of Le Thuy district and is mainly concentrated in Kim Thuy commune, so it is very convenient for implementing the task of forest management and protection according to unified orientation and direction.

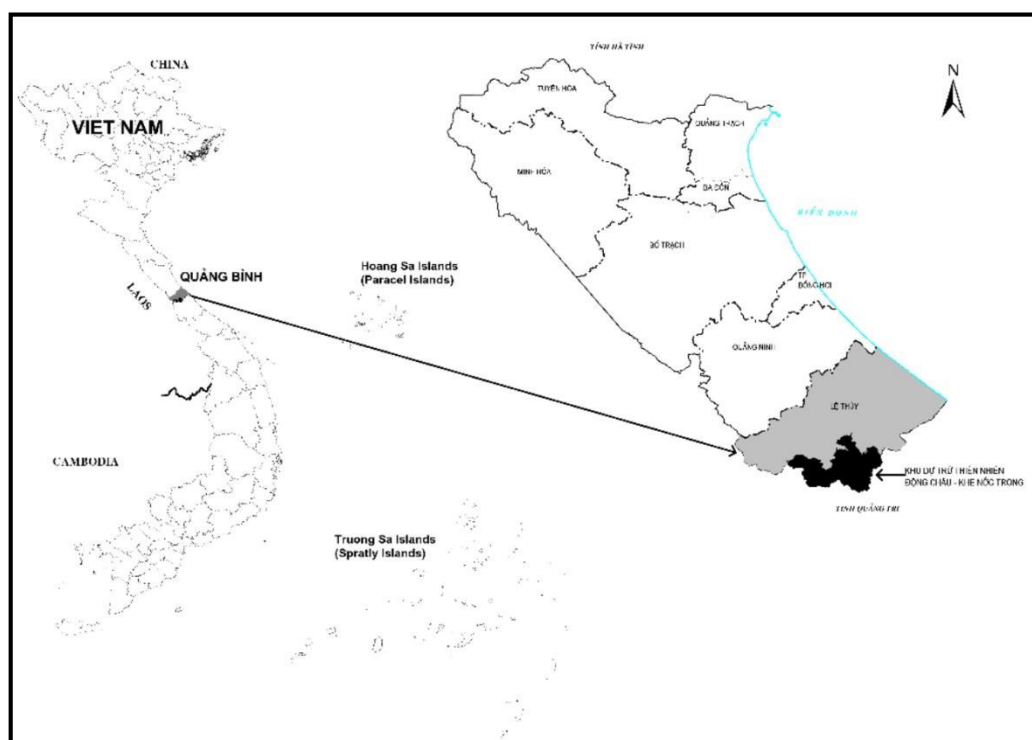


Figure 2. Location map of Dong Chau - Khe Nuoc Trong nature reserve (black area)

This nature reserve area is located in the second half of the North Central region, in the Truong Son mountainous region. This area is considered very important by world nature conservation organizations for biodiversity conservation. Dong Chau - Khe Nuoc Trong is a place with high biodiversity and has many different ecosystems such as sub-tropical evergreen closed-season rainforest, lowland tropical evergreen closed-season rainforest; secondary forests after exploitation; secondary forests recovering on deforested land; forests growing on limestone mountains; planted forests, etc. The rational use of forest resources in Dong Chau - Khe Nuoc Trong aims to protect forests, conserve biodiversity, preserve rare genetic resources, not degrade the ecological environment, enhance the value of forests, rationally use landscapes and forest environments to lease forest environments, develop ecotourism, and contribute to the socio-economic development of the locality.

4.2. Current status of forest resources and assessment of forest management, conservation and biodiversity values in Dong Chau – Khe Nuoc Trong

Forest area in Dong Chau - Khe Nuoc Trong as of December 2022

The natural forest area was 21,768.17 ha, accounting for 99.23% of forested land area, of which evergreen broadleaf forest is the main one (accounting for 98.67%), the remaining 0.56% is mixed forest of wood and bamboo. This is a natural resource to preserve forest ecosystems, the distribution, residence, and habitat of forest animals.

The area of planted forests (excluding unforested forests) of this nature reserve is very small, only 169.0 ha, with *Acacia mangium*, *Erythrophleum fordii*,...

The area of land without forests (including unforested planted forests) accounted for a small proportion of the total area, with 273.05 ha, accounting for 1.23% of the natural area, of which the area of unforested planted forests and the area with regenerated timber trees account for the highest proportion of the area of land without forests. The area of land without regenerated timber trees accounts for only 4.94% (13.51 ha). Thus, there is not much vacant land left for forest development. The area of poor and exhausted forests that need to be restored and improved in quality by silvicultural measures is still quite large.

Table 3. Current status of forestry land in the nature reserve (hectares) as of December 2022

| Type of forestry land | Total management area | Special-use forest land | Production forest land | In addition to 3 types of forests |
|--|-----------------------|-------------------------|------------------------|-----------------------------------|
| Grand total | 22.210,22 | 22.186,59 | 18,12 | 5,51 |
| I. Land with forest | 21.937,17 | 21.919,05 | 18,12 | - |
| 1. Natural forest | 21.768,17 | 21.750,05 | 18,12 | - |
| 1.1. Wood forests according to reserves | 21.645,49 | 21.627,37 | 18,12 | - |
| - Rich forest | 9.803,13 | 9.803,13 | | |
| - Medium forest | 4.687,04 | 4.687,04 | | |
| - Poor forest | 6.877,81 | 6.861,91 | 15,9 | |
| - Very poor forest | 275,29 | 275,29 | | |
| - Forests without reserves | 2,22 | | 2,22 | |
| 1.2. Bamboo forest | | | | |
| 1.3. Wood mixed wood and bamboo | | | | |
| 2. Planted forest | 169,00 | 169,00 | - | - |
| 2.1. Timber plantation | 169,00 | 169 | | |
| 2.2. Other plantations | - | | | |
| II. Land without forest | 273,05 | 267,54 | - | 5,51 |
| 1. Land with planted forest but not yet forested | 160,00 | 160,0 | | |
| 2. Land with regenerated trees | 58,33 | 58,33 | | |
| 3. Land without regenerated trees | 13,51 | 13,51 | | |
| 4. Land with agricultural crops | - | | | |
| 5. Water surface | 2,64 | 2,64 | | |
| 6. Other lands | 38,57 | 33,06 | | 5,51 |

**Source: Results of monitoring forest developments in Le Thuy district in 2022, with additional updates on new planting and forest enrichment results of this nature reserve.*

Other land managed by Dong Chau – Khe Nuoc Trong nature reserve covered an area of 41.21 ha (accounting for 15.09% of the non-forested land area), including 5.51 ha of land outside the three main types of forests, which are the land of the nature reserve headquarters and forest protection stations.

Forest management, protection, development and biodiversity values

- In terms of natural forest management and afforestation

Over the years, the entire natural forest area of Dong Chau—Khe Nuoc Trong has been strictly protected by many measures aimed at preserving the intact forest area, existing habitats, and biological resources. The nature reserve also plans to replant special-use forests on land areas cultivated by local people.

Within the framework of pursuing sustainable development goals, especially the goals of reducing greenhouse gas emissions, adapting to climate change, and conserving biodiversity according to the Glasgow declaration, this nature reserve also encloses, promotes natural regeneration and has additional afforestation, not only increasing the forest area but also beautifying the landscape to attract tourists.

Table 3. Summary of some activities in forest management, protection and planting

| On forest protection | On planted forest management |
|---|---|
| <ol style="list-style-type: none"> 1. The direct forest protection force is deployed promptly at all important and vulnerable points. 2. Maintain community groups contracted to protect forests to strengthen protection work. <p>- The coordination regulations between the nature reserve, the local authorities, and the forest protection department in the border areas are maintained regularly, contributing to promoting the effectiveness of forest protection.</p> <ol style="list-style-type: none"> 3. Every year, the nature reserve organizes raids with the participation of local authorities to detect and promptly prevent illegal violations in natural forests. 4. Good communication work has gradually changed people's awareness. | <ol style="list-style-type: none"> 1. Due to the small area of planted forests located in the ecological restoration zone, the only activities allowed are forest protection and fire prevention and fighting, and it is not allowed to exploit forest products or harvest dead or fallen trees. 2. Specialized forest protection forces have conducted strict patrols and control of acts and violations to promptly prevent and resolve illegal exploitation and damage to the management area. 3. Some difficulties in afforestation and forest management in this nature reserve are low planting prices; short care time (3 years) and few care times/year (2 times/year), so it is not guaranteed to control the vegetation, while the vegetation grows strongly during rainy season; there is no investment fund for the protection and forest fire prevention after planting, so the risk of forest fires is higher. |

- Non-wood forest product management

In this nature reserve, non-timber forest products are mainly concentrated in natural forests, including vegetables, fruits, and medicinal plants, which are sources of livelihood and serve the essential needs of people's daily lives. With the characteristics of local people mostly living near forests, some groups still depend on forests for the exploitation of medicinal plants, mushrooms, vegetables, tubers, fruits, etc., causing difficulties for the management and protection of forests. To limit this situation, in recent times, Dong Chau – Khe Nuoc Trong nature reserve has implemented the following activities: Regularly coordinating with local authorities of buffer zone communes to organize village meetings, propagate and mobilize people and sign commitments not to exploit non-timber forest products in the managed forest area.

The educational level of the people in the area is still low, the farming practices of the local people are still backward, and the ability to absorb scientific and technical knowledge to apply to production and business is still limited... so life still depends on forest resources. The demand for

production land is increasing, causing great pressure on forests, with the potential risk of encroachment on forests as well as the level of violations leading to the forest area.

- Rescue, development and handling of violations of laws on forest management, protection and development, and biodiversity conservation

Because the Dong Chau - Khe Nuoc Trong Nature Reserve is newly established, there is no rescue center or any systematic rescue activities. The only activities related to rescue are snare removal and propaganda through the VFBC and Vietnature projects. In 2015, the Vietnature project (formerly Birdlife) had activities for the conservation of the White-crested Pheasant and environmental education. Currently, a wild animal breeding area is being built in Kim Thuy commune.

From 2020-2023, the specialized forest protection force of the nature reserve discovered and processed 20 violations of forest management, forest development, forest protection and forest product management as follows:

Table 4. Violations of forest protection and development in the Dong Chau – Khe Nuoc Trong nature reserve from 2020 - 2023 (unit: number of cases)

| Violation | Total | In 2020 | In 2021 | In 2022 | In 2023 |
|---|-------|---------|---------|---------|---------|
| Grand total of violation case | 20 | 7 | 7 | 5 | 1 |
| Violation of regulations on exploitation of timber and other forest products | 17 | 6 | 5 | 5 | 1 |
| Violating state regulations on forest fire prevention and fighting causing forest fires | 3 | 1 | 2 | 0 | 0 |

* Source: Compiled from data from the nature reserve area (2023).

The situation of management and handling of violations of the law on forest management, protection and development, and biodiversity conservation in the nature reserve has been very good since its establishment.

Proposing some solutions for sustainable management, protection, development, use of forests and conservation of biodiversity

- Plan for forest protection and development contracting for households, individuals, and communities

We propose some solutions in managing, protecting forest resources based on support and cooperation between the management board and households to prevent violations of the laws, including:

+ Regularly patrol and inspect contracted forests. Timely detect and prevent violations of forestry laws and report to local authorities to take measures to prevent and handle violations of forestry laws such as acts of encroachment on forest resources in contracted forests. Coordinate with the Nature Reserve to take care of the forest such as: clearing climbing plants and bushes without a purpose to create favorable conditions for tree planting purposes.

+ Organize supervision of forest protection work of households and organizations according to the contract signed with Dong Chau – Khe Nuoc Trong Nature Reserve.

+ Organize a 6-month summary conference and an annual forest protection contract summary conference to reward households and organizations that perform well and criticize and handle households and organizations that do not perform well, causing damage to forest resources.

- In monitoring, protection and management of forest resources

According to the provisions of Appendix IV, Circular No. 28/2018/TT-BNNPTNT dated November 16, 2018 of the Minister of Agriculture and Rural Development, the results of forest function classification have determined that the nature reserve has most of the attributes of a forest with high conservation value (HCV). Therefore, there is no need to divide the areas with high conservation value but focus on the following strategic management activities:

Table 5. Summary of proposed activities in monitoring, protection and management of forest resources

| No. | Suggested items/Activities |
|-----|---|
| 1 | <p><i>Biodiversity conservation activities</i></p> <ul style="list-style-type: none"> - Investigate and update the forest flora and fauna list and determine the distribution of rare species. Review and update to add new species, and remove species that no longer appear from the list to build the complete list of flora and fauna; and also investigate, survey, and develop a conservation plan for some valuable native timber species; - Investigate many valuable non-timber forest products and medicinal herbs to improve the livelihoods of local communities. - Develop a conservation plan for endangered, precious, and rare flora and fauna by species group: (i) Investigate and evaluate species; (ii) Develop a database of species to serve management and monitoring; (ii) Monitor and supervise species' habitats; (iii) Develop conservation solutions and organize propaganda to raise awareness of conservation work. - Raise conservation awareness to change behavior in exploitation, use, and protection of biodiversity: (i) Organize propaganda to disseminate laws and raise awareness of biodiversity conservation; (ii) Organize propaganda and introduction activities for tourists; (iii) Maintain and promote the activities of the nature reserve clubs in buffer zone communes; (iv) Strengthen coordination with local party committees and authorities of districts and communes. |
| 2 | <p><i>Biodiversity monitoring activities</i></p> <ul style="list-style-type: none"> - Develop and implement a plan to monitor wildlife species according to key species groups: Large mammals; small carnivores, herbivores, primates, birds, reptiles, amphibians - Establish ecological research locating plots to monitor and supervise the natural recovery process of the forest. - Locating; put up name tags of species on some ecological routes in Khe Nuoc Trong and routes to Tóc Tiên waterfall, Dương Cẩm waterfall, and Heaven Gate waterfall to serve environmental education. - Effectively apply information technology, and unmanned aerial vehicles in patrolling, protecting forests, and monitoring biodiversity. |
| 3 | <p><i>Rescue, conservation and development activities of living creatures</i></p> <ul style="list-style-type: none"> - Learning and exchanging experiences in the rescue and conservation of living creatures. - Cooperating with domestic and foreign organizations in rescue, and conservation of living creatures and wildlife. - Establishing investment projects to upgrade and improve the infrastructure system serving rescue, conservation, and development of living creatures. |

- Human resource training and development needs plans

To enhance the capacity of the staff in the field of nature conservation management, biodiversity, and sustainable ecotourism development. This study proposes the following proposed solutions:

+ Training experts on wildlife conservation, and experts on plant species conservation. Organizing visits, learning from experiences of models on plant and animal conservation in places that are doing this work well;

- + Sending staff to regularly participate in short-term training courses, training, conferences, seminars, and scientific activities domestically and internationally through schools, research institutes, programs, projects, topics;

- + Training on uses of tools to support forest protection and fire prevention;

- + Develop a project on job positions for the nature reserve and submit it to the competent authority for approval and implementation according to regulations.

- *Propaganda, dissemination and legal education activities*

- + Plan and organize propaganda and raise community awareness about forest protection, biodiversity conservation, and forest fire prevention and fighting in 18 villages and hamlets in the buffer zone;

- + Editing and publishing general introduction documents about natural resources of Dong Chau - Khe Nuoc Trong natural reserve;

- + Editing and publishing handbooks to identify animal species, common woody plants and medicinal plants in Dong Chau - Khe Nuoc Trong natural reserve;

- + Organize a celebration of the establishment of Dong Chau - Khe Nuoc Trong natural reserve, propagate the role and importance of this nature reserve to domestic and international tourists;

- + Build information channels on social networks to propagate forest protection, biodiversity conservation and environmental education for students and people.

- *Service activities for the community*

- + Model to improve the efficiency of using forest protection contracts to contribute to improving the livelihoods of the community;

- + Model for developing community tourism (homestay) model in some villages in the buffer zone;

- + Model of supporting specialty tree varieties to help improve livelihoods for ethnic minorities in bordering areas;

- + Model of supporting seed sources of some non-timber forest product species originating from natural forests to create raw material sources to serve market demand, gradually improving the livelihoods of people in buffer zone villages/hamlets;

- + Model of growing medicinal plants under the canopy of planted forests, under the canopy of poor, depleted natural forests, and mixed forests.

5. CONCLUSIONS

This article focuses on sustainable forest management issues, emphasizing the main issues of forest resource conservation, protection, biodiversity monitoring, education and communication for the community, and human resource training plan in Dong Chau - Khe Nuoc Trong nature reserve. Through the main methods, document analysis and secondary data analysis, document analysis and secondary data, investigation methods, interviews, and the Delphi method, we have clarified the current status of forest management in Dong Chau - Khe Nuoc Trong in recent years. The study also

proposed solutions to protect forests, conserve biodiversity, enhance the value of special-use forests, and train and develop human resources to contribute to socio-economic development in localities in the nature reserve, aiming at management according to plans in a sustainable manner in terms of economy, society, and environment.

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QUANTIFYING THE STRUCTURE AND SPATIAL MODELING OF URBANIZATION PROCESS IN THE NORTHERN AND NORTHWEST SUBURBAN AREAS OF HO CHI MINH CITY

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ABSTRACT

Assessing landscape changes is essential in analyzing the environmental consequences of urbanization. This study used Sentinel 2 images and Support Vector Machine (SVM) algorithm to analyze the changes in land use land cover (LULC) in the North and Northwest of Ho Chi Minh city from 2015 to 2024. SVM was applied with default parameters of Kernel type, gamma in the kernel function, and classification probability threshold. SVM method achieved fairly high accuracy ($k > 0.7$) in classifying LULC of the study area. In addition, landscape indices were applied to assess the impact of urbanization on the landscape in 4 categories: shape, size, diversity, and spread. The research results showed that from the city center, the urban spread trend was diffuse in Hoc Mon and Cu Chi districts, shown through the fragmented and scattered areas of forest and agricultural land in space, while the areas of built-up land and traffic land had gradually increased in quantity, playing a major role in the spatial structure. Through the above analysis, the study provides information on the ability to apply remote sensing and landscape metrics to serve the purpose of reasonable land use.

Keywords: Landscape metrics, GIS, urbanization, Sentinel 2 images, the North and Northwest of Ho Chi Minh city.

1. INTRODUCTION

Population concentration and expansion of socio-economic activities in urban areas have led to rapid urban development worldwide in recent decades (Li H. *et al.*, 2017). At the same time, land use patterns, especially forest and agricultural lands around central urban areas, have been gradually transformed due to rapid urbanization. These dramatic changes in land use land cover (LULC) and human activities have caused major problems for the natural environment, such as biodiversity loss (Bihamta *et al.*, 2014), urban heat island increase (Ismael, 2021), environmental degradation (Dadashpoor & Salarian, 2018), reduced watershed flows, increased flooding in urban areas (He at al., 2019), and increased CO2 emissions (Ali *et al.*, 2019).

These issues have been extensively studied regarding landscape modeling (Jiao *et al.*, 2019) and are often represented using landscape metrics (Zhang & Su, 2016). Remote sensing and geographic information systems (GIS) to analyze and monitor the urbanization process and its emerging issues regarding sustainable urban growth and structure in a spatial context (Ismael, 2021). Landscape metrics are among the widely used methods for assessing, monitoring, and planning landscape patterns (Peng *et al.*, 2010). Landscape metrics are commonly used in studies of landscape change over multi-year periods, both for ecological value studies and for analyzing the state and spatial structure of various types of landscapes, including urban (Sahraoui Y *et al.*,

2021), rural (Zheng X *et al.*, 2017), forest (McAlpine *et al.*, 2002), and degraded landscapes (e.g., due to industrial extraction and intensive agriculture).

Studies have shown that most landscape metrics are calculated on land use and cover classification maps (Buyantuyev *et al.*, 2009). Using landscape metrics, one can study the spatial patterns of the area under consideration and its changes related to urbanization processes, thereby explaining the impact of these processes on environmental characteristics. Furthermore, these metrics can be used in making decisions related to urban growth, land use allocation, and sustainable urban development planning. Landscape metrics or spatial metrics based on the geometric properties of landscape elements are widely used indicators to measure some aspects of landscape structure and spatial patterns as well as their changes in space and time. Patch size and patch shape metrics have been widely used to assess fragmentation at both small and large scales (Fuller, 2001). Landscape metrics can also help quantitatively identify and describe complex spatial patterns of urbanization, which can then be related to ecological and socio-economic processes.

Studies on this topic can be classified into several categories: (i) Using landscape and LULC data to analyze landscape changes and fragmentation (Pôças, 2014); (ii) Using landscape data as indicators to measure changes in biodiversity or ecological risks, for example, Schindler *et al.* (2008) analyzed the landscape structure in Dadia, Greece and found that the landscape structure pattern was related to habitat types, land uses and protection levels; (iii) Using landscape data as an assessment tool to analyze the impact of urban development on landscape and green space, such as Zhou Xiaolu *et al.* (2011) used integrated landscape indices to describe the patterns and intensity of green space change in Kunming, China from 1992 to 2009. In Vietnam, the main research direction mainly focuses on the change of LULC, which is the input for calculating landscape metrics under the context of urbanization. Some popular studies such as Duong Nong *et al.* (2021) showed that suburban communes and districts in Hanoi have a high level of landscape fragmentation, shown by the increasing number and density of fragments, which is due to the urbanization process and population growth in the suburbs. Or another study conducted in Binh Duong, which is characterized by high industrial economic activities, Dang Bui Hung *et al.* (2022) showed that agricultural land was being urbanized and expanded based on planning, at the same time the landscape in Binh Duong province has also gradually lost its uniformity and there has been fragmentation throughout the landscape.

In the context of the increasing urbanization speed of Ho Chi Minh city, the analysis and assessment of the spatial distribution of land use types is necessary to quantify the expansion of urban built-up land area, urban development characteristics in the northern and northwestern suburbs of Ho Chi Minh city. From the above issues, the study provides aspects to consider the changes of urbanization in the inner city affecting district 12, Hoc Mon district and Cu Chi district using remote sensing data and landscape measurements.

2. STUDY AREA

Ho Chi Minh city (HCM city) has the highest population size and urbanization rate in the country. After January 1st, 2021, *Resolution 1111/NQ-UBTVQH14* officially took effect, the city now includes: 1 city, 21 districts, specifically as follows:

- Current districts: District 1, district 3, district 4, district 5, district 6, district 7, district 8, district 10, district 11, district 12, Binh Thanh district, Go Vap district, Phu Nhuan district, Tan Binh district, Tan Phu district, Binh Tan district (Districts 2, 9, Thu Duc merged into Thu Duc city)
- Districts of HCM city: Nha Be district, Hoc Mon district, Cu Chi district, Can Gio district, Binh Chanh district
- Cities directly under HCM city include 1 city: Thu Duc City.

According to the general urban planning and architecture management regulations of HCM city (issued on August 29th, 2014), for the existing old urban area, there are 13 inner-city districts including: 1, 3, 4, 5, 6, 8, 10, 11, Go Vap, Binh Thanh, Phu Nhuan, Tan Binh, Tan Phu. The new urban areas in the spatial planning of HCM city, understood in another way as suburban districts, include: to the South including distr. 7, Nha Be distr., Can Gio distr.; to the West including Binh Chanh distr., Binh Tan distr.; to the North - Northwest including district 12, Hoc Mon distr., Cu Chi distr.

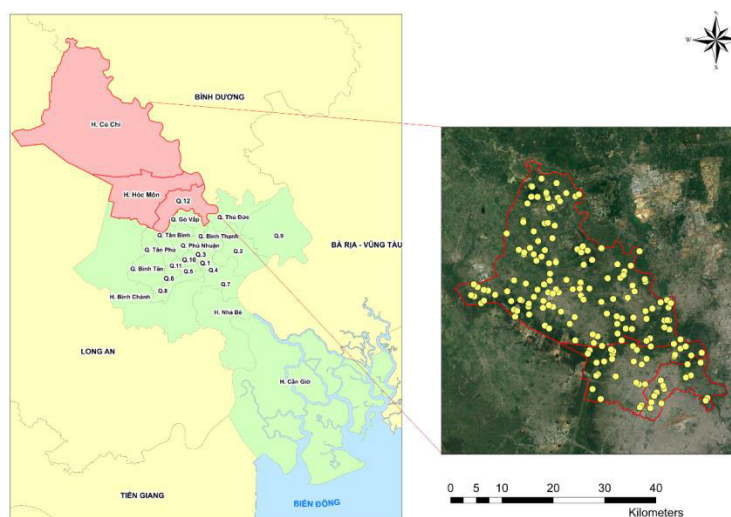


Figure 1. Distribution of field validation sample points in the study

3. RESEARCH METHODOLOGY

To monitor changes in LULC and landscape model for management purposes, this study integrated 3 main research methods: field investigation - survey, spatial analysis using remote sensing and GIS technology, and calculation of landscape indices.

The data used were Sentinel 2 satellite images, processed at level 2A (geometric correction and coordinate system converted to UTM zone 48 Northern hemisphere), collected in 2015, 2020 and 2024 with cloud cover < 10%, collected in December and January to limit the influence of the atmosphere (clouds, water vapor, ...).

In addition, this article also used Google Earth images to determine the locations of LULC sample points, ArcMap 10.8 software in LULC classification and Fragstats 4.2 to calculate landscape measurements. The data analysis process is shown in Figure 2 and the selected landscape indices used in the analysis are summarized in Table 3.

Table 1. Technical information on Sentinel 2 image data in research

| Scene ID | Acquisition time | Cloud cover |
|--|------------------|-------------|
| s3://sentinel-s2-l1c/tiles/48/P/XT/2015/12/28/0/ | 28/12/2015 | 1% |
| s3://sentinel-s2-l2a/tiles/48/P/XT/2020/2/25/0/ | 20/01/2020 | 2.4% |
| s3://sentinel-s2-l2a/tiles/48/P/XT/2024/1/25/0/ | 25/01/2024 | 0% |

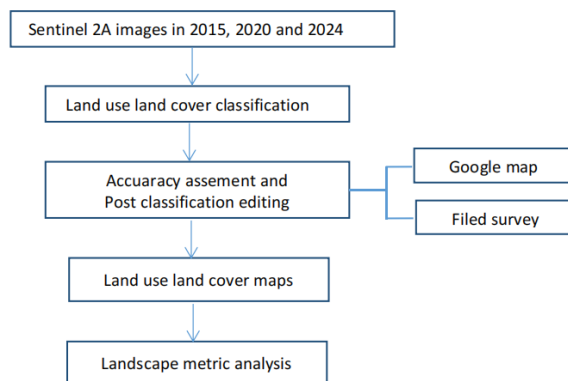


Figure 2. Data analysis procedure

3.1. Image classification method using Support Vector Machine algorithm and accuracy assement by Kappa coefficient

The study used the Support Vector Machine (SVM) classification method in classifying objects. The SVM model is a way to represent points in space and select the boundary between two classes so that the distance from the training samples to the boundary is the closest. New data is also represented in the same space and is predicted by the algorithm to belong to one of the two classes depending on which side of the boundary the data is on (Nguyen Thi Oanh & Phung Minh Tam, 2015). This classification method is considered to have higher accuracy than commonly used classification methods such as Maximum Likelihood, Minimal Distance, Artificial Neural Network. This study classified LULC into 6 types, including built-up land, agricultural land, forest land, traffic land, barren land and water surface.

The accuracy of the interpretation results and maps were evaluated based on the reference to the actual ground control points through the overall accuracy and the Kappa coefficient. In which, the overall accuracy was calculated by the total number of correctly classified pixels and the total number of surveyed sample pixels. To evaluate the accuracy after classification, the study used the kappa coefficient (κ), calculated according to the following formula (Bishop *et al.*, 1974):

$$K = \frac{N \sum_{i=1}^r x_{ii} - \sum_{i=1}^r (x_{i+} \cdot x_{+i})}{N^2 - \sum_{i=1}^r (x_{i+} \cdot x_{+i})} \quad (1)$$

In which: r = number of rows and columns in error matrix;

N =total number of observations (pixels);

X_{ii} =observation in row i and column i;

X_{i+} =marginal total of row i, and X_{+i} =marginal total of column i;

The closer the kappa value is to 1, the more accurate the LULC classification map results are. The post-classification evaluation results of LULC between classified pixels and the real pixels are shown by the overall accuracy and Kappa coefficient.

Table 2. The overall accuracy and kappa coefficient after classification

| | 2015 | 2020 | 2024 |
|-------------------|--------|--------|--------|
| Overall accuracy | 81.25% | 88.75% | 87.63% |
| Kappa coefficient | 0.74 | 0.75 | 0.75 |

3.2. Landscape metric analysis

Table 3. Description of landscape metrics used in this article

| Landscape metric | Type | Scale | Range of changes | Description |
|---|-------------|---------------------|---------------------------|---|
| Largest patch index (LPI) | Area | Class and landscape | $0 < LPI \leq 100$ | LPI value: ratio of the largest discrete patch area to the landscape area. LPI approaches 0 when the largest discrete patch in the landscape is of negligible size. LPI = 100 when the landscape has only one discrete patch and occupies the entire landscape area |
| Number of patch (NP) | | | $NP \geq 1$ | The number of discrete patches present in the landscape. NumP = 1 in case the landscape has only one discrete patch. |
| Patch density (PD) | | | N | Number of discrete pieces per unit area. |
| Percentage of landscape (PLAND) | | Class | $0 < PLAND \leq 100$ | The percentage of the total landscape occupied by each patch type. When the value reaches 100, the area of the corresponding patch type increases in the landscape. |
| Shape metric (SHAPE) | Shape | Landscape | $SHAPE \geq 1$ | The SHAPE value is equal to or close to 1 in case the fragment has a regular standard shape. A SHAPE value > 1 indicates that the fragment has a complex or elongated shape. |
| Shannon Weaver's diversity index (SHDI) | Diversity | Landscape | $0 \leq SHDI < 1$ | SHDI values increase as the number of different types of fragments increases. High SHDI values indicate that the landscape has many fragments of different structural nature, or a reasonable area distribution among fragment types. |
| Simpson's diversity index (SIDI) | | | $0 \leq SIDI < 1$ | SIDI = 0 in the case of a landscape with only one discrete fragment. SIDI is approximately 1 in the case of a landscape with a very large number of discrete fragments of different compositional nature (equivalent to a large PR fragment richness), or a proportional distribution of the area |
| Patch richness (PR) | | | $PR \geq 1$ | PR = 1 in cases where the landscape has one type of land cover, or only a single discrete patch. |
| Contagion (CONTAG) | Aggregation | Landscape | $0\% < CONTAG \leq 100\%$ | The CONTAG value is approximately 0% in the case where the fragments are most strongly separated and most sparsely distributed. The CONTAG value = 100% in the case where all fragment types are most highly clustered, or the landscape consists of only a single fragment. |
| Interspersion and juxtaposition index (IJI) | | | $0\% < IJI \leq 100\%$ | The IJI value is approximately 0 in the case of landscapes with irregularly distributed fragments. The IJI value = 100 in the case of landscapes with uniformly distributed fragments. |

*Source: Nguyen An Thinh, 2014

The landscape metrics in this study were analyzed using area/density/edge metrics, shape metrics, core area metrics, isolation/proximity metrics, diversity metrics, evenness metrics, and connectivity metrics. The classification results were used to calculate landscape metrics by FRAGSTATS 4.2 software.

The metrics to quantify landscape structure and connectivity were selected at the class and landscape levels.

4. RESULTS AND DISCUSSIONS

4.1. Changes in land use land cover in the period 2015 – 2024

From figure 3 and the data table on LULC area changes in 3 suburban districts of HCM city, it could be seen that agricultural land accounts for more than 60% of the entire area, distributed mostly in Cu Chi district, the West and Northwest of Hoc Mon district and a scattered part in dist.12. However, the agricultural land area tends to decrease continuously, most clearly seen in the East of Hoc Mon district and distr.12.

Forest land area with more than 5000 hectares, mostly rubber plantation forest and a small part of natural forest in Ben Dinh tunnel, Ben Duoc - Cu Chi tunnel, and most concentrated in Cu Chi district. From 2015 to 2024, the forest land area decreased rapidly, partly serving the construction process of urbanization.

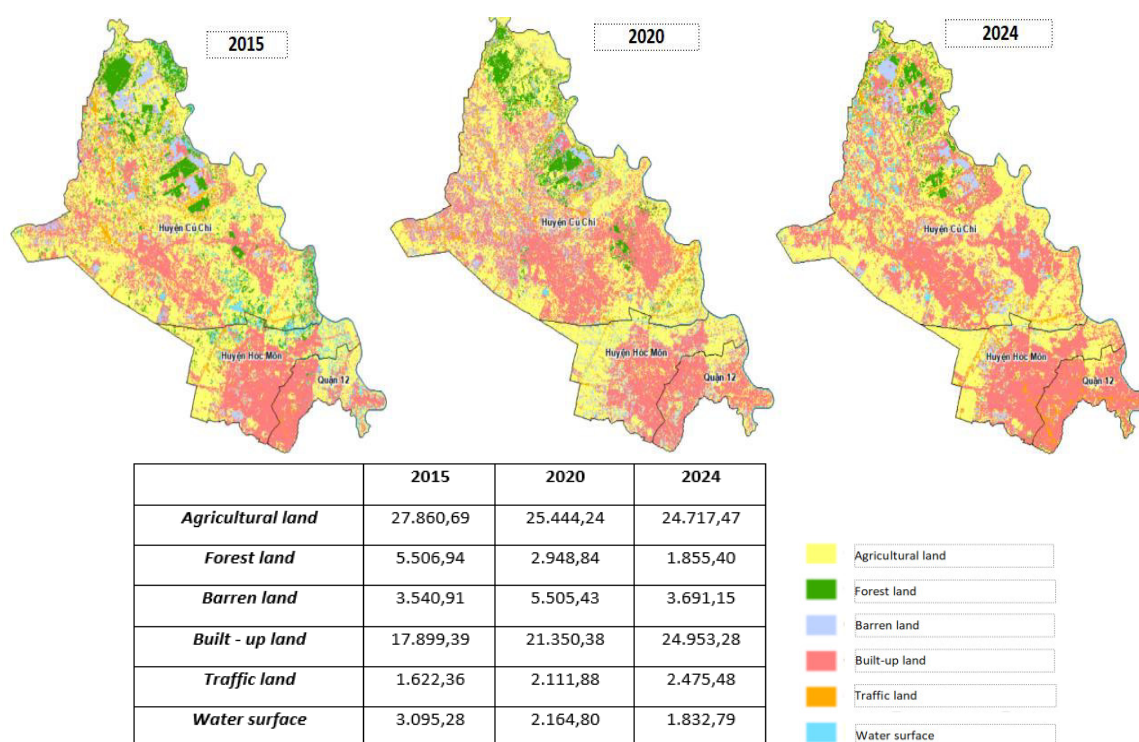


Figure 3. Changes in LULC area (hectares) in the North and Northwest regions in the period 2015-2024

There are two main types of barren land in the research area, according to the investigation and survey process: barren land of construction works, residential areas under construction, and

cultivated land of rice-growing regions after harvest. This type of land always fluctuates over time due to the influence of harvest time. In addition, the area of water surface land, except for the Saigon River basin, the places where rice is cultivated also fluctuates the water surface area over time, especially at the time of image collection when it is the time of sowing and transplanting rice seedlings.

In general, under the impact of the urbanization process due to the influence of urban expansion, the area of agricultural land and forest land is gradually being converted to construction and non-agricultural purposes.

4.2. Quantifying spatial structure using landscape measurements

4.2.1. The size and density of the landscape (Area)

- Landscape scale

From 2015 to 2024, there were many changes in the quantity, density and fluctuation rate of the general landscape layer in the study area, shown in table 4 as follows:

Table 4. Landscape scale statistics of NP, PD and LPI in the study area

| Year | NP | PD | LPI |
|------|--------|-------|-------|
| 2015 | 24.685 | 41,47 | 28,57 |
| 2020 | 44.292 | 74,41 | 8,86 |
| 2024 | 44.810 | 75,26 | 10,52 |

- Class metric

Built-up land, forest land, and barren land are the types with a significant number of landscape patches (NP) in space. In addition, the number of agricultural patches also accounted for a significant number in the period 2015 - 2020, second only to built-up land. However, by 2024, the number of agricultural patches decreased by half compared to the previous period, but the number of built-up and traffic land patches increased. The number of forest land patches also decreased significantly.

The LULC type with the highest PD value is built-up land. In addition, traffic land also has the second highest density increase after built-up land. The density of pieces of forest land is the type that has decreased the most. This decline shows that the landscape plays a major role as built-up land, and due to the impact of urbanization, the landscape pieces here tend to become fragmented, fragmented into pieces next to large pieces/large areas of built-up land.

PLAND and LPI are the main landscape metrics that explain the main spatial transformation axis, so they can be considered as useful indicators to describe the current landscape fragmentation. The PLAND index shows a significant expansion of urban land. Furthermore, the LPI index has the largest proportion of agricultural land and exhibits significant spatial fragmentation, reflecting the spread of urban fragmentation over time. These metrics show the dynamic transformation in urban spatial, which is characterized by significant fragmentation and increasing complexity.

Table 5. Landscape metrics data on the size and density of LULC types

| Year | 2015 | | | | 2020 | | | |
|--------------------------|-------|------|-------|-------|--------|-------|------|-------|
| | NP | PD | LPI | PLAND | NP | PD | LPI | PLAND |
| <i>Agricultural land</i> | 3.927 | 6,59 | 28,57 | 47,38 | 8.964 | 15,06 | 8,86 | 22,73 |
| <i>Forest land</i> | 5.140 | 8,64 | 11,03 | 30,24 | 6.079 | 10,21 | 4,36 | 31,39 |
| <i>Built – up land</i> | 5.894 | 9,90 | 1,21 | 8,89 | 15.855 | 26,63 | 1,35 | 20,28 |
| <i>Barren land</i> | 4.610 | 7,74 | 0,34 | 5,96 | 8.241 | 14,14 | 0,53 | 7,04 |
| <i>Traffic land</i> | 1.745 | 2,93 | 0,20 | 2,66 | 1.156 | 1,94 | 0,05 | 0,65 |
| <i>Water surface</i> | 3.364 | 5,65 | 0,60 | 5,12 | 3.819 | 6,41 | 3,14 | 17,88 |

| Year | 2024 | | | |
|--------------------------|--------|-------|-------|-------|
| | NP | PD | LPI | PLAND |
| <i>Agricultural land</i> | 3.939 | 6,61 | 10,52 | 33,99 |
| <i>Forest land</i> | 1.783 | 2,99 | 0,25 | 3,57 |
| <i>Built – up land</i> | 12.583 | 21,14 | 0,39 | 32,06 |
| <i>Barren land</i> | 14.995 | 9,32 | 0,45 | 7,6 |
| <i>Traffic land</i> | 5.549 | 25,19 | 0,47 | 10,81 |
| <i>Water surface</i> | 5.952 | 9,99 | 0,25 | 11,94 |

4.2.2. Shape index at the landscape layer

The lower the shape index, the simpler the shape, which can be described by basic geometric figures and the amalgamation of specific patch shapes. The average shape index indicates the average shape of different LULC types. The shape mean (SHAPE_MN) index all have values > 1 in the period 2015 – 2024 (shown in table 6), meaning that the patches have a distinct irregular elongated shape and are highly complex. SHAPE_MN increases due to the increase in NP data of the type of roads and built-up land, while agricultural land and forest land tend to decrease.

Table 6. Shape index of the North and Northwest regions in the period 2015-2024

| Year | SHAPE_MN |
|------|----------|
| 2015 | 1,18 |
| 2020 | 1,23 |
| 2024 | 1,20 |

4.2.3. Diversity indices at the landscape layer

The Shannon diversity’s index measures ecological diversity within a population but can also be applied to landscape surveys (Horodnic *et al.*, 2019). There is no diversity when the landscape contains only a single patch (its value is 0), as different landscape patches and their spatial distribution increase, diversity also increases.

In contrast, another popular index measuring landscape diversity, similar to SHDI but with a more intuitive interpretation, is the Simpson diversity’s index (SIDI). SIDI is assessed based on the richness of the most common land use type (Magurran, 1988). The values of SHID and SIDI in this study increased in 2015, 2020 and 2024 due to the impact of urbanization on landscape

fragmentation. The diversity of the study area has basically increased, the distribution of landscape types is uneven, the number of landscape fragments is increasing due to fragmentation into small pieces. It is the significant increase in urban area that has affected this index.

| Year | PR | SHDI | SIDI | CONTAG | IJI |
|------|------|------|------|--------|-------|
| 2015 | 6,00 | 1,34 | 0,66 | 42,83 | 75,22 |
| 2020 | 6,00 | 1,55 | 0,71 | 27,11 | 76,84 |
| 2024 | 6,00 | 1,54 | 0,74 | 28,57 | 83,37 |

Note: The richness of the fragments corresponds to the six LULC types in this study

4.2.4. Spread and scatter of landscape layers

The interspersion and juxtaposition index (IJI) is an index of LULC fragmentation that indicates the degree of interspersion of land use cover. In general, the IJI value in 2024 is higher than the previous two-time points, which indicates an increasing degree of spatial interspersion between discrete fragments.

The CONTAG dispersion is inversely related to NP, LPI. CONTAG decreased sharply after 2015, then fluctuated slightly from 2020 to 2024. The gradual decrease in the CONTAG index has led to the connection of landscape fragments as well as the unbalanced spatial distribution of landscape fragments. This decreasing trend indicates a more scattered and less continuous landscape pattern after 2015.

4.2. Landscape changes responses to the urban growth in the study area

To understand the landscape change processes, this study used the *Landscape Expansion Index* (LEI) to analyze the types of urban growth in the study area, in which each new urban patch is classified into three trends, including infilling, outlying and edge-expansion (Forman R., 1995). This quantitative method is based on the urban expansion of the newer patch compared to the older patch. LEI is computed as a ratio of the length of common edge (l_c) (old and new patch shares) to the total perimeter of the new patch (l_t). The formula of the LEI index is calculated as follows:

$$LEI = \frac{l_c}{l_t} \times 100 \quad (2)$$

LEI has three growth types and the values range from 0 to 100:

- Infilling growth type: a new urban patch is surrounded by at least 50% of existing urban patches i.e., $50 < LEI \leq 100$;
- Edge-expansion type: a new urban patch is surrounded by less than 50% of existing urban patches i.e., $0 < LEI \leq 50$;
- Outlying growth type: a new urban patch is not surrounded by any existing urban patch i.e., $LEI = 0$.

Figure 4 showed the distribution of different urban growth trends, mainly describing the edge-expansion trend in the study area, with the characteristic of additional distribution and adjacent to areas with previously existing built-up land, expanding the perimeter edges of the

construction land in 2015, thereby expanding the construction land area in the study area. The second common trend was filling, this type was distributed adjacent to the traffic network, most clearly seen in the Southern part of district 12, provincial road 15 located in the East of Cu Chi district and inter-district routes. Because the South of district 12, where is Tan Binh district, Go Vap district, the built-up land area of these two districts has reached its limit, so the urban expansion gradually moves to district 12, increasing the density of the urban core in and the appearance of many residential areas. In contrast, outlying growth accounts for a small area of the total growth area, mainly dispersed around the Northern edge (Cu Chi district), where there is mainly agricultural land. This trend clearly shows that agricultural land is gradually being converted to non-agricultural land.

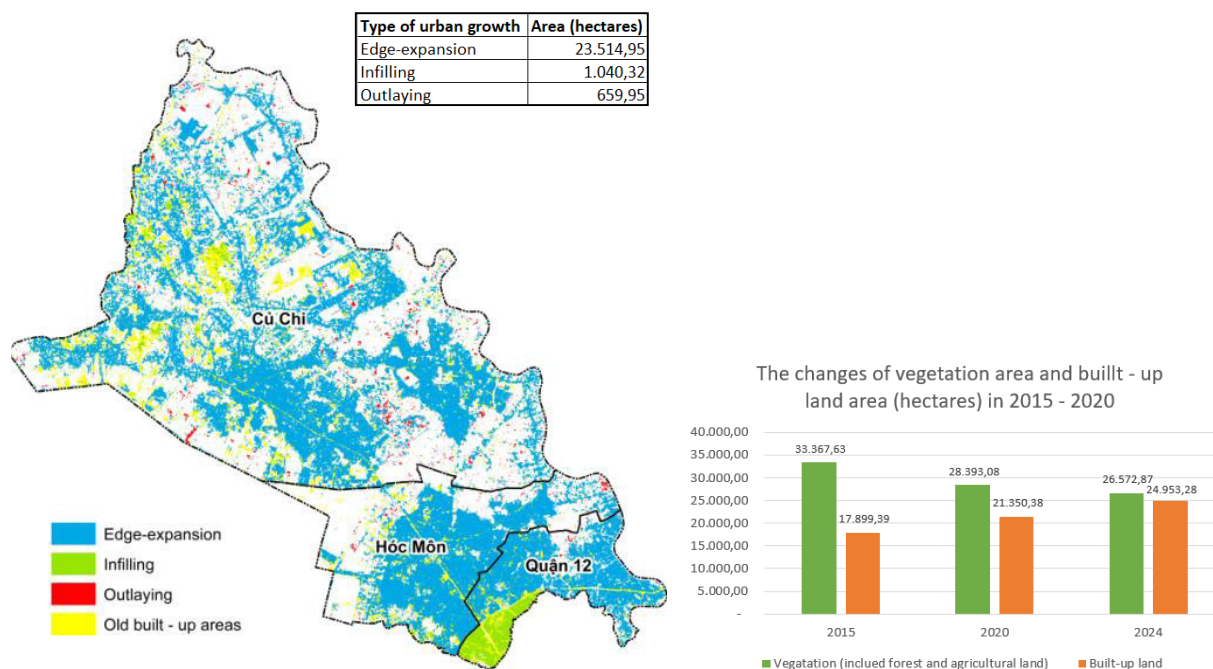


Figure 4. Spatio-temporal distribution of growth types in 2015 – 2024 in the study area

With different urban expansion methods and landscape measurements, the spatial expansion of urban land is reflected in the increase in built-up land area and the decrease in vegetation area (shown in figure 4). Urban land is increasingly dominant in district 12 and Hoc Mon district, over time, the area of forest land and agricultural land in Cu Chi district gradually decreases, reflected in the increasing trend of urban land in the periphery. In these peripheral areas, urban land development is characterized by small patches or point expansion, which will affect the original landscape structure and reduce the dominance and connectivity of the landscape, while increasing the diversity of the landscape.

5. CONCLUSIONS

This study analyzed and evaluated the spatial change patterns in district 12, Hoc Mon district, Cu Chi district in the North and Northwest of HCM city using digital landscape measurement

techniques, remote sensing and GIS. Six main LULC types were identified for the study: agricultural land, forest land, built-up land, traffic land, vacant land and water surface. The study showed that the vegetation cover (forest land and agricultural land) has decreased significantly during the study period (2015 - 2024) and the corresponding increase in the surface areas of built-up land and traffic land through the analysis of size, density at two levels of class and landscape. Furthermore, the urbanization process is the main reason why the fragments representing settlements and constructions are increasing. When approached from the perspective of landscape-level measurements, the fragments become complex in shape, tending to be strongly fragmented in space. In addition, the fragments are less connected and more fragmented due to the impact of urbanization that changes the space, especially the conversion of land use from agricultural land, forest land to non-agricultural purposes. The results also show that multi-temporal analysis integrated with remote sensing, GIS and field surveys provides an operational tool to analyze the relationship between landscape and land use changes in the periphery of HCM city - where rapid urban growth begins. Due to the problems of landscape fragmentation and loss of green space diversity identified in this study, there is a need for sustainable land use planning and policies, balanced in the selection of socio-economic development scenarios.

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INDIGENOUS KNOWLEDGE IN EXPLOITING AND USING MEDICINAL PLANTS OF THE H'MONG PEOPLE IN HANG KIA COMMUNE, MAI CHAU DISTRICT, HOA BINH PROVINCE IN THE DIRECTION OF SUSTAINABLE DEVELOPMENT

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ABSTRACT

The resources of medicinal plants and the wealth of knowledge in exploiting and using these plants across different cultures are increasingly exploited for health care and economic development. This study was conducted in Hang Kia commune, Mai Chau district, Hoa Binh province. This commune is located within the Hang Kia - Pa Co nature reserve, and is predominantly inhabited by the Hmong people. Their knowledge in identifying and using local medicinal plants is demonstrated through the community's traditional healers. However, nowadays, the knowledge of using medicinal plants is gradually fading, and many medicinal plants face the risk of extinction. Therefore, the urgent issue now is how to conserve not only the medicinal plants but also the traditional remedies within the community, thereby promoting these valuable resources to be passed down and preserved for future generations.

Keywords: Hang Kia - Pa Ko, Indigenous knowledge, H'mong.

1. INTRODUCTION

The Hmong people in Hang Kia commune, Mai Chau district, Hoa Binh province, have preserved and developed a rich source of indigenous knowledge related to the exploitation and use of medicinal plants from nature. This knowledge not only reflects the community's deep understanding of medicinal plants that are available in their living environment but also demonstrates the close relationship between humans and nature. The traditional methods of harvesting, processing and using medicinal herbs of the Hmong people have been passed down from generation to generation, resulting in high efficiency in treating diseases and maintaining the health of the community.

However, in the current context, with the development of society and the risk of environmental degradation, the exploitation of medicinal plants needs to be oriented towards a sustainable development model. This requires the preservation of indigenous knowledge, while combining with modern science to manage and exploit medicinal resources in a reasonable manner. Sustainable development in the exploitation of medicinal plants not only helps maintain natural resources but also contributes to environmental protection, preserving the cultural heritage of the Hmong people, and opening up the potential for ecological tourism and economic development for local communities.

Indigenous knowledge has long been recognized as a crucial element in the sustainable management of natural resources, especially in the context of traditional medicine and the use of

medicinal plants. Among the H'mong people in Hang Kia commune, their intimate understanding of the local environment, particularly in the identification, harvesting, and application of medicinal plants, has been passed down through generations. This knowledge system forms the backbone of their healthcare practices and reflects a deep connection with nature. Scholars have emphasized the significance of preserving indigenous knowledge, as it often provides sustainable solutions to environmental conservation. The H'mong community in Hang Kia, similar to other ethnic groups across Southeast Asia, relies on a variety of local flora for treating ailments. According to research, the ethnobotanical practices of the H'mong people not only contribute to their cultural heritage but also serve as a valuable resource for biodiversity conservation and the development of pharmaceuticals (Farnsworth, 1985).

Studies on indigenous knowledge systems have often highlighted the sustainable practices inherent in these traditions. For example, Berkes (1999) points out that indigenous communities like the H'mong engage in selective harvesting, ensuring that plant species are not overexploited, and they often have spiritual or cultural rules that prevent the depletion of natural resources. Such practices align with the modern concept of sustainable development, which emphasizes the need for balancing economic, environmental, and social considerations. In Vietnam, the exploration of medicinal plants and the role of indigenous knowledge has gained attention in both academic and policy-making circles. According to Le and Ngo (2009), the H'mong people in northern Vietnam, including in Hang Kia, possess rich ethnopharmacological knowledge, utilizing a wide range of medicinal plants for treating diseases ranging from common colds to more severe ailments like rheumatism. The sustainable use of these resources is integral to their long-term availability, and the H'mong's practices demonstrate effective management of these natural resources.

However, the integration of indigenous knowledge with contemporary scientific approaches is necessary to ensure the protection of biodiversity and cultural heritage. Studies by Cunningham (2001) suggest that blending traditional knowledge with scientific research can lead to better conservation outcomes while empowering indigenous communities. Furthermore, ensuring legal frameworks that protect intellectual property rights and prevent biopiracy is crucial in maintaining the H'mong's control over their traditional medicinal knowledge. In the direction of sustainable development, the promotion of indigenous knowledge should include capacity-building efforts, education on the value of biodiversity, and community-based conservation programs. These initiatives, according to Posey (1999), are essential in safeguarding indigenous practices while promoting economic opportunities such as ecotourism and the commercialization of herbal products. Thus, understanding and documenting the indigenous knowledge of the H'mong people in Hang Kia is vital for promoting sustainable development. Through respectful collaboration between indigenous communities, researchers, and policymakers, it is possible to ensure that the traditional practices of the H'mong can continue to contribute to both cultural preservation and the sustainable use of natural resources.

2. THEORY AND RESEARCH METHODS METHODOLOGY

2.1. Theoretical Framework

Medicinal plant resources and knowledge treasures in the use of them in different cultures are being increasingly exploited and researched for health care and economic development. There are documents showing that medicinal plants serve four main needs: (i) pharmaceutical industry (ii) traditional health care systems (iii) individual traditional medicine practitioner and (iv) household using (Lampert J., Serivastava J., Noel Vietmeyer. 1997) (Michel J. Balick, Elaine Elisabetsky and Sarah A. Laird. 1996). Nowadays, the use of medicinal plants in industrial countries is increasing, about 40% of the population in developed industrial countries using supplemental medicines have become a threat to this resource. The overexploitation of wild medicinal plant resources is caused by population growth pressure and the need for life leading to the fact that the amount of renewable resources does not compensate for the loss. (Nirmal K. Bhattarai. 1997)

Studies show that the gradual loss of medicinal plant resources is caused by several reasons: (i) wasteful use habits (ii) destructive collecting activities, (iii) poor storage conditions. (iv) lack of suitable transportation and market, (v) increasing demand for medicinal plants (Lyn de alwis. 1997). On the other hand, there is a view that local people are those who always find ways to maximize the exploitation of the resources to serve their interests. Responding to the above threat, a view on conserving this resource has been introduced. Before the Chiang Mai conference (1988), conservation perspectives were developed by experts around the world but scattered and unsystematic. It is said that to conserve medicinal plants, it is necessary to have a firm grasp of their distribution and status quo to establish zones of origin and transposition. According to O Akerel, preserving medicinal plant resources in countries is recognizing and preserving their use value in traditional medicine. (Akerel O, 1991).

This study was conducted in Hang Kia commune, Mai Châu district, Hoa Binh province with the majority of Hmong population. Located in Hang Kia - Pa Co natural reserve, the area is known for the typical tropical forest ecosystem of Northwestern Vietnam and valuable plant area and people have a special relationship with the forest. Forest resources not only provide them with food and fuel but also provide an extremely rich source of medicinal herbs that they can use in the treatment of diseases.

2.2. Methodology

To explore the indigenous knowledge of the H'mong people in Hang Kia commune, specifically in the exploitation and use of medicinal plants, a mixed-methods approach will be employed. This method combines both qualitative and quantitative techniques, enabling a comprehensive understanding of their practices while aligning with sustainable development goals.

Participant observation will be a key method to immerse researchers in the day-to-day activities of the H'mong community. This method allows for first-hand observation of plant harvesting, preparation, and usage, providing rich, contextual data on how indigenous knowledge is applied in real life. Researchers will engage with healers and elders who possess

detailed knowledge of medicinal plants, observing both their practices and cultural rituals related to plant use.

In-depth interviews (10 people) will be conducted with traditional healers (4 people), elders and community members who have been cured by traditional medicine (6 people). These interviews will focus on identifying key medicinal plants, collection methods, processing techniques and the cultural significance of these practices. Open-ended questions will enable participants to share their knowledge, while providing flexibility to explore emerging topics.

The study will conduct two focus group discussions (FGDs) of 6-8 people each in the community to collect collective knowledge and perspectives of the community. These discussions will involve a variety of community members such as traditional healers, village leaders, women and youth, to collect diverse understandings of the sustainable use of medicinal plants. FGDs are useful in understanding the social dynamics and collective decision-making processes involved in medicinal plant collection and resource management.

3. RESULTS

3.1. The role of medicinal plant in life of Hmong people in Hang Kia commune, Mai Chau district, Hoa Binh province

3.1.1. The role of medicinal plants in spiritual life

Herbal medicine has existed and developed for a long time in the forest and the Hmong in Hang Kia commune have known to use medicinal plants for common diseases in everyday life for a very long time. All herbal remedies, methods of processing and using medicinal herbs have been passed on from one person to another, generation to generation. Especially, the Hmong sanctified medicinal plants and believed that the spiritual dog resided in medicinal plants, therefore those who practiced healing in the community must set an altar for the god of herbal medicine. *“About 35 - 40 years ago, the Hmong people still had three altars: An ancestral altar, an altar of the gods and an altar of herbal medicine. However, up to now, most of the Mong people here have combined their ancestral altars and the gods' altars into one, while the altar of herbal medicine has remained the same.”* (Sung A Si, 40 years old, male)

According to the Hmong people in Hang Kia, herbal medicine practitioners can diagnose a patient's disease through observing the patient's nuances as well as the description of the patient's condition. Besides, each practitioner has certain skills to examine and know the seriousness of the disease. They also have deep knowledge about medicinal plants in the forest, the use of each one and how to collect and process medicine for disease treating and maintain medicinal plants as well. One of the principles the Hmong herbal medicine practitioners must follow is that they have to conduct the act of worshipping and praying to the god and ghosts of herbal medicine whenever treatment happens. By doing that they can be confident in the diagnosis and treatment of patients. This is a special ritual in which only the practitioner is allowed to represent the sick man and all the villagers to contact the supernatural powers in charge of herbal medicine.

“Every herb has life and soul, so it is the spirit of medicine that governs the whole soul of medicinal plants”.

To set up the altar, a ceremony must be made: a live rooster is brought to the altar offering to the god of medicine; they kill the rooster there, stick the feathers onto the silver paper and stick them on the altar.

Since then, there is an altar of herbal medicine in the house of the practitioner. Patients coming to ask for medical treatment have to bring along a little incense (with or without money). Before the practitioner go to get the medicine, he has to burn incense and worship at the altar to wish the sick person would recover soon. When the sick person get well, they have to bring gifts to the practitioner’s house to give thanks. If not, the god of herbal medicine will make the practitioner severely ill.

Every year on the new year of the Hmong people (early December of the solar calendar), herbal medicine practitioners must make a ritual to worship the god of medicine and replace the altar. Again, one rooster is sacrificed, an one new silver paper with chicken feathers is sticked on the, which means changing clothes for the new year “.

For patients seeking medical treatment, the rituals implemented by herbal medicine practitioners is a call for divine consent of the god. Only such the god will tell the practitioner the plants that can cure the sick. Without the aforementioned rituals, “no one shows the way and no one blesses the sick person”. Thus, it can be seen that the ritual of worshiping herbal medicine plays a particularly important role in the spiritual life, not only for the practitioner but also for the Hmong community here.

Ms. Hang Y Vua - 68 years old, said: According to HMong's customs, when the sick person comes to the physician's house, he only needs to bring a incense bunch and a paper (paper is made from Giang tree – a kind of bamboo tree). After that, the physician will use this incense to burn up and pray the god of herbal medicine. When praying the physician clearly state the name, age, address of the patient, information about the illness such as symptom, duration. Besides, the physician will ask for the permission of the god to go to get the medicinal plant. The patient promises that when he is cured, he would give an offering or something to the physician to express his gratitude to the person who healed him.

After recovering from the illness, to keep the promise, the patient will usually bring to physician's house an offering, which can be a chicken, a skirt or a shirt, etc... or a small amount of money like 100,000 VND - 200,000 VND depending on the severity and complication of disease (broken leg or arm, infertility, kidney stones, partial or total paralysis) or normal (idiopathic, insomnia, stomach ache, headache).

3.1.2. Some medicinal plants and herbal remedies are used locally

Natural medicinal plants are widely distributed in the world in general and in Vietnam in particular. Trees exist in many different forms and geographical distribution is also different: there are trees, shrubs, herbs growing on limestone mountains, sometimes trees, herbs, vines grow in the hills, red soil... Because of the difference in geography, climate, and soil, their therapeutic uses

are also very different and depend very much on the user as well as their medicine processing. There are plants that heal, tubers or stems or leaves are used for treatment, there are also some plants of which the trunk, tubers, leaves and even the sap are combined to make the medicine. In Vietnam, the existence and transmission of traditional medicinal plants and herbal remedies mainly among ethnic minorities such as HMong, Dao, Tay, Thai, Muong, Ca Tu and Van Kieu.. The remedies and medicinal plants have been handed down for many generations and now they not only gather in the forest but also bring the medicinal plants in the forest back to their home gardens. They said this would be convenient for taking medicine, sharing with their descendants and preserving gene sources of some precious medicinal plants which are dying.

3.2. Indigenous knowledge of Hmong people in Hang Kia commune, Mai Chau district, Hoa Binh province in the exploitation and use of traditional medicines

3.2.1. Experience in exploiting and protecting traditional medicines

According to the experience of herb medicine practitioners, medicinal plants are wild plants growing in the forest, there are rare plants that have to go all day to get, but also there are many species of trees that can be found easily. Most of the people do not know it is a medicinal plant but only a physician who is aware of it. It is not specified at which time of the day to pick up the medicine, but before going to collect herbal medicine in the forest, the physician has to burn incense on the altar of herbal medicine and pray to ask the god of medicine for blessing them “*get what they want so they can cure the disease*”.

While collecting medicinal herbs, if the plants are easy to grow and find, they can get the whole tree, while rare or slow-regenerating trees, they use their experience to selectively exploit, only take a part of it and leave the root or some branches left so the tree can grow then they come to get it later. HMong people do not have the habit of taking herbal medicine to store in the house, only when a patient comes, they will diagnose the disease, burn incense and go to get medicine in the forest.

According to the customs of the Mong people, herbal medicine practitioners do not usually transfer their profession to other lineages and also do not have the habit of sharing experience in using medicine with other practitioners from other ethnic groups. Each ethnic group has different experiences and remedies. If they meet each other on the way to get medicinal plants, they just do their job without discussing anything. Besides, the Hmong believe that even if other people know about medicinal plants, they cannot cure themselves effectively because of the lack of spirituality in the healing process through the worship of the traditional medicine altar. The reputation of a practitioner is due to word of mouth patients or people in the community. HMong physicians never show off to promote their image or experience, they are only confident and wholeheartedly with the patient when the patient comes and wishes to be treated completely trustfully.

Table 1. List of herb medicine used by Hmong people in Hang Kia commune

| No. | Title | Function | Part collected | Time to collect | Place | How to process | Description | Breeding |
|-----|---------------|---|-----------------------|---------------------------------|-------------|---|--|--|
| 1 | Chùa Mo Pang | Be combined with psyllium and some other plants to cure <i>urination, diabetes mellitus</i> | Leaves, stems, tubers | Early morning or late afternoon | Home garden | Fresh or dried plants slow-cooked with drinking water for daily use is best. | Herbaceous, sprouting in clusters, leaves growing from the base, 30-35cm long, with a pointed tip like a blade, petioles at the base then gradually green up | Propagation by tubers. Just remove the bulbs to plant in moist soil |
| 2 | Chua Cang Lua | Cure <i>allergy, skin rashes</i> | Leaves, stems, roots | Early morning | Home garden | Boil the whole fresh plant then squeeze into a tight grip on the rash, allergy. Use 2-3 times | Herbaceous, single leaf sprouting, double-sided propeller leaves, self-blooming white flowers | Propagation by seeds. Usually at the end of the summer, the seeds are stored until the following season and sometimes the ripe seeds fall to the ground next year. |
| 3 | Mẫu tở | Treatment of <i>uterine prolapse</i> | Leaves | Early morning | Home garden | Take 3-4 leaves that heat on the stove then sit down on the hot leaves, do 2-3 times in the morning, noon, evening during the day (morning at 7am, 1-2pm, 8 -9 pm) | Herbaceous, single leaf sprouting, shallow lobed, 5-10 cm long stalks, serrated margins, often sprouting into dust, crumbling slightly viscous. | Propagated by seeds. |
| 4 | Luá Li | Cure <i>diabetes, rheumatism</i> | Leaves, stems, tubers | Early morning | Home garden | Fresh plants slow-cooked with drinking water for daily use is best for diabetes. Dried root soaked with rice/corn wine for daily use for rheumatism | Small woody, single-feathered compound leaves, leaflets opposite, serrated edges | Propagation by seeds |
| 5 | Chúa Noong | <i>Dermatitis</i> | Leaves | Early morning | Home garden | Crushed fresh leaves close to the skin, or take fresh leaves through the fire and cover the skin | Herbaceous plants, single leaves sprouting, fishbone shaped veins, crumpled to smell pungent, hands see slightly viscous water, flowers are white | Propagation by seeds however most plants grow naturally in forests and home garden |

| No. | Title | Function | Part collected | Time to collect | Place | How to process | Description | Breeding |
|-----|------------|--|-----------------------|---------------------------------|-------------|--|--|-----------------------|
| 6 | Tăng kỳ | Relieve <i>fever, headache, tired body</i> | Leaves, stems, tubers | Early morning or late afternoon | Home garden | Take fresh leaves to boil in water to get the steam, or pick leaves to cook with meat, soup to eat daily | Herbaceous plants, double-feathered leaves, leaves that grow from the root in clusters, the top double leaves will be deeply lobed, the leaves are purple, the leaves are slightly viscous | Propagation by tubers |
| 7 | Xăng xí | Relieve <i>back pain, joint pain</i> | Tubers | Early morning | Home garden | Dry, bury in soil, soak with drinking alcohol, drink daily | Herbaceous plants, double-feathered leaves sprouting in clusters at the base, the top double leaves will be deeply lobed, the leaf stalks are purple, the leaf surface is a little purple-purple with serrated edges | Propagation by tubers |
| 8 | Sa Nhân | Relieve <i>joint pain, insomnia</i> | Tubers | Early morning | Home garden | Dry, bury in soil, soak with drinking alcohol, drink daily | The arrowroot family, herbaceous plants, single-leaf sprouting leaves, inverted egg-shaped leaves, pointed tip heads clustered | Propagation by tubers |
| 9 | Củ Máu | Cure diarrhea, back pain | Tubers | Early morning | Home garden | Soaked with alcohol for drinking daily | Vines, single leaves grow spaced, veins floating from 1 point near the petiole, tubers are round to the size of a car bowl, sometimes bigger, skin slightly wrinkled and with many nodules. | Propagation by tubers |
| 10 | Củ ba tầng | Relieve <i>back pain, rheumatism</i> | Tubers | Early morning | Home garden | Dry, bury in soil, soak with drinking alcohol, drink only one small cup at a time before eating | The vines are purple, the leaves have 6 leaves, the distance of the burning segment is 50-70 cm, the tubers are round like the mouth of a car bowl, brown with many rough spots. | Propagation by tubers |

| No. | Title | Function | Part collected | Time to collect | Place | How to process | Description | Breeding |
|-----|-------------------|--|------------------|---------------------------------|--------------------------|--|--|-------------------------|
| 11 | Cây coong | <i>Cough, diarrhea</i> | Seed | Early morning or late afternoon | Home garden | Chew raw seeds | The Galangal family grows in clusters, a single leaf grows in the main body, a purple petiole. On the leaf, there is a large veins running along the leaf stalk to the top | Propagation by tubers |
| 12 | Nọng đũa | Treatment of <i>uterine prolapse</i> (associated with Săng Sồng) | Leave | Early morning or late afternoon | Home garden | Take the leaves to boil with some other types of leaves and sit on the steam. 2-3 times per day in the morning, noon, and afternoon cool for 3 days. | Herbaceous, single-leaved leaves, ovoid, succulent, crumpled and slightly green in color, with a pale white main tendon | Propagation by branches |
| 13 | Săng sồng | <i>back pain, uterine prolapse</i> (associated with Nọng đũa) | Stems and leaves | Early morning | Home garden | Get fresh stems close to burning tubers or more soaked with alcohol about 1 week, then drink | Herbaceous plants, double-feathered leaves, 2 times odd, opposite, leaflets deeply shaped like a propeller, plants grow in clusters | Propagation by tubers |
| 14 | Rờ A Mãng | Pain in the hand of unknown cause | Leaves | Early morning | Home garden | Take fresh crumpled leaves then apply on the wound | Herbaceous plants, single-axis, single-leaved leaves, sword-shaped, pointed-edged leaves with a white main veins running from the petioles to the tip | Propagation by seeds |
| 15 | Pịa đề (của nước) | Relieve abdominal boil, abdominal pain, | Leaves | Early morning | Home garden, stream bank | Take clean leaves and put them into boiling water, let them cool down gradually, take one dose of each pot. | Herbaceous plants, sprouting in clusters, with long, round swords shaped around them, small veins not visible, crumpled viscous in hands; | Tuber crops |
| 16 | Pịa ang (của đất) | Relieve abdominal boil, abdominal pain, | Stems and leaves | Early morning | Home garden, stream bank | Take clean leaves and put them into boiling water, let them cool down gradually, take one dose of each pot. | Herbaceous plants, in clusters, with long, oblong-shaped leaves with a main vein running along the petioles to the leaf tips | Tuber crops |
| 17 | Pàng thông | Cure <i>difficulty urinating</i> | Tubers | Morning, noon, afternoon | Home garden | Dry 3 tubers then slow cook with water, drink before eating | Herbaceous plants, without main stems, shallow leaf | Tuber crops |

| No. | Title | Function | Part collected | Time to collect | Place | How to process | Description | Breeding |
|-----|---------------|----------------------------------|----------------|--------------------------|-------------|--|--|------------------|
| | | | | | | | splinter, petiole concentrated at the base of the tree, veins concentrated on petiole, on leaves covered with light brown agarwood, concentrated on leaf margins, leaf margins saw | |
| 18 | Cây Chơ | Urinating, blood urinating | Leaves | Morning, noon, afternoon | Home garden | Take fresh leaves to boil in water for about 5 minutes then remove the water to drink daily | Herbaceous plants, without the main stem, the leaves grow from the root to spread all around, the leaves have three veins running from the petioles to the tips of the leaves. | Tuber crops |
| 19 | Pĩa Hơ Chăng | menstrual pain | Leaves | Morning, afternoon | Home garden | Take dried leaves, finely chopped, then add in the kettle to add boiling water. Drink before eating | Herbaceous, round stems with many stings, single leaves sprouting away from the main stem, ovoid leaves, corrugated margins | Plant by stem |
| 20 | Trăng xông đỏ | Relieve back pain, stop bleeding | Leaves | Morning | Home garden | Scratch and apply it to the wound, if someone has back pain, then heat up and then apply it to the pain. | Herbaceous plants, single-feathered double-leaved leaves, clustered in main body, Leafs with serrated leaflets, shallow lobes, veins, purple petioles | Tuber/root crops |

Recourse: Collected by authors

HMong physicians appreciate the secrecy of medicine because they believe that keeping this secret is part of their success in treating patients. Therefore, after diagnosing the disease, the medicinal plants that were brought from the forest are often chopped into pieces, mixed so that during the decoction, the substance will work faster as well as to make it impossible for outsiders to know the ingredient and recipe of the medicine. Following the rule of predecessors, Hmong herb medicine practitioners never bring medicine to the market. Even if they try to sell, the medicine will no longer be effective. Then a unique cultural feature of HMong people was formed. They don't go to the forest to get medicine if they have not burned incense and prayed to the altar of herbal medicine. Therefore, the preservation and conservation of medicinal plants of the Mong people are strictly followed.

3.2.2. Preserving medicinal plants in Hmong community in Hang Kia commune, Mai Chau district, Hoa Binh province

- Conservation in home garden

For HMong herbalists, every family has a herbal garden or grows herbal plants around the home garden area. These medicinal plants are derived from natural forests, there are medicinal plants that are passed on from generation to generation and also new medicinal plants are brought to plant. The medicinal plants in the garden such as Chan Song Do, Sa Nhan, Noong Dia, Tang Ky ... are regular used ones and for simple diseases such as abdominal pain, diarrhea, and urination. Before the physicians bring the medicinal plants back to plant, they also observe how it lives in the forest so that when they return home, they will try to create such a living environment. Most of the medicinal plants brought back to the garden are able to adapt to the growing conditions in the home garden such as intercropping under the fruit trees of Plums, Peaches or adapting to the moist, wet environment near the well area.

- Conservation in forests

In the process of collecting medicinal herbs, depending on each medicinal plant and its use, the physician will take the leaves, stems or roots. Most of the available medicinal plants are collected by physicians at their root, but there are also medicinal plants that are collected partially selectively. Therefore, during the process of collecting medicine, some plants after being harvested were taken care of and protected directly by the practitioner in the forest.

“Find out the rare medicinal plants, we do not take all but I have to mark and remember the place so 2-3 years later we come back to get it. We usually mark it with a knife bumping slightly 2-3 times into big trees next to or clearing grass, bushes, grass fields around this precious medicinal plant and mark the path next to medicinal plants or may fence around medicinal plants”.

One issue of conservation of local medicinal plants today is the heterogeneity of medicine use experience. According to Ms. Lang Y Vua, naturally, the experience of using traditional medicines of the HMong, Thai and Muong ethnic groups in Mai Chau district is completely different. Even with the same illness, the way to get medicine and pick up them is completely different. HMong people do not use types of plants that Muong and Thai people use to make herbal medicines, and vice versa. The advantage of this matter is the pressure on medicinal plants has been greatly reduced because there is no coincidence of medicinal plants among ethnic groups.

4. CONCLUSION

Vietnam is a country that is highly appreciated by the world for the richness, practical significance, scientific and economic value of Vietnamese medicinal plant resources. Traditional medicinal plants and traditional medicine knowledge have contributed to maintaining the survival and development of ethnic groups, playing an important role in human health care and sustainability of Vietnamese traditional medicine. However, it seems that we haven't paid much attention to preserving the knowledge treasure of using medicinal plants which is increasingly fading. Many medicinal plants are facing extinction. Information about the process that has been happening in the community related to the use, conservation and development of medicinal plants, etc...is almost ignored. Therefore, the question that is extremely urgent now is how to preserve not only medicinal plants but also folk remedies in the community, thereby promoting the available values to preserve the tradition of the predecessor then to pass on to future generations.

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THE IMPACT OF INDUSTRIALIZATION AND MODERNIZATION ON RURAL AREAS IN THE SOUTHEAST REGION

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ABSTRACT

The article examines the impact of industrialization and modernization on the rural areas of Southeast Vietnam, aiming to identify the current situation and propose sustainable development solutions. The research objective is to analyze the multidimensional changes in rural life in this region, thereby contributing a scientific basis for formulating appropriate policies. The research methodology primarily relies on secondary data analysis, including statistical data and previous studies on rural and socio-economic development in Southeast Vietnam. Analytical methods such as logic, systems approach, and sociological, ethnographic approaches were employed to provide objective assessments. The findings show that industrialization and modernization have widened the income gap between rural and urban areas, reduced the sustainability of livelihoods, revealed inadequacies in infrastructure, and underutilized the role of farmers as key agents. Rural areas face increasingly severe environmental pollution and a decline in community cultural cohesion. The article recommends solutions such as improving infrastructure, developing rural employment policies, vocational training, and environmental protection to promote the sustainable development of rural areas in Southeast Vietnam.

Keywords: Agriculture, farmers, process, rural areas, Southeast Region.

1. INTRODUCTION

The Southeast Region includes the provinces and cities of Ho Chi Minh City, Dong Nai, Binh Duong, Ba Ria - Vung Tau, Binh Phuoc, and Tay Ninh, covering an area of 23,551 km², accounting for 7.1% of the country's area; its population is about 18.8 million people, representing more than 18% of Vietnam's population (Nguyen, T. H. D., 2023). The Southeast Region has a highly advantageous geographical position; fertile and diverse land, easy to exploit; a temperate climate, flat terrain, and relatively abundant natural resources. In 2022, the GRDP of the Southeast Region accounted for about 31% of the country; exports contributed about 35%, and budget revenues about 38% of the country; the region's per capita GRDP was 1.64 times the national average; the urbanization rate of the region was 66.5%, 1.8 times the national average (Southeast Region Coordination Council, 2023). This region is home to many religions and forms of belief among the people and has a diverse population due to large migrations over the centuries, which have created various customary systems, converging into a common cultural tradition with unique characteristics within Vietnamese culture. Besides the majority Vietnamese, the population in the Southeast Region includes indigenous and immigrant ethnic groups such as the Choro, Ma, Stieng, Coho, Hoa, Cham, Khome, Tay, Nung, Muong, and others. The cultural identity of the ethnic groups in the Southeast Region encompasses the most typical and essential values, deeply national

in nature, expressed in the material and spiritual aspects of life through daily production activities, communication, and interactions among the people of the Southeast Region. The Southeast Region has a large urban network, which significantly impacts the development of the surrounding rural areas. The development of rural areas depends not only on internal resources but also on the connection with urban areas within the region and with Ho Chi Minh City. Within the scope of this article, we study the transformation of rural areas in the Southeast Region during the process of industrialization and modernization, aiming to identify the current situation and trends of change, providing scientific arguments for formulating policies and solutions to help rural communities in the region develop sustainably.

2. RESEARCH HISTORY

Recent studies on social change in Vietnam in general and the Southeast Region in particular have seen the active participation of numerous scientists. Regarding cultural change, Nguyen T. P. C (2009) suggested that cultural change is understood as the movement process of all societies. In another study, the author stated that it is the dichotomous process between the industrial and agricultural economic systems, as well as the dichotomous and continuous process between rural and urban areas (Nguyen, T. P. C, 2010). In his work “Industrialization, Urbanization, and Livelihood Changes in the Suburbs of Hanoi”, Nguyen, V. S (2014) divided village space into various types such as: residential space, architectural space, social space, sacred space, cultivation/production space, administrative space, and common space. The author argued that sacred space is where tangible or intangible values or religious and belief activities are contained. In the work “Suburban Villages and Cultural Changes - A Case Study of Xuan Dinh Village, Tu Liem District, Hanoi”, Nguyen, T. P. C., & D. L. P (2016) concluded that the expansion and interweaving of social networks within and outside the village community have become common and continuous, village boundaries are increasingly expanding, and each villager is connected to various relationships and social networks both inside and outside. Based on continuous multi-dimensional exchanges and interactions, cultural practices within the village have also changed in many different directions. Notably, in recent years (from 2010-2020), the Southern Region Institute of Social Sciences has led a series of scientific research projects related to urban areas, rural areas, and farmers in the Southern Region, including the Southeast Region, such as: Basic Issues on Social Development and Social Management for Sustainable Development in the Southern Region; Surveying Enterprises in the Southern Region towards Sustainable Development; Community Development in the Sustainable Development of the Southeast Region (2011-2020); Comprehensive Basic Investigation on Sustainable Development Linkages in the Southern Region; Research on Adjusting Indicators in New Rural Criteria at the Commune Level after Standardization and Proposing Solutions to Sustainably Maintain These Indicators; Population and Migration Issues in Sustainable Development of the Southern Region, etc. In general, recent studies on social change in the process of industrialization and modernization have covered many topics, from theoretical issues, and policies to practical matters, especially new issues emerging during implementation. These are essential reference materials that form the basis for us to inherit and complete this article.

3. RESEARCH METHODOLOGY

The research methodology of the article is based on secondary data analysis, combined with specialized analytical methods to provide an in-depth view of the impact of industrialization and modernization on the rural areas of Southeast Vietnam. First, the collection and analysis of secondary data are conducted through published documents from government agencies, research institutions, as well as reports from provinces and cities in the Southeast region. These materials include socio-economic statistics, comprehensive reports on agricultural and rural development, and previous studies related to urbanization, industrialization, and rural development. These data serve as the foundation for shaping an overall picture of the region's current changes. The logical method is used to analyze the connections between economic, social, and cultural factors during the industrialization and modernization process. Through this method, the article evaluates the causal relationships between factors such as economic structural changes, labor migration, and the impacts on livelihoods, the environment, and rural community culture. Using the logical method helps clarify the shifts in the relationships between rural and urban areas, between traditional agricultural production and industrial and urban development. The systems approach is applied to comprehensively assess various aspects of rural development in the context of industrialization. Through this, the article examines not only economic changes but also analyzes issues related to infrastructure, the environment, and society. This method allows for a multidimensional view of the issues in the rural areas of Southeast Vietnam, from uneven development between localities to the influence of urban growth on surrounding rural areas. Additionally, specialized methods such as sociology, ethnology, and cultural studies are employed to study the impact of industrialization on rural communities, particularly in the fields of culture and livelihoods. Sociology helps analyze social stratification within rural communities, changes in labor structure and income, as well as negative impacts on community cultural life. Ethnology plays a role in examining changes in the cultural identities of ethnic minority groups in the region, especially as cultural exchanges between rural and urban areas intensify. Cultural studies are used to examine the transformation of traditional values and how they are affected by the influx of external cultural influences. All these methods are flexibly combined to ensure objectivity and scientific rigor in assessing the changes in the rural areas of Southeast Vietnam. The use of a multi-method approach not only provides a comprehensive evaluation of the current situation but also offers solid arguments for policy recommendations to promote sustainable rural development, aligned with the region's practical conditions.

4. RESEARCH RESULTS

4.1. Changes in Rural Southeast Region During the Process of Industrialization and Modernization

4.1.1. The livelihoods of rural residents are unsustainable, and the income gap between rural and urban areas is increasing

The process of industrialization and modernization has led to the displacement of farmers, forcing them to abandon agriculture while lacking the necessary conditions to transition to other

occupations. In this situation, the most vulnerable group is rural workers over 35 years old (especially female workers). At this age, they find it difficult to be recruited by enterprises and also find it challenging to retrain for new jobs, while their primary occupation in agriculture is no longer viable due to the lack of land for production. In reality, the unemployment and underemployment rates among farmers in the Southeast Region are still quite high. According to statistics, the unemployment rate in the rural areas of the Southeast Region is the highest in the country (3.37% in 2008, 2.05% in 2009, while the national rural unemployment rate was 2.25% and 1.53%, respectively) (General Statistics Office, 2009). In 2023, the unemployment rate in rural areas of the Southeast Region continued to be among the highest in the country at 2.64%, while the national rate was 2% (Phuong T, 2023). The increase in unemployment and underemployment in rural Southeast Region is due to several reasons, primarily the shrinking agricultural production area caused by the construction of industrial zones and urban areas in the region. According to statistics, from 2001 to 2006, the agricultural land area in the region decreased by 4.28%, with annual crop land decreasing by 15.0% and rice-growing land by 14.15% (General Statistics Office, 2006). Notably, with increasing market risks and natural disasters, support from social welfare programs and organizations for rural households, although increased, is still limited. A report by the Central Institute for Economic Management in 2016 showed that up to 30% of rural households reported experiencing shocks in production and life. Surveys indicate that the percentage of rural households receiving support from government social welfare programs increased from 38.9% in 2010 to 48.1% in 2018; in new rural standard communes, this rate was only 44.8% in 2018, lower than in non-standard communes at 50.9%. The percentage of rural households receiving support from organizations (such as the Women's Union, the Red Cross, etc.) slightly increased from 4.2% in 2010 to 4.8% in 2018; in new rural standard communes, this rate was only 3.2% in 2018, lower than in non-standard communes at 6.2%. This means that 50% of rural households have to self-insure against risks from their income or rely on family and friends. Additionally, rural development in the Southeast Region in recent years lacks connectivity and support from industrial-urban development. Communes and districts in most provinces and cities in the Southeast Region still struggle in building new rural areas due to unclear orientation in connecting with urban development. The absolute income gap has increased from VND 12.7 million/person/year in 2010 to VND 31.6 million/person/year in 2018 (General Statistics Office, 2018). The income and living standards of people, especially in remote areas, still face many difficulties, slow improvement, high poverty rates, and unsustainable livelihoods against risks from natural disasters, epidemics, and market price fluctuations. Agricultural income is shrinking, while non-agricultural income is unstable. By 2019, new rural standard communes had higher average per capita income, but agricultural income was only equivalent to non-standard communes (at VND 7.7 million/person/year). Low agricultural income and limited job creation in rural areas lead to a trend of rural labor moving to urban areas, putting significant pressure on urban areas. About 50% of the income difference between new rural standard communes and non-standard communes is mainly due to remittances from migrant workers or relatives. The percentage of rural households receiving support from children in new rural standard communes is 30.1%, while in non-standard communes, it is only 25.2%. Rural differentiation is progressing strongly, with the income gap between the richest 20% and the poorest 20% of rural households increasing sharply from 7.5

times in 2010 to 8.6 times in 2018. The poverty rate in rural areas is four times higher than in urban areas (IPSARD, 2019).

4.1.2. Rural Infrastructure is Still Limited in Serving Production and Business

Improvements in infrastructure are considered by the public as the greatest achievement of the New Rural Development Program in the Southeast region. However, these improvements have only met the goals of the initial stage of the program, which is to serve the living needs of rural residents, and have not yet fulfilled the requirements for modern agricultural and rural production and business. Narrow and weak bridges and roads, shallow and fragmented canals mean that only small transport vehicles can reach production sites, reducing sales prices and increasing transportation and transshipment costs of raw materials and agricultural products, thereby lowering competitiveness. Many roadways in the region cannot accommodate container transport vehicles. The transport capacity between bridges and roads is incompatible. The rural road system only meets the needs of light transportation. Waterway transportation has not yet taken advantage of its potential due to a lack of adequately equipped ports for loading and unloading, warehousing, especially ports for large ships to reduce dependence on Ho Chi Minh City. For instance, the four provinces and cities, including Ho Chi Minh City, Binh Duong, Dong Nai, and Ba Ria - Vung Tau, all have opportunities to develop river and sea economies and need to collaborate on a good transportation system for the circulation of goods. However, the current inter-regional transportation system connecting these four provinces and cities is still very poor (Ngo, V. N. S, 2022). Furthermore, there is no convenient connection between road and waterway networks to form logistics centers that help reduce transportation costs, which is one of the factors decreasing the region's competitive advantage.

4.1.3. Ineffective Linkage Between New Rural Development and Agricultural Restructuring

Despite many efforts and priorities given to infrastructure development in new rural construction, transportation, irrigation, and electricity infrastructure in many areas of the Southeast region remain weak and do not meet the requirements for large-scale agricultural production. Some infrastructure works are not regularly maintained and are deteriorating. Some localities follow the movement without real substance. Most focus on infrastructure development, paying insufficient attention to production, business development, cultural life construction, and improving people's living standards. Recent surveys show that while over 80% of households are satisfied with roads, electricity systems, and schools in new rural construction, only less than 60% are satisfied with the irrigation system and the quality of cultural houses. Social investment in agriculture is low, about 3 billion USD per year, of which 50% is state budget, and only 16.7% is from enterprises. Agricultural production organization has not changed much. Farmers' capabilities and skills are still limited, with most household economic entities not reaching the scale of large-scale commodity production, which requires high competitiveness. The scale of agricultural production households is still small, with most having agricultural land use of less than 2 hectares (over 70%) (Le, T. S, 2016). The quality of rural labor is still low; according to the General Statistics Office in 2018, only 14.3% have received training (compared to 38.0% in urban areas). Large-scale production, value chain-oriented, linking raw material production with preservation, processing,

and consumption has not become mainstream. The number of complete value chains is limited, lacking linkage between large enterprises, local small and medium enterprises, and farmers' organizations. The connection between producers and businesses is still weak. The formation and restructuring of cooperatives are not strong enough, with many cooperatives established earlier through meeting new rural criteria not organized and implemented according to the Cooperative Law, failing to realize the essence of cooperatives, or members participating in cooperatives only nominally. Cooperative directors are uncertain of their roles, leading to confusion in management, production, and business (General Statistics Office, 2018). The application of high technology and modern technology in production, processing, and preservation is limited, not achieving breakthroughs to enhance the added value and competitiveness of products and industries, especially in the context of Vietnam's deep international integration. The overall technological level is still low, not creating a spillover effect and quickly promoting the change of small, fragmented, unlinked, and unprofessional farming practices. Although farmers' application of science and technology has shown positive changes, the contribution of science and technology investment to agricultural restructuring and new rural construction has not been outstanding; investment in agricultural science and technology is not commensurate with the potential of agriculture in the region (Nguyen, Q. D, 2021).

4.1.4. The Role of Farmers as the Main Actors Has Not Been Emphasized

Due to inadequate propaganda and mobilization efforts, and failing to thoroughly implement the principle of “farmers as the main actors”, public participation has not been active. There is a mindset of relying on state investment and guidance, and in some places, there are signs of misuse of contributions and abuse of power by the public in carrying out public tasks. A 2019 survey by IPSARD showed that only 68.1% of households reported having the right to participate in the planning, plans, and projects of new rural development in their locality; only 55% reported having the right to participate in selecting works and projects; 66.9% reported having the right to supervise the implementation of new rural projects (IPSARD, 2019). In some cases, locals interviewed did not know that their commune had achieved new rural standards. Small-scale household economy still accounts for a high proportion and is showing limitations and weaknesses, hindering the process of agricultural industrialization and modernization. Meanwhile, new forces for rural development have not been fully harnessed. The development of household economy and farm economy is limited and small in number (accounting for only about 0.4% of agricultural households), and small in scale (only equivalent to household economy in other countries). Enterprises have not fully exploited their potential in rural economic development and new rural construction. The number of agricultural enterprises is still low, accounting for only 1.2% of the total number of enterprises nationwide (IPSARD, 2019). The entrepreneurial movement among rural youth has not received clear attention. There are still concerns among management levels about conflicts of interest between farmers and businesses, so there are no groundbreaking policies or solutions to create and fully utilize the momentum of new forces for rural economic development and new rural construction.

4.1.5. Rural Environmental Pollution is Increasing

The Southeast region has the highest economic growth rate in the country, offering many job opportunities, especially in provinces and cities such as Ho Chi Minh City, Vung Tau, Dong Nai, and Binh Duong. This region has a strong pull for labor from other regions. Between 2004 and 2009, nearly 1.6 million people nationwide moved to the Southeast region. Most migrants from other regions prefer the Southeast, especially residents of the Mekong Delta (97% of migrants from this region move to the Southeast) (General Statistics Office, 2009). By 2019, the Southeast continued to be the most attractive destination for migrants, with 1.3 million people moving to the region, accounting for more than two-thirds of inter-regional migrants nationwide (General Statistics Office, 2019). Rapid development with uncontrolled industrial zones and export processing zones has turned many areas into “technology dumps” for some countries. Many industrial zones, production, and business establishments, including some craft villages in rural areas, do not invest in waste treatment systems (solid waste, air, water) and discharge directly into the environment. Many residential areas in the region live with dust, noise, odors, and toxic wastewater. Heavy environmental pollution not only affects the health and quality of life of residents in the region but also severely damages the production and business results of households engaged in farming, livestock, and aquaculture. Environmental pollution in the Southeast region has reached alarming levels, with untreated wastewater from factories making plants unable to grow and causing mass deaths of farmed fish and shrimp. Monitoring data from the Ministry of Natural Resources and Environment shows that agricultural land around industrial and craft village activities is at high risk of heavy metal pollution (Cu, Pb, Zn, Cd), with varying levels in Ho Chi Minh City. In the industrial zone of District 12, As levels exceed the threshold of the Vietnam National Technical Regulation 03-MT: 2015/BTNMT for agricultural land by 1.25 times; Hg levels in the soil are also quite high. In Binh Duong, agricultural production land near the Dai Dang industrial zone (Thu Dau Mot City) has Cr levels exceeding the threshold by 1.32 times. Agricultural production land in Tan Uyen (Binh Duong) has Cd levels exceeding the threshold by 1.09 times. In Dong Nai, agricultural production land in Trang Bom and Vinh Cuu has As levels exceeding the threshold by 1.03-1.27 times; Vinh Cuu also has Cd levels exceeding the threshold by 1.09 times (Nguyen, L. T, 2024). Rural environmental pollution is rapidly increasing due to production and consumption waste. Meanwhile, environmental protection solutions and awareness among rural actors do not meet the requirements for sustainable development, necessitating new approaches and more effective solutions.

4.1.6. The Decline of Community-Oriented Cultural Life in Rural Areas

The cultural and spiritual life in rural areas is quite impoverished, despite the increase in personal entertainment means, which is creating a trend towards individual cultural enjoyment, reducing community connectivity. Most cultural facilities such as cultural houses and sports centers in communes and hamlets are rarely active, even though they were built according to new rural criteria. Community connections are often conditioned by the abuse of alcohol and stimulants, which is a negative trend that needs to change. Under the impact of socio-economic life, especially in the period of international integration, the assimilation and influence of foreign cultures are overshadowing and diluting indigenous culture. Some traditional cultural values of

local culture are no longer preserved or have been altered; cultural spaces are impacted and disrupted. The infiltration of foreign cultures undermines the preservation of local customs, rituals, and traditional festivals. Good traditional cultural values such as loyalty, altruism, and honesty are being overshadowed and encroached upon; there is confusion and passivity in spiritual life, especially with the complex changes in the fields of religion and spirituality. Traditional crafts, one of the seven types of intangible cultural heritage, have faded under the pressure of urbanization in recent years, while new craft villages have been formed following the economic market development and international integration. The change in living space from traditional village culture to urban culture, while the lifestyle, interaction behavior, and social relationships of individuals have not adapted promptly, creates inconsistencies. New values and norms associated with civilized urban living spaces have not been established, or if established, they are incomplete, creating conflicts. Therefore, common standards and regulations are needed to harmonize personal interests with community interests during the period of development and integration (Tran, M. D 2019).

4.2. Solutions for Rural Development in the Southeast Region in the Coming Time

Prioritizing the Improvement of Rural Infrastructure: It is necessary to continue improving rural infrastructure, focusing on upgrading, constructing, and expanding key rural roads to ensure the uniformity of goods transport capacity. The Southeast region is an agricultural development area, but local agricultural product prices are low, and transportation costs are high due to weak infrastructure, which overly relies on road transport. Rail transport, being a large-scale and low-cost means, should be invested in for key areas of aquaculture and fruit production. This investment will enhance the competitiveness of the region's agricultural products, increasing the role of central hubs for connectivity and goods transshipment. This will effectively support farmers' business activities and attract business participation in agricultural and rural development.

Developing Policies to Create Rural Jobs in Key Agricultural Areas: This policy should be based on a strategy to develop the value chain of agricultural products and industries serving agriculture rather than industrial processing industries. Currently, agriculture mainly focuses on production, creating low added value, while the upstream stages such as seed breeding, fertilizer production, animal and plant protection drugs, and the downstream stages such as preservation, processing, brand building, marketing, and distribution to end consumers, which have high added value, are not yet mastered. There is significant potential here to create many jobs and increase income for rural residents. Policies to create rural jobs should be oriented towards increasing the value of agricultural products.

Prioritize Investment in a National Vocational Training Program: Vocational training is currently the weakest link, while the quality of the rural workforce remains low. It is necessary to adjust the scale of investment in general education to align with the overall declining birth rate trend, while considering the significant differences in the scale and structure of the young population between immigration and emigration regions. The quality of human resources is the most crucial factor reflecting competitive capacity in the 21st century, but the quality of rural human resources in the Southeast region remains low, failing to meet the requirements for

transforming the economic model from extensive to intensive. The primary reason is the vocational training system, both generally and in rural areas, which is both insufficient and weak, emphasizing formality over practical training. The training content and quality do not meet market demands. International cooperation in educational and vocational training investment projects is the most feasible and effective solution, as it can overcome inherent weaknesses in domestic education and vocational training by leveraging the expertise and advanced training methods of foreign countries. Investment in general education should be based on the actual increase in the school-age population rather than the registered population, as immigration increasingly becomes the most critical factor determining the scale and structure of a locality's population.

Emphasize Rural Environmental Protection: Environmental protection, biodiversity restoration, reduction of waste discharge, and incorporating “green” criteria in production and life should be regarded as essential criteria in building new rural areas. Establishing self-managed communities that cooperate not only in mutual assistance in life but also in production and environmental protection is crucial for every family to contribute to building a sustainable community. This is a solid foundation for fostering sustainable cooperation, adapting to climate change, and developing cooperative models and community-based, eco-tourism models.

Preserve and Promote Traditional Rural Cultural Values: The intangible cultural values of the Southeast region, which are both representative of the nation and characteristic of the southern region, are tied to the natural conditions, history, and people of this area. The community spirit of the Southern people, particularly in the Southeast, is vividly expressed in their customs, habits, and interactions within the village. The Resolution No. 24-NQ/TW dated October 7, 2022, by the Politburo on the development of the Southeast region's socio-economy and the assurance of national defense and security until 2030, with a vision to 2045, proposes: “Building the Southeast region into a civilized, modern, and internationally integrated region. Develop rapidly, sustainably, and harmoniously among sub-regions and localities within the region; integrating economic, cultural, and social fields with ecological environment protection... Strongly promote the revolutionary historical traditions, culture, and self-reliance and resilience spirit of the 'Heroic and Resilient Eastern Region' in the construction and development of the region”. To preserve and promote the traditional values of the Southeast region during the renewal and integration period, it is necessary to further enhance propaganda and education to raise awareness and identify the good traditional values of the Southeast people. This will nourish each person's soul, transforming into the sense of responsibility of each citizen toward the nation's destiny. Strongly ignite and promote the spirit of patriotism and community solidarity, so every citizen truly becomes a “soldier on the front line of national construction and defense” to strengthen and solidify the “people's heart defense”.

5. CONCLUSION

Industrialization and modernization are the inevitable paths to lifting the country out of poverty and backwardness, improving the lives of the population. Over the past few decades, the agriculture of the Southeast region has made significant strides, enabling the majority of the rural poor to improve their lives and making the Southeast region a promising land in Vietnam.

However, rural areas are crucial for farmers, serving as the longstanding living space and being indispensable in forming and developing modern agricultural production. Therefore, it is necessary to build a comprehensively and sustainably developed new rural area linked to urbanization, ensuring it is substantive, profound, and effective, for the benefit of the people. This is a task that the authorities and relevant sectors in the Southeast region must always keep in mind during the process of industrialization and modernization.

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ENERGY MANAGEMENT PROGRAM FOR DIESEL POWER PLANTS: STRATEGIES AND BENEFITS

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ABSTRACT

The rapid growth of energy demand globally requires efficient and sustainable management of energy resources in residences, commercial hubs, industries, and even the generation sector, particularly in diesel power plants. This research study investigates and examines the development of an energy management program (EMP) adapted to diesel power plants to make operations more efficient, reduce environmental impacts, and optimize fuel consumption. The research begins with a comprehensive analysis of existing energy management practices at a specific diesel power plant and identifies key areas for development. Through a combination of empirical data collection, simulation models, and case studies, the study explores innovative strategies for integrating optimal energy management programs, predictive maintenance, and real-time energy monitoring technology. The proposed program aims to facilitate seamless integration with existing plant infrastructure and ensure minimal disruption during implementation. The study also examines the economic and environmental benefits of EMP, including potential savings, reduction of greenhouse gases, and compliance with international energy efficiency standards. The results emphasize the vital role of energy management in promoting sustainable power generation and energy conservation, which also provide practical insights and recommendations for policymakers, plant operators, and energy industry stakeholders.

Keywords: Energy management program; diesel power plant; energy efficiency.

INTRODUCTION

Energy management is a strategy for optimizing energy consumption while adhering to well-defined systems and procedures. When it comes to energy conservation, energy management refers to the process of monitoring, controlling, and conserving energy. The objective is to reduce energy costs and waste without compromising production or quality, as well as to mitigate environmental impacts.

In many parts of the world, managing energy savings is a difficult task. Many factors, including economic, environmental, and political, have a significant influence on energy management practices, leading to various reservations in making appropriate decisions. Energy management provides a standardized roadmap for organizational effectiveness, efficiency, and profitability. By using energy management techniques, energy and economic losses can be minimized and significant savings in fuel can be used for additional power generation.

2. LITERATURE REVIEW

2.1. Importance of Energy Management

Energy management is the best solution and constitutes a strategic area cost for direct and immediate reduction of energy consumption (Yacout, 2017). Given that energy is a limited resource, it is critical for countries to use the least amount of energy possible while maximizing

economic output. With energy management, we are able to deal with already existing sources and actual consumption and achieve minimizing use of energy and maximizing economic output and also reducing environmental impact (Türkođlu, S. P., & Kardođan, 2018).

2.2. Importance to Economics

Energy management is proven from time to time to be cost effective. Energy management, in most manufacturing, industrial, and commercial organizations, is one of the most promising profit improvement-cost reduction programs available today.

When an aggressive energy management program is launched, energy cost savings of 5-15 percent are typically realized quickly with little to no required capital expenditure. Savings of up to 30 percent are common, and savings of up to 50, 60, and even 70 percent have been achieved. These savings are all the result of retrofitting activities. New buildings designed to be energy efficient frequently use 20 percent of the energy required by existing buildings (resulting in an 80 percent savings) (B. L. Capehart, W. C. Turner, and W. J. Kennedy, 2020).

2.3. Importance to the National and Global Good

Global energy management programs are extremely important. One important reason is that energy management assists each nation in dealing with some of its most pressing issues. Global energy use continues to grow at a rapid pace (N. Aryal, L. D. M. Ottosen, M. V. W. Kofoed, and D. Pant, 2021). Furthermore, average world oil prices, according to Brent crude, climbed dramatically since 1970 (Capehart et.al, 2020) Climate change is one of the pressing issues the world is facing today. Carbon dioxide is the main contributor to global climate change, which is produced by the combustion of fossil fuel, primarily to provide transportation and energy services (Salim, R. A., Hassan, K., & Shafiei, S., 2014). The quickest, most effective, and cost-effective way of reducing fossil energy use is through renewable and energy efficiency. Reduction of ozone depletion and acid rain can also be achieved through this (Rosenfeld, A., McAuliffe, P., & Wilson, J., 2004).

2.4. Energy Management Systems

To successfully implement energy management within an organization, a simple-to-understand system must be implemented. Here are some of the characteristics of effective energy management (Lewry, 2013).

(1) Address management issues within the organization, with the resulting energy savings providing a competitive business advantage.

(2) Provide a structured approach as well as a framework for working.

(3) The outputs must provide a clear sense of direction for the organization and communicate the objectives to all stakeholders.

(4) The system should be easy to measure and monitor in order to maintain objectivity and reputation.

(5) Modern management philosophy is one of continuous improvement, in which any system must review and capture lessons learned before acting on them.

2.5. The “Five-Step-Plus” Approach

The Building Research Establishment (BRE) has advocated for a “five-step-plus” approach, in which the loop is closed by a review and audit step, the analysis of which results in a final step, the lessons learned. These are then fed into an improvement plan, which encompasses all aspects of the process and includes a change action plan. This strategy should be implemented once the energy management program has gained traction.

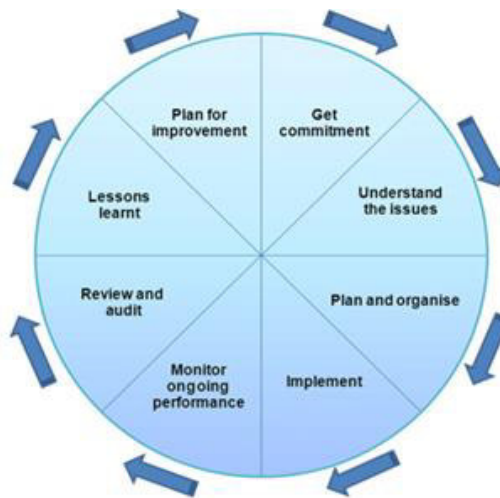


Figure 1. The Five-step-plus Approach

2.6. ENERGY STAR Guidelines for Energy Management

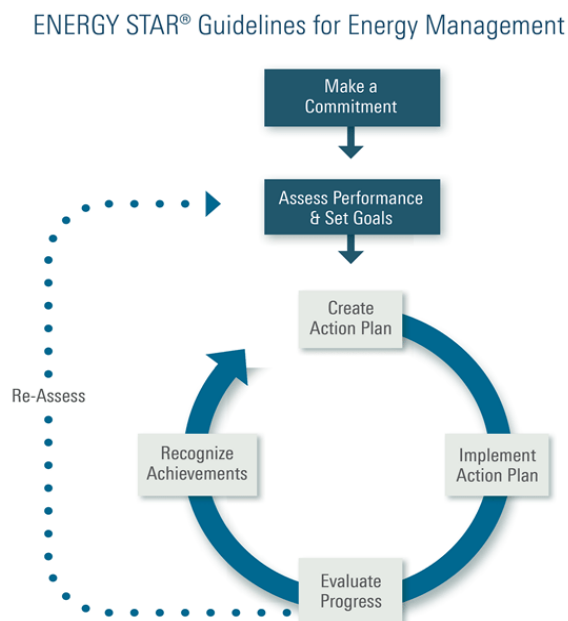


Figure 2. Energy Star Guidelines for Energy Management

Guidelines for Energy Management of the Energy Star are illustrated in the graphic. ENERGY STAR Guidelines for Energy Management provides a proven strategy for creating an energy management program focused on continuous improvement of energy performance. The process builds on the commitment organization's make when they become an ENERGY STAR partner.

2.7. The 360 Approach



Figure 3. The 360 Approach

Ocean's Energy Management Strategy investigates all aspects of an organization's exposure to energy-related risk and identifies cost-cutting opportunities. The 360 Approach of Energy Management Strategy is illustrated in Figure 1 as a continuous cycle. The 360° approach is defined specifically as an assessment of all energy-related risks to a facility/organization. After identifying the energy-related issues, the process of mitigating the risk of these issues equals the Energy Management Strategy.

3. METHODOLOGY

The study begins with data collection through a load audit and survey. Following that, the collected data will be analysed. Then, Energy Management Policies and Action Plan would be developed. After that, the potential savings associated with the implementation of the developed Energy Management Program will be determined. If the Energy Management Program is effective, the researcher will proceed to the results and recommendations section. Otherwise, the Energy Management Program should be revised.

Potential Savings of the Developed Energy Management Program

There are two ways to reduce energy consumption, either reduce the wattage of the loads or reduce their hours of operation. The energy consumption can be calculated using the following equation:

$$\text{Energy Consumption (kWh)} = \text{Load Watts (kW)} \times \text{Hours of Operation} \quad (\text{Eq. 3.1})$$

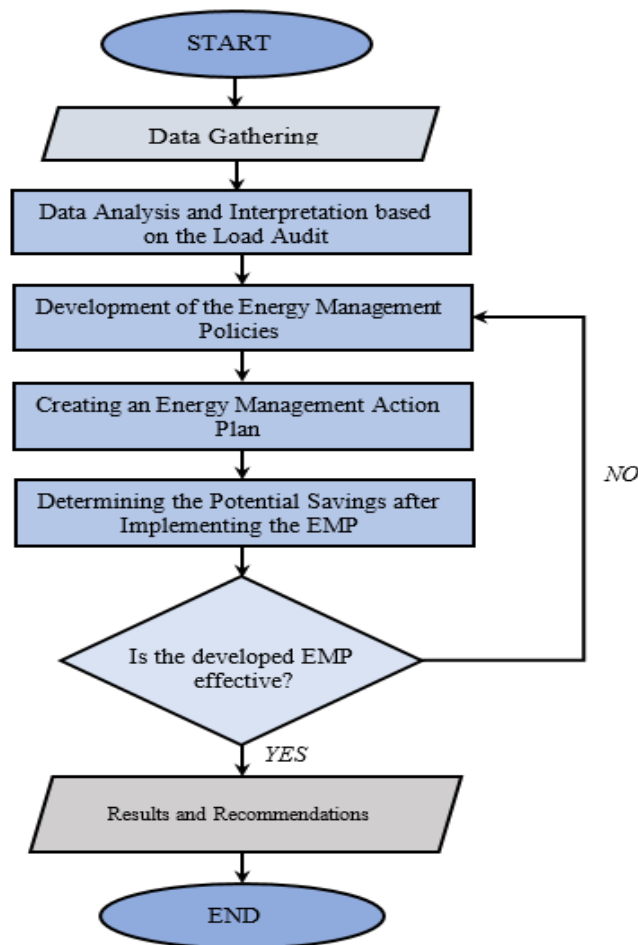


Figure 4. Research Flowchart

Base on the equation, the load wattage and hours of operation are directly proportional to the energy consumption. Therefore, reducing the wattage and hours of operation will reduce the energy consumption. This is the bases of the potential savings of the developed program. The hours of operation can be reduced through behavior-based programs. On the other hand, reduction of the load wattage can be achieved by replacing equipment with a more energy efficient counterpart or reducing the number of loads.

4. RESULTS

After the thorough load audit conducted in the Misamis Oriental Power Plant 1 of the King Energy Generation Inc. in Gingoog City, this chapter shows the results and discussion of the methods undertaken by the researcher to achieve the objectives of the study.

4.1. Load Audit Results

The quantity of lighting, appliances, computer systems, and other equipment are determined through a tally system. Presented in this section of the study are the results from the load audit that was conducted by the researchers on MOPP1. Figure 5, shows the total load audit data. The load

audit results will be categorized into 2 types. Type-1 will be focusing on the lighting, ACU, other equipment's and auxiliary equipment's that covers the electric bill consumption of MOPP1. And for Type-2 covers the auxiliary equipment's that does not affect the electric bill consumption of MOPP1. The data presented shows the total load percentage of MOPP1. Figure 8 shows that 50% of the plant's load are ACU loads, followed by auxiliary equipment at 24%, the lighting loads at 15%, and least are plug loads at 11%.

TYPE 1 MOPP1 TOTAL LOAD AUDIT

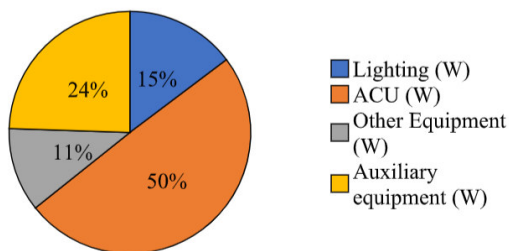


Figure 5. MOPP1 Total Load

The total load of MOPP1 and its percentage distribution of loads. The highest energy consumption for Type-1 load audit results is ACU which totals to 32,380 W of load. For auxiliary equipment which has a total load 16,000 W. The lowest load total is the other equipment, this includes the appliances and other equipment related present in every room which has a total load of 7332.5 W.

4.2. Energy Management Program

4.2.1. Lighting program

a. Utilize daylight

Inclusion: Substation Control Room, and Administration Building (Offices)

- Use daylight to replace some electric lighting near fenestration during substantial periods of the day.

- Remind personnel or office occupants to switch OFF office lights and utilize daylight. This can be done by putting stickers at the doors of each office.

- Open curtains and blinds during daylight hours or remove any obstructions from the window.

b. Perform lighting fixture maintenance on a monthly basis

Inclusion: All buildings

- An improvement in the maintenance factor can result in a 10% reduction in energy use [28].

- Lamps and their fixtures should be cleaned and dusted on a regular basis.

- All lighting systems deteriorate in performance during operation and therefore require constant maintenance. As the useful light delivered by a lighting system declines, the wattage remains constant, resulting in energy waste.

c. Replace sodium lamps with LED lamps for street lighting

Inclusion: Outdoor

d. Replace fluorescent lamps with a more energy efficient LED lamps

Inclusion: All buildings

- Replace T8/40W fluorescent with T8/20W LED lamps
- Replace T8/36W fluorescent with T8/18W LED lamps

4.2.2. Air condition unit program

a. Air Condition units should be turn off when not in use. If possible, turn off air condition units when the room is not used or vacant

Exclusions: Control Room, Switch Gear Room, Battery Room

- As the internal temperature of the components increase, their lifespan will decrease. Air condition units present in this room are operated 24hrs to avoid moisture and damages to the electrical components.

b. Establish schedule a precise schedule for the operation of air condition units in every room present

- Air conditioning units should start to operate after an hour or two prior to its usual operating schedules. It is advised to start operation starting 10am.

- Turn off all air conditioning units 30 minutes or more before leaving the room.

- Cut off of using air condition units by 5:00pm

c. Keep the room insulated. Optimized the air condition units by closing all windows and doors when the air condition units are operating

d. Replace all air condition units that has been operating for more than its service life [58]

- Modern air condition unit service is around 15-20 Years.

- Older air condition unit service is around 10-12 Years.

4.2.3. Plug loads program

a. All powered office equipment should be turned off or place on standby when not in use unless it is detrimental to the operation of the equipment to do so. Items such as copiers, printers, calculators, shredders, etc., should be turned off at the end of the workday.

b. Turn off desktop computers when not in used, most desktop computers consume energy when they are in idle or in sleep mode. This also applies to all equipment's present in the room or office.

c. Purchase of energy efficiency office equipment and other computer electronic to reduce heat output and energy consumption. This could be applied to old equipment and other computer electronic that uses more energy consumption.

4.2.4. Auxiliary equipments program

Under the Auxiliary Equipment Program will be categorized into two types, this reflects the load audit results.

(a) Type-1 auxiliary equipment program will focus more on the equipment that covers the electrical bill consumption of MOPPI.

(b) Type-2 auxiliary equipment program that is not covered by the electric bill consumption of MOPPI.

a. (a) All auxiliary equipment under categorized as Type-1 are online 27/4. This equipment should be monitored daily to avoid any underlying problems before they can have an adverse effect

b. (a)(b) Type-1 and Type-2 Auxiliary equipment should undergo maintenance weekly. There are three-types of maintenance to be done:

- Condition Base Maintenance: A maintenance strategy that monitors the actual condition of an equipment to decide what maintenance needs to be done.

- Corrective Maintenance: A maintenance tasks that corrects a problem with an equipment and returns it to proper working order.

- Periodic Maintenance: A maintenance to be performed on the equipment based on a set of time intervals.

Assessment of Potential Savings

For the potential savings, an assessment of potential savings of the program is involve using the phases discussed on the energy management action plan. This assessment could show the estimate of the potential savings on the programs. See Appendix for the detailed calculation of the potential savings.

Total Potential Savings

The table below shows the total potential savings of the energy management program. The utility cost effective rate of MORESCO-2 used for the calculation of the potential savings, as mentioned earlier, is Php14.7371/kWh. Potential savings can be achieved by reducing operating hours or the reducing the total load. The hours of operation can be reduced through behavior-based programs (Programs 1.1, 2.1, 2.2, and 3.1). On the other hand, reduction of the load wattage can be achieved by replacing equipment with a more energy efficient counterpart or reducing the number of loads, which are investment-based program (Programs 1.2, 1.3, 1.4).

Table 1 shows the total savings of the programs that are based on the behavior alone while the Table 2 shows the total savings from investment-based programs alone. Table 3 shows the overall total of the potential savings, which is Php1,271,564.532 annually.

Table 1. Total Savings from Behavioural Programs Alone

| Total Saving in Hours/Day | Total Savings in kWh/Day | Total Savings in kWh/Month | Total Savings in kWh/Year | Total Maximum Savings/Year (Php) |
|---------------------------|--------------------------|----------------------------|---------------------------|----------------------------------|
| 26.5 | 140.11 | 4203.21 | 51139.06 | 753641.37 |

Table 2. Total Savings from Investment-Based Programs Alone

| Total Reduction of Load in kW | Total Savings in kWh/Day | Total Savings in kWh/Month | Total Savings in kWh/Year | Total Maximum Savings/Year (Php) |
|-------------------------------|--------------------------|----------------------------|---------------------------|----------------------------------|
| 6.2188 | 96.2854 | 2888.562 | 35144.17 | 517,923.1624 |

Table 3. Overall Total Savings of all Programs

| Total Savings in kWh/Day | Total Savings in kWh/Month | Total Savings in kWh/Year | Total Maximum Savings/Year (Php) |
|--------------------------|----------------------------|---------------------------|----------------------------------|
| 236.3954 | 7,091.772 | 86,283.23 | 1,271,564.532 |

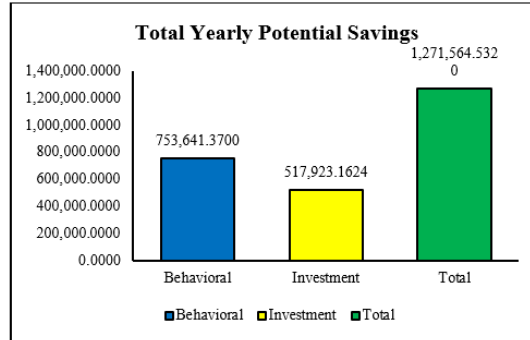


Figure 6. Total Potential Savings

When the energy management program is implemented, a total potential savings is Php1,271,564.532.

5. CONCLUSIONS

Energy management is one of the most effective approaches to reducing an institution's direct and immediate energy use. The Misamis Oriental Power Plant 1, a peaking power plant, of the King Energy Generation Inc. can benefit from the implementation of an energy management program. The facility has recorded huge energy usage from 2019 to 2021 as seen from their monthly utility bills, ranging from Php117,861.48 to Php207,081.26 with an average growth rate of 4.26%. Through the walk-through audit conducted by the researchers, it was shown that 50% of the plant's load are ACU loads, followed by auxiliary equipment at 24%, the lighting loads at 15%, and least are plug loads at 11%. Furthermore, the energy utilization of each building was determined and it shows that the highest consuming building is the Power House, with ACU loads as the highest consuming load. From the estimation of the total potential savings, the MOPPI can save up to Php1,271,564.532 annually based on the programs developed.

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IMPACT OF MIGRATION ON SUSTAINABLE DEVELOPMENT IN VIETNAM IN THE PERIOD 1989 TO 2023

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ABSTRACT

Migration is a topic of concern for many countries. The United Nations 2030 Agenda for Sustainable Development has recognized migration as a core development consideration. In Vietnam, about 13,6% of the population are migrants. By synthesising secondary data, the study shows that migration affects Vietnam's sustainable development positively and negatively. Regarding positive impacts, migration helps increase GDP, urbanisation, and reasonable economic restructuring in terms of economic sustainable development; migration helps reduce inequality, increase the labor market balance, reduce poverty in terms of socially sustainable development. However, on the negative side, migration causes many pollution problems, population explosion, increased social evils, and burdens on public spending... in all three problems of sustainable development. To promote positive impacts and limit negative impacts, the government needs to have policies and plans that include migration factors, enhance social security solutions for migrants, encourage legal migration, and limit unnecessary migration.

Keywords: Migration, sustainable development, positive and negative.

1. INTRODUCTION

Migration is the clearest evidence of uneven development between regions within a country and territories within a continent. Migration has become a strategy for people to improve their livelihoods and access to good education, health care, modern culture.

Migration is formed by the shift from rural to urban areas or from agricultural areas to other areas, contributing to economic restructuring and directly affects the variables measuring the economy achievements (Taylor & Phillip, 2001; ILO, 2021). The United Nations 2030 Agenda for Sustainable Development has recognized migration as a core variable. Recognizing the impacts of migration on socio-economic issues will help the country makes appropriate adjustments to the sustainable development (Nguyen, 2018).

Since the Doi Moi period, Vietnam has witnessed increased migration, including both internal and international flows. Vietnam has had a strong rural-urban migration due to rapid industrialization and urbanisation. Cities such as Ho Chi Minh City, Hanoi, and surrounding provinces attract many young people (aged 20-39) and highly educated people looking for better jobs and higher wages. According to the 2019 Population Census (GSO & UNFA, 2020), there were more than 6,4 million internal migrants, of which women accounted for a significant

proportion (55,5%). Vietnam has a long history of emigration, especially after the war. According to incomplete statistics, there are about 5,3 million Vietnamese living abroad.

Migration significantly impacts sustainable development in Vietnam, both positively and negatively on economic, social, environmental sectors. For positive impacts, migration contributes to Vietnam's economic growth, reduce unemployment or underemployment, development of human resources, contributing to increasing the urbanisation rate and promoting economic restructuring towards modernization (Nguyen et al, 2011; GSO & UNFA, 2020). However, migration also causes many negative impacts on sustainable development such as creating disparities, imbalances in social structure and economic development levels between rural and urban areas, putting pressure on environmental issues, and causing cultural and social disruption (Bui et al, 2022; Do, 2024).

The study uses secondary data collected from the population and housing censuses of the General Statistics Office of Vietnam, data collected from the International Organization for Migration, and reports on economic development and social issues of Vietnam... to demonstrate the two-way impact of migration on sustainable development in Vietnam.

2. LITERATURE REVIEW

Migration and its impacts are a topic of interest to many scholars both domestically and internationally. However, there are not many studies that clearly demonstrate or explain the relationship between migration and sustainable development because the approaches to sustainability are diverse with many different perspectives.

2.1. Positive Impacts

For economic sectors, recent studies have shown that migration contributes to overall economic development. The improvement of labour and the concentration of skilled, talented, and educated labour, migration creates economic agglomeration and increases the value of gross domestic product (GDP) due to the spillover effects of remittances, technology, and knowledge that migrants transfer to their original place of residence through income, expenditure, and reinvestment activities (Olusegun, 2017). Normal migration flows occur from rural to urban areas, from low-income to high-income areas, and from agricultural to non-agricultural areas. This creates a positive shift in labour that will increase the overall labour productivity and income of the economy, thereby determining the wealth of nations (McMillan & Robdrik, 2011). Since the 1970s, economic structure and migration have been addressed by several researchers, represented by Sanders & Brown (1981).

For social sectors, migration is also the cause of the spatial division of labour, combined with the transformation of the production process from traditional production to assembly line production, new economic initiatives focusing on niche markets, the trend of transnational circulation, and changes in the organisation of labour markets and communication systems leading to changes in the labour structure, which in turn leads to inevitable changes in the economic structure (Brown & Goetz, 1997).

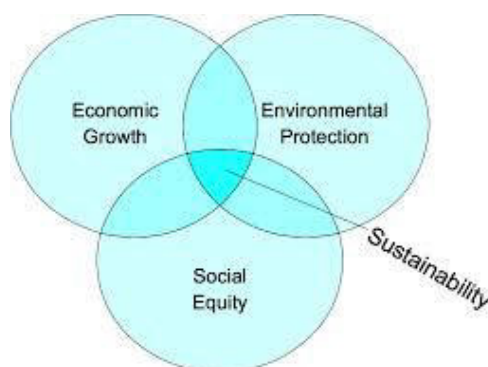
2.2. Negative Impacts

For the social factors, spontaneous migration and unorganised seasonal labour migration from rural to urban areas are very common and have caused a shortage of labour in agricultural production in rural areas (Dustmann & Preston, 2015). On the contrary, in urban areas, unemployment has increased because some immigrants have taken jobs from local people due to cheaper labour costs. Otherwise, downside of migration is “social disruption”. “Social disruption at the family level” is a phenomenon that occurs when there is urban migration or migration abroad, causing separation between family members, deeply affecting family life, relationships and customs

For environmental factors, migrant contribute to increasing environmental pollution in the place of immigration. Among the causes of environmental pollution, population growth, including the presence of migrant workers, is one of the main reasons leading to this pollution (Garling, 1998). Environmental pollution behaviours (land, water, air, noise, etc.) such as littering in public places, smoking in public places, using many personal vehicles, and discharging untreated wastewater, etc. of migrant workers more or less make the environment in the place of immigration more serious.

For economic factors, migration from rural areas to cities causes the transport infrastructure and urban landscape to be disrupted, affecting the goal of building a civilized and modern urban area. When the number of immigrants to cities is large, along with the corresponding increase in means of transport, the urban transport infrastructure cannot keep up, causing traffic jams and congestion in most urban areas, many other consequences such as noise pollution, traffic accidents, environmental pollution... are some of the challenges of urban areas (Nguyen, 2018).

3. METHODOLOGY



Source: Agyeman & Evans (2003).

This study based on high reliability data which collected from the population and housing census conducted by the General Statistics Office (GSO) with technical support from the World Bank and UNFPA in Vietnam. In addition, information from books, newspapers and magazines on migration and its relationship with sustainable development in Vietnam from previous studies is systematized in this study. The study also uses descriptive and comparative statistical methods

and Difference-in-Differences (DiD) to assess the relationship between migration and sustainable development in Vietnam through examining the sustainability of development in three aspects: economic, social, and environmental.

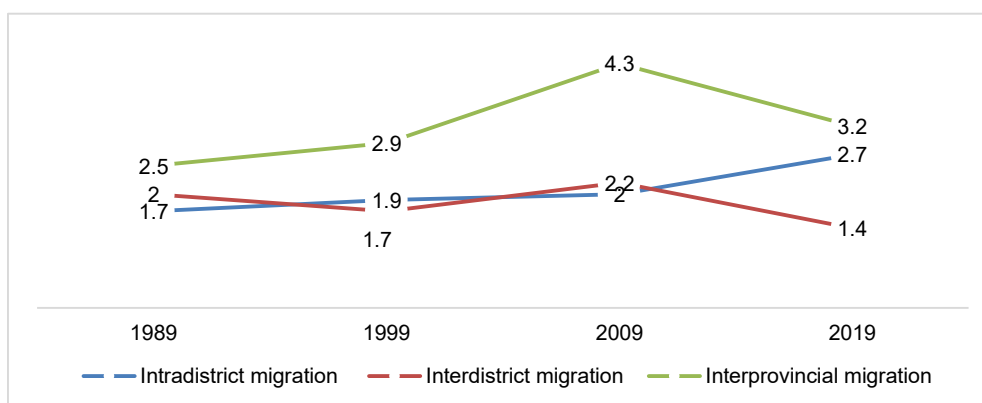
4. RESEARCH RESULTS

4.1. Overview of migration in Vietnam

4.1.1. Internal migration

Although Vietnam's population has been increasing steadily and reached over one hundred million people, migration has shown signs of decreasing both in quantity and rate in the period 2009-2019, in contrast to the previous period 1989 - 2009, when all three types of migration (intra-district, inter-district and inter-provincial migration) recorded an increasing trend (Figure 1). Thus, it can be seen that the development is relatively even among regions/areas/localities of Vietnam in the recent period (GSO & UNFA, 2020).

Migrant jobs seem to be more suitable with women. In Vietnam, the feminization of migrant labor continues and although the trend is decreasing, the female migration status is always high, but there is an adjustment to this difference as women tend to choose to work closer to home to take care of their families. In the two periods 1999 - 2009 and 2009 - 2019, there was an increase and decrease in the ratio of women to male migrants, respectively.



Source: GSO & UNFA (2020).

Figure 1. Rate of migrants by types of migration, 1989-2019 (Unit: %)

In Vietnam, there are many reasons for migration such as government policies, marriage, and education. However, employment is the main reason for migration with 36.8% of migrants citing this reason in the 2019 survey. The Southeast region - where there are many job opportunities - has attracted more migrants than other regions of Vietnam with 50.3% of people coming here to live for this reason (GSO & UNFA, 2020).

4.1.2. International Migration

International migration is a common trend in Vietnam due to two reasons: push factors (lack of jobs, low income, poor infrastructure, underdeveloped education and health care...) and pull factors (economic development, advanced health care education, decent infrastructure, good social

welfare...). These types of migration can be temporary or permanent but contribute to sustainable development in Vietnam (Nguyen, 2022).

Nguyen (2022) in his study stated that Vietnam's international migration has been recorded for a long time, but most clearly began in the 19th century. The number of Vietnamese people working abroad has increased over time. According to the Department of Overseas Labor Management (Ministry of Labor, War Invalids and Social Affairs), the total number of Vietnamese workers working abroad in 2023 was 159.986, reaching 133,3% of the plan.

Table 1. Labour exports in 2023

| No | Destination | Total (worker) |
|----|-------------|----------------|
| 1 | Japan | 82.829 |
| 2 | Taiwan | 58.620 |
| 3 | Korea | 11.626 |
| 4 | China | 1.869 |
| 5 | Hungary | 1.683 |
| 6 | Other | 14.329 |
| | Total | 159.986 |

Source: Nguyen (2022).

Besides labour export, marriage migration also accounts for a large proportion in Vietnam. According to the Vietnam Institute for Gender and Family Studies (2015), more than 257.555 Vietnamese people (80% female) married foreigners and moved outside Vietnam from 1995 to 2010. In 2016 alone, the number of transnational marriages of Vietnamese people reached 16.233; of which 83% were female (IOM, 2017). Countries with a tendency to marry Vietnamese people are Taiwan, South Korea, Germany, the United States, Canada, France, Australia and Sweden. Transnational marriages also contribute to the opposite impact on Vietnam in its socio-economic approach.

Another increasingly popular international migration trend in Vietnam is studying abroad. Nguyen (2022) reported that the number of Vietnamese students studying abroad increased from 125,000 in 2013 to 170,000 in 2018. The countries where Vietnamese students study the most are the United States, Japan, Australia, France, the United Kingdom. The majority of students study undergraduate programs (43%), language courses (30%), master's degree programs (20%) and other study programs.

4.2. The impact of Migration to sustainable development in Vietnam

4.2.1. Positive Impacts

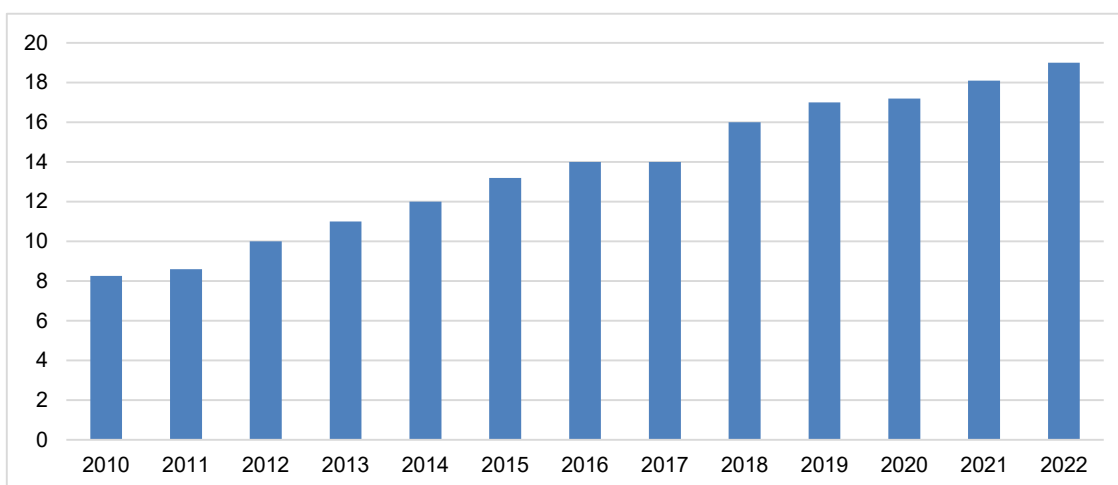
a. Economic factors

The relationship between migration and development is widely acknowledged to be complex, and many commentators argue that there is a lack of solid information about how migration impacts development.

- Remittances

Migrants often send remittances back to their families in Vietnam, which can boost household incomes, reduce poverty, and increase spending on health, education, and other necessities. This flow of funds can stimulate local economies and support development projects.

Remittances are a source of welfare for origin countries. In Vietnam, remittances represent an important source of external funds for economic development. Recently, the flow of money sent back from Vietnamese who are working or living abroad to their homeland has been increasing rapidly. General Statistics Office data shows the remittances in Vietnam within 13 years, from 2010 to 2022 from in figure 2. The amount of remittances has been growing steadily over recent years. In 2010, the total value of remittances was reported to reach \$ 8,2 billion, which is about half of the value in 2018 (\$ 16 billion), and the total value of remittances was nearly \$ 19 billion, equaling 4,6% of the country's GDP in 2023. Recently, the flow of remittances has been increasing rapidly.



Source: GSO (2023).

Figure 2. Vietnam's remittances from 2010-2022 (Unit: Billion dollars)

Remittances are an extremely important source of foreign currency to ensure the balance of foreign currency supply and demand, contributing significantly to the implementation of monetary policy, exchange rates, and interest rates in the context of considerable pressure on exchange rates and interest rates. At the same time, it is a positive signal of financial resources to help Vietnam offset and reduce the impact of the country's economic recession.

- Economic growth and development

Twelve out of 63 provinces and centrally-run cities recorded positive net migration rates, these provinces all had good economic growth rates such as Bac Ninh, Binh Duong, HCM city with net migration rates of 41,7‰; 30,8‰ and 21,8‰ respectively while Dong Thap, An Giang, Soc Trang was the province with the highest negative net migration rate-23,7‰; -22,9‰ and – 20,9‰, correspondingly it was also the province with the low economic growth rate and GDP in the country (Table 2).

Table 2. Relationship between net migration rate and GDP in 2023

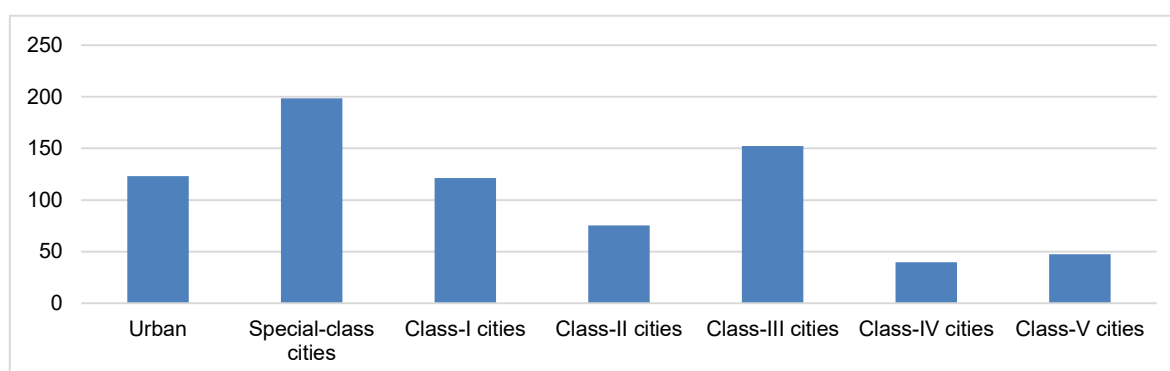
| Positive | | | Negative | | |
|------------------|------------------------|---------------------|-----------|------------------------|---------------------|
| Province | Net migration rate (%) | GRDP (billion dong) | Province | Net migration rate (%) | GRDP (billion dong) |
| Bac Ninh | 41,7 | 248,376 | Dong Thap | -23,7 | 100,184 |
| Binh Duong | 30,8 | 459,032 | An Giang | -22,9 | 133,533 |
| Ho Chi Minh city | 21,8 | 1.497 | Soc Trang | -20,9 | 49,349 |

Source: GSO (2023).

- Urbanisation and Infrastructure Development

Migration from rural to urban areas can drive urbanisation, which can lead to the development of better infrastructure, services, and housing. This can create a more conducive environment for businesses and industries, furthering economic growth.

There is a strong relationship between migration and urbanisation. Migration (only immigrants) accounts for 12,3% of the urban population or 4,9 million persons. Administrative factors also contribute to urbanisation and account for 26,4% of the urban population or 10,4 million persons.



Source: GSO & UNFA (2020).

Figure 6. Immigration rate by types of city (Unit: %)

Rural-to-urban migration in Vietnam has significant implications for urbanization and economic development. It plays a crucial role in enhancing infrastructure, services, and housing in urban areas. According to the General Statistics Office of Vietnam, the country had approximately 6,4 million migrants in 2019, accounting for about 7,3% of the population aged five and older. This migration trend is primarily driven by the pursuit of better employment opportunities, contributing to the economic vitality of urban regions.

b. Social factor

- Labor Market

Migration also has a strong impact on the labour market and helps to balance it. Migration can alleviate unemployment and underemployment in rural areas by providing work opportunities

elsewhere. It can also help fill labour shortages in urban areas or specific industries, contributing to economic growth. In the 1999 and 2009 Censuses, the Southeast is the region with the highest net migration rate in the country (20.3%), which is also the region that needs the most labor due to the presence of many factories, enterprises, industrial parks and urban areas. Meanwhile, the lowest rate is in the Northern midlands and mountainous region (4.3%) where there is little employment and a surplus of labor. However, in 2019, the Central Highlands shifted to become an outmigration region; the Red River Delta and the South East have the highest in-migration rates. The South East continues to be the most attractive destination for migrants with 1,3 million persons.

- Improve the quality of human resource

According to the 2019 Population and Housing Census (GSO & UNFA, 2020) most migrants are young (20-39 years old), accounting for about 61.8%. The average age of migrants is 28 years old.

Migrants who return to Vietnam bring back new skills, knowledge, and experiences that can contribute to local economic development and innovation. This transfer of skills can enhance productivity and improve business practices. In the world bank report "Migration in Vietnam: new evidence from recent survey" by Ian & Nguyen, Vu (2015) confirmed that a significant number of Vietnamese return migrants possess skills and knowledge acquired abroad, which can substantially contribute to local economic development. A World Bank report highlights that approximately 2,3 million Vietnamese migrants return home each year, often bringing valuable skills that can enhance productivity and drive innovation in local businesses. Additionally, data from 2010-2012 reveals that around 22,7% of individuals who migrated for work within that period had returned, reflecting more recent economic trends and migration decisions. These individuals tend to be positively selected based on education, with higher levels of education correlating with their likelihood of migration.

- Reduce the poverty

Migration has a strong impact on poverty reduction through remittances from migrants both domestically and internationally. On average, about 21% of poor households have migrants. Remittances not only meet consumption needs but also serve the needs of health care, education and production investment (Le Quoc Hoi & Nguyen Thi Hoai Thu, 2019).

4.2.2. Negative Impacts

a. Social and Economic Factors

- Rural-Urban Divide

Migration can exacerbate inequalities between rural and urban areas, with rural areas often experiencing a depletion of human resources, especially among the young and skilled population. This can hinder rural development and increase poverty and inequality.

The research by To, Nguyen, and Nguyen (2023) with topic "The impact of FDI, trade openness and migration on income inequality in developing countries" mentioned that migration has a positive impact on GINI with a probability of 58,69%, meaning that migration can push income inequality higher. This is argued that due to the high initial cost of migration in

communities with little experience in migration, only families with relatively high-income levels can afford to send members abroad. Later, these families will also benefit from remittances, so inequality will increase.

The results of the 2015 Vietnam Internal Migration survey (GSO, 2015) showed that the migration flow stems from the difference in living standards between rural and urban areas and job demands. Internal migration causes a brain drain in rural areas, with many people with qualifications and skills in rural areas gradually moving to the city. The proportion of migrants with technical expertise is higher than that of non-migrants (about 31,7% compared to 24,5%). The proportion of migrants with college, university, or postgraduate degrees is 23,1%, while the proportion of non-migrants is 17,4%. This difference is partly due to the impact of the younger age structure of the migrant group compared to the non-migrant group. Many young people migrate to urban areas because there are more training facilities to continue studying at higher levels.

- Access to Services

Migrants, particularly those who are undocumented or informal, may face challenges accessing essential services such as healthcare, education, and social security. This can lead to disparities in well-being and social exclusion.

Immigration pressure on jobs, housing, and social security is highest in the special-class cities of Ha Noi and Ho Chi Minh City. There are nearly 200 immigrants per every 1.000 people living in the special-class cities; 2,7 times higher than the national average and 5,3 times higher than that of the rural areas.

Monograph of the 2019, Population and Housing Census shows that Migrants to urban areas face difficulties even with housing issues, as the average housing area per capita of migrants is lower than that of non-migrants (21,9m²/person and 25,4m²/person, respectively). In particular, nearly half of migrants still have to rent/borrow houses to live, mainly renting/borrowing from private individuals. Migrant children are more disadvantaged than non-migrant children in accessing education, especially at the lower secondary and upper secondary levels. Over the years, the proportion of migrant children aged 11-18 who are attending school is always lower than the proportion of non-migrant children aged 11-18; typically, in 2019, 83,9% of non-migrant children aged 11-18 were currently attending school, while only 55,7% of inter-provincial migrants in this age group were attending school. In addition, the negative impacts of global climate change are also exacerbating urban challenges and directly affecting people, including vulnerable migrant groups.

Research by Nguyen (2022) showed that migrant workers in Vietnam, especially those without formal contracts, face significant barriers in accessing essential services such as healthcare, education, and social security. Studies indicate that a substantial number of these workers experience food insecurity, with approximately 46% of informal workers reporting moderate to severe food insecurity. In contrast, those in formal employment benefit from some level of government support, yet still encounter challenges related to bureaucratic processes.

- Family Separation

Migration often involves family separation, which can have social implications, such as the disruption of family structures, changes in caregiving arrangements, and psychological impacts on children and the elderly.

Bui et al (2022) in the report with the topic “ The Social Impact of Labor Migration to the Stayer. Case study in Thanh Hoa Province” highlighted the absence of parents profoundly affects the care and education of children, resulting in increased responsibilities for grandparents. In families with migrant workers, grandparents often assume the daily task of escorting children to school (57,8%), whereas this rate is significantly lower at 22,7% in non-migrant households. This indicates a notable shift in family structure and educational roles due to labour migration. The impact of labour migration is notably evident among children, particularly in their reliance on relatives when facing bullying at home and school. Specifically, 71% of children in families with migrant workers often seek assistance from their grandparents when bullied at home. In contrast, children in families without migrants primarily depend on their parents (47,2% at home and 20,5% at school). Regarding healthcare; 62,8% of children from migrant households are taken to medical appointments by their grandparents, which is significantly higher than the 58,2% for children in non-migrant households. 95,4% of children in families without migrants receive direct medical care from their parents, compared to just 25.5% in migrant families. Notably, the incidence of corporal punishment among children in migrant families has significantly decreased (10,8%) compared to those in non-migrant families (61,4%). Additionally, the rate of children regularly visiting their parents at work stands at only 7%, while 17% visit during summer holidays, primarily due to the constraints of their parents' time and conditions.

b. Environmental Factors

- Urbanization and Environmental Stress

The rapid urbanisation driven by migration can lead to increased pressure on urban infrastructure and the environment, including issues like air and water pollution, waste management problems, and the loss of green spaces. This can have long-term effects on environmental sustainability.

In the article “Migration from other provinces to Hanoi - issues and solutions” Dinh (2010) affirmed: The increase in means of transport and the urbanization process along with the development of industry have increased toxic gases, causing air pollution... Pollution in areas near factories and main traffic routes exceeds the permissible limit, dust exceeds the standard by 4-10 times, CO₂, NO₂ by 2-4 times, SO₂ by 3-5 times.

According to the research of Do (2024) in Ho Chi Minh City mentioned that the large number of immigrants makes the living environment suffocating. The lack of clean water for daily life, air pollution, noise... especially household waste is increasing; untreated waste from industrial parks and clusters has put great pressure on the environment. For example, Xuyen Tam canal (starting from Nhieu Loc - Thi Nghe canal) is 8,2km long, the system includes Cau Bong canal, Cau Son canal, Long Van Tu canal, Lang canal passing through two districts Binh Thanh, Go Vap and the end point is Vam Thuat river. This canal has all kinds of pollution, reducing the number of immigrants living and dumping garbage into the canal. Many households have had to accept living

in makeshift stilt houses along Xuyen Tam beach for more than 20 years, surrounded by garbage and all kinds of other waste that can affect their health.

5. CONCLUSION

Migration is an important component to promote sustainable development such as contributing to GDP through remittances, allocating labor reasonably between regions, promoting urbanization, improving the quality of human resources from returning workers... However, migration also brings many problems that hinder sustainability such as creating pressure on infrastructure, environment, and family distance.

To harness the positive impacts and mitigate the negative effects of migration on sustainable development, Vietnam can consider several policy approaches (1) Ensure that urban planning and infrastructure development are inclusive and sustainable, taking into account the needs of migrants and the local population. (2) Invest in rural development to reduce the push factors of migration, such as poverty and lack of opportunities, and to ensure balanced regional development. (3) Strengthen social protection systems to provide migrants with access to essential services and protect their rights, regardless of their legal status. (4) Implement policies that promote sustainable resource use and environmental protection, particularly in rapidly urbanising areas. By addressing these factors, Vietnam can better manage migration and leverage it as a driver of sustainable development.

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GROUND-LEVEL OZONE POLLUTION IN MALAYSIA: DESCRIPTIVE ANALYSIS AND CLASSIFICATION USING HIERARCHICAL CLUSTERING

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ABSTRACT

Tropospheric ozone, a critical air pollutant, plays a significant role in determining ambient air quality. It forms through a photochemical reaction between sunlight, volatile organic compounds (VOCs), and nitrogen oxides, earning it the label of a secondary pollutant. Beyond its impact on human health, ozone also poses a threat to the environment and vegetation. This study, conducted from 2018 and 2022, analyzed hourly average ozone (O₃) concentrations across 46 air quality monitoring stations in Malaysia. Mean, standard deviation, skewness, and kurtosis were employed to understand the characteristics of ground-level ozone concentrations. Using Agglomerative Hierarchical Cluster analysis, the stations were grouped into three clusters based on the mean hourly average O₃ concentrations: High Pollution Region (HPR), Medium Pollution Region (MPR), and Low Pollution Region (LPR). Interestingly, some suburban stations, typically expected to have lower pollution levels, recorded higher O₃ readings and were categorized in the high pollution cluster. By clustering the monitoring stations into these three groups, future research can benefit from a more focused assessment of air quality, reducing the complexity of monitoring and enhancing the effectiveness of pollution management strategies.

Keywords: Air pollution, cluster analysis, Ground-level ozone.

1. INTRODUCTION

In today's fast-paced world, air quality is a major concern for both developed and developing countries. According to the World Health Organization (WHO), air pollution is a serious health and environmental issue, leading to millions of deaths and loss of healthy life every year due to exposure (World Health Organization, 2023). In Malaysia, environmental issues weren't taken seriously until the haze problem in Southeast Asia in the 1980s. Recognizing the impact on human health and the environment, the Malaysian Department of Environment (DOE) introduced the Malaysia Ambient Air Quality Guidelines (MAAQG) in 1989 to define harmful levels of air pollutants (Rani et al., 2018). In 2013, the MAAQG was replaced by the New Ambient Air Quality Standard, which updated the concentration limits for pollutants and added a new parameter. The six parameters now include ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulphur dioxide (SO₂), particulate matter less than 10 microns (PM₁₀), and the newly added particulate matter less than 2.5 microns (PM_{2.5}). The Malaysia Air Quality Index (MAQI) was the first system established by the Department of Environment (DOE) in 1993 to report air quality status to authorities and the public. In 1996, the DOE updated this system and introduced the Air Pollutant Index (API), which is based on the United States' Pollutant Standard Index (PSI). The API reflects the air quality status and is displayed on the Air Pollution Index Management System (APIMS) and the DOE website.

The API is calculated using the concentrations of six main pollutants: ground-level ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter less than 10 microns (PM₁₀), and particulate matter less than 2.5 microns (PM_{2.5}) (Mohd Halim et al., 2022). The air quality is then classified as good, moderate, unhealthy, very unhealthy, or hazardous.

Each air pollutant affects human health differently, with impacts ranging from mild to severe depending on the length of exposure (Chen et al., 2017). Short-term exposure can cause mild symptoms like eye irritation or worsen pre-existing conditions such as asthma and chronic obstructive pulmonary disease (COPD). However, long-term exposure can lead to more serious health issues, including death. In 2019, the Malaysia Ministry of Health reported that respiratory illnesses caused by poor air quality were responsible for about 10,600 deaths, or 14.8% of all deaths, making it the second leading cause of death after cardiovascular diseases (Centre for Research on Energy and Clean Air, 2022).

According to the United States Environmental Protection Agency (USEPA), air pollution sources can be natural or human-made, emitting gases and particles into the air. Human activities, known as anthropogenic sources, include industrial activities, vehicle emissions, construction, use of chemical products like paints, power plants, and open burning. Natural sources include biogenic emissions from plants and microbial decomposition, as well as geogenic emissions from volcanoes, wildfires, and lightning, which contribute to the formation of pollutants like carbon dioxide (CO₂), sulfur dioxide (SO₂), carbon monoxide (CO), and ozone (O₃).

In Malaysia, industrial activities are the main contributors to air pollution, especially in urban areas. In 2021, there were 13,989 industrial sources of air pollution in the country (Department of Environment, 2022). The aims of this research are to compare the characteristics of ground-level ozone (O₃) concentrations in Malaysia using descriptive statistics based on the locations of monitoring stations and to classify the stations according to these characteristics.

2. LITERATURE REVIEW

Air pollution is an escalating global concern that demands urgent and comprehensive action from human society. The World Health Organization (WHO) has revealed alarming statistics indicating that the air inhaled by 99% of the global population exceeds safe guideline limits. This widespread issue is largely attributed to industrialization and urbanization, as evidenced by recent studies. The situation is particularly dire in low- and middle-income countries, where rapid economic growth and urban expansion have severely compromised air quality (World Health Organization, 2023).

In the pursuit of economic development, many nations have experienced a significant decline in air quality, driven by the emission of various pollutants. Malaysia, a developing country undergoing rapid industrialization and urbanization, mirrors this trend. The country's growing population has led to an increased demand for industrial production, transportation, and energy generation, all of which contribute to air pollution (Jaffar et al., 2018). The pollutants released from these activities, particularly from industrial processes and vehicle emissions, directly enter the atmosphere, exacerbating pollution levels.

Air pollution is typically defined as the presence of pollutants in the atmosphere at concentrations that pose a threat to human health. The gravity of this issue is underscored by the fact that air pollution is responsible for approximately seven million premature deaths worldwide each year. Research has shown that 11.65% of global deaths, particularly in low-income countries, are linked to air pollution, highlighting the disproportionate burden borne by these regions due to limited resources to combat pollution (Babatola, 2021).

Air quality is primarily determined by the concentrations of six key pollutants: particulate matter (PM₁₀ and PM_{2.5}), ground-level ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), and nitrogen dioxide (NO₂) (DOE, 2022). Among these, the concentration of ground-level ozone has become increasingly important due to its significant health risks compared to other pollutants (Sicard, 2021). Ozone, a secondary pollutant, is formed through the reaction of volatile organic compounds (VOC) and nitrogen oxides (NO_x) with solar radiation. The harmful effects of ozone are well-documented, as seen in China, where 89,391 premature deaths were reported in 2014 due to chronic obstructive pulmonary disease (COPD) caused by ozone exposure (Xu, 2021). Ozone exposure not only poses a threat to human health but also damages materials, plants, and trees (Ramya et al., 2023). Furthermore, research indicates that ozone levels and related mortality rates are highest in Asian and African cities, although even high-income regions like North America and the Asia Pacific experience significant ozone concentrations and associated health impacts (Malashock et al., 2019).

The factors contributing to air pollution can be broadly categorized into socioeconomic and natural meteorological factors. Socioeconomic factors include government policies on pollution control, economic scale, city size, industrial organization, and traffic intensity. Natural meteorological factors encompass temperature, humidity, air pressure, wind speed, and precipitation. For instance, changes in meteorological conditions can significantly influence ozone formation. High temperatures, often associated with intense sunlight, promote the chemical reactions that produce ozone, leading to increased concentrations (Li et al., 2017). Conversely, lower temperatures can inhibit these reactions, reducing ozone levels. Wind patterns also play a crucial role in the dispersion of ozone and its precursors, affecting pollution levels across different regions (Liu, 2022).

In Malaysia, the increasing concentrations of ozone are particularly concerning. Data from the Department of Environment (DOE) in 2021 revealed a 28.15% increase in the number of vehicles compared to 2021, while emissions from power plants, a significant source of NO₂, recorded the highest readings at 67%. Although there was a slight decrease in the annual average concentration of ozone compared to 2021, the levels remain concerning when compared to the Malaysian Ambient Air Quality Standards (MAAQS) (Department of Environment, 2022).

The characteristics of ground-level ozone are heavily influenced by meteorological factors. For example, temperature plays a significant role in ozone dispersion. Low temperatures reduce the chemical reactions necessary for ozone formation, while high temperatures, coupled with increased sunlight, significantly boost ozone production. Studies have shown that ozone levels peak around 2:00 PM when human activities, motor vehicle emissions, and sunlight are at their highest, and then gradually decrease by 9:00 PM as solar radiation diminishes (Rafee et al., 2023). Wind also acts as a transporter of ozone and its precursors, further affecting pollution levels

depending on wind speed and direction (Liu et al., 2022). The DOE's 2022 report noted that ozone concentrations were particularly high in suburban areas due to the downwind effects of pollutants from industrial and vehicular emissions.

Effective air quality monitoring is crucial to addressing the health impacts of air pollution. In Malaysia, there are 65 air quality monitoring stations and three mobile monitoring stations (Department of Environment, 2022). However, the vast amount of data generated can make it challenging to accurately interpret the current air quality status. To improve monitoring efficiency and reduce costs, air quality monitoring stations can be grouped into clusters based on similar characteristics. This approach not only enhances the management of public health risks but also optimizes the use of resources.

Clustering analysis is a valuable technique for organizing monitoring stations into smaller groups based on shared characteristics. This method allows for a more efficient analysis of air quality data, making it easier to identify patterns and assess the status of air pollution (Govender & Sivakumar, 2020).

In conclusion, air pollution remains a critical global challenge, with ozone pollution posing significant risks to both human health and the environment. Understanding the factors that contribute to ozone formation and dispersion, as well as employing effective monitoring and clustering techniques, is essential for mitigating these risks and improving air quality management.

3. METHODS AND STUDY AREA

3.1. Data and Study Areas

Malaysia's air quality is meticulously monitored by 65 stations distributed across the country. These stations, managed by the Department of Environment (DOE), are strategically classified according to land use categories, including industrial, rural, urban, and suburban areas. The classification helps to provide a comprehensive overview of air quality across diverse environments, reflecting the different sources and levels of pollution.

For the analysis, secondary data was obtained from the Department of Environment Malaysia. However, it is important to note that data from 19 of these stations were excluded from the analysis due to incomplete records. As a result, the study focused on the hourly average concentrations of ground-level ozone (O₃) from the remaining 46 monitoring stations only for 2018 and 2022. Data between 2018 and 2022 was ignored due to COVID19 and the data might be invalid. This data provides valuable insights into the spatial and temporal variations of ozone levels across different regions in Malaysia, helping to understand the impact of various factors such as land use, traffic, industrial activity, and meteorological conditions on air quality.

3.2. Methodology

In this study, descriptive statistics are employed to summarize and provide insights into the dataset's key characteristics, focusing on measures such as mean, standard deviation, skewness, and kurtosis. The mean serves as an indicator of central tendency, reflecting the average value

around which data points cluster. The standard deviation measures the degree of dispersion or variability in the dataset, with larger values indicating greater spread. Skewness examines the asymmetry of the data distribution, where values near zero denote a symmetrical distribution, and positive or negative skewness suggests longer tails on the right or left side, respectively. Kurtosis assesses the "tailedness" or peakedness of the distribution, with higher kurtosis indicating sharper peaks and heavier tails, and lower kurtosis suggesting flatter distributions. These descriptive statistics provide an essential understanding of the data's characteristics, guiding further analytical processes (Sahoo, 2022).

In air pollution research, cluster analysis is a widely used technique for grouping data points with similar characteristics (Govender & Sivakumar, 2020). Among the various methods available, k-means and agglomerative hierarchical cluster analysis (AHC) are particularly popular. In this study, AHC was employed to classify 65 air quality monitoring stations across Malaysia into smaller, more manageable groups based on their ground-level ozone (O₃) characteristics.

Agglomerative hierarchical cluster analysis begins by treating each monitoring station as its own cluster. The AHC analysis in this study was conducted using Ward's Method, a technique that measures the dissimilarity, or distance, between clusters using Euclidean distance. Ward's Method operates by initially considering each monitoring station as an individual cluster. The Euclidean distance between each pair of clusters is then calculated, and the two clusters with the smallest distance (i.e., the most similar clusters) are merged into a single cluster. This process of calculating distances and merging clusters is repeated iteratively until all stations are combined into a single cluster.

The process and results of Ward's Method can be visually represented in a dendrogram, a tree-like diagram that illustrates the sequence in which clusters are merged. The Euclidean distance, which quantifies the similarity between clusters, is a critical component of this method and is calculated using the following equation:

$$d(x, y) = \sqrt{\sum_{i=1}^n (x_i - y_i)^2}$$

This equation represents the distance $d(x,y)$ between two points x and y across n dimensions (in this case, the characteristics of ground-level ozone). The smaller the Euclidean distance, the more similar the clusters, guiding the merging process in Ward's Method. Through this approach, the study aims to group the monitoring stations in a way that reflects their similarities in air quality characteristics, allowing for more efficient and targeted analysis of ozone pollution patterns across Malaysia.

4. RESULTS AND DISCUSSIONS

In this study, the agglomerative hierarchical cluster (AHC) method was applied to analyze the hourly average concentrations of ground-level ozone (O₃) collected from 46 air quality

monitoring stations across Malaysia for the years 2018 and 2022. The results of the AHC are represented in the form of a dendrogram, which illustrates the hierarchical relationships and dissimilarities between the clusters formed. The dendrogram groups monitoring stations that share similar characteristics, clustering them together based on the ozone concentration levels observed at each station.

From the analysis of the data collected, the monitoring stations were classified into three main clusters, which were labeled as High Pollution Region (HPR), Medium Pollution Region (MPR), and Low Pollution Region (LPR). This classification helps to categorize the stations according to the severity of ozone pollution they recorded, providing a clear understanding of the regional distribution of air quality issues. Figure 1 visually presents the significant clustering of monitoring stations based on the hourly average concentrations of ozone for 2018 using the AHC method. The dendrogram generated from this analysis clearly illustrates the relationships between the stations, with those exhibiting similar ozone concentration patterns being grouped together. The classification resulted in 20 stations being placed in the High Pollution Region (HPR), 12 stations in the Medium Pollution Region (MPR), and 14 stations in the Low Pollution Region (LPR).

A closer look at the geographical distribution of these clusters reveals that most of the stations in the High Pollution Region (HPR) are located in the northern, eastern, central, and southern regions of Peninsular Malaysia. The Medium Pollution Region (MPR) primarily includes stations from the southern region, along with a few from the central and northern regions. In contrast, the Low Pollution Region (LPR) encompasses all the stations in Sabah, a few in Sarawak and the eastern region, and one station each from the northern, southern, and central regions of Peninsular Malaysia. Table 1 provides a detailed list of the monitoring stations classified into HPR, MPR, and LPR for 2018. The descriptive statistics for ozone concentrations in these regions are shown in Table 2. The mean hourly average ozone concentrations for the High Pollution Region (HPR), Medium Pollution Region (MPR), and Low Pollution Region (LPR) were 0.01427 ppm, 0.017886 ppm, and 0.019971 ppm, respectively. These statistics indicate that, contrary to what might be expected, the Low Pollution Region (LPR) exhibited the highest mean ozone concentration, while the High Pollution Region (HPR) had the lowest mean concentration. This could suggest that the classification was more influenced by the frequency and peaks of high ozone episodes rather than the average levels alone.

Each monitoring station within these regions was further classified based on regional land use categories: urban (U), suburban (SU), industrial (I), rural (R), and background (B). In the High Pollution Region (HPR), 15 stations were located in suburban areas, and five in urban areas, making suburban regions the most represented in this cluster. In the Medium Pollution Region (MPR), there were seven stations in suburban areas and five in urban areas. Meanwhile, the Low Pollution Region (LPR) included 13 stations in suburban areas and one station classified as background. This distribution highlights the predominance of suburban stations in all regions, with urban and background stations playing smaller roles.

This analysis not only categorizes the monitoring stations based on ozone pollution levels but also provides insights into the regional and land use factors that may influence ozone concentrations. The clustering approach helps in identifying specific areas that require targeted air

quality management strategies and allows for a more efficient allocation of resources to monitor and mitigate air pollution in Malaysia.

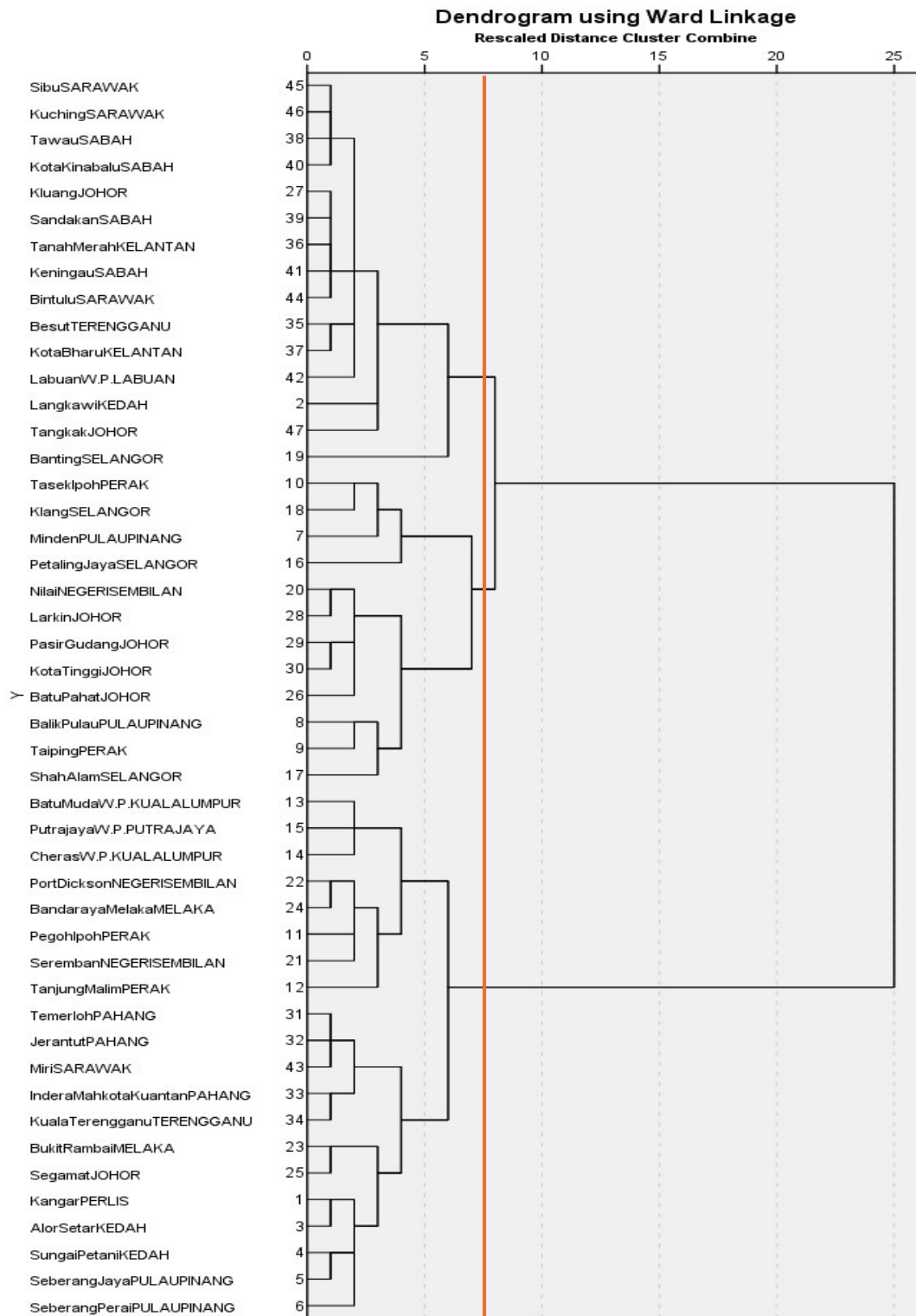


Figure 1. Stations cluster in 2018

Table 1. List of stations based on High Pollution Regions (HPR), Medium Pollution Regions (MPR) and Low Pollution Regions (LPR) 2018

| CLUSTER 1 (HPR) | CLUSTER 2 (MPR) | CLUSTER 3 (LPR) |
|--------------------------------|-------------------------|-----------------------|
| Alor Setar, Kedah | Tasek Ipoh, Perak | Sibu, Sarawak |
| Bandaraya Melaka, Melaka | Klang, Selangor | Kuching, Sarawak |
| Batu Muda, W.P. Kuala Lumpur | Minden, P.Pinang | Tawau, Sabah |
| Bukit Rambai, Melaka | Petaling Jaya, Selangor | Kota Kinabalu, Sabah |
| Cheras, W.P. Kuala Lumpur | Nilai, Negeri Sembilan | Sandakan, Sabah |
| Indera Mahkota Kuantan, Pahang | Larkin, Johor | Tanah Merah, Kelantan |
| Jerantut, Pahang | Pasir Gudang, Johor | Keningau, Sabah |
| Kangar, Perlis | Kota Tinggi, Johor | Bintulu, Sarawak |
| Kuala Terengganu, Terengganu | Batu Pahat, Johor | Besut, Terengganu |
| Miri, Sarawak | Balik Pulau, P.Pinang | Kota Bharu, Kelantan |
| Pegoh Ipoh, Perak | Taiping, Perak | Labuan, W.P. Labuan |
| Port Dickson, Negeri Sembilan | Shah Alam, Selangor | Langkawi, Kedah |
| Putrajaya, W.P. Putrajaya | | Tangkak, Johor |
| Seberang Jaya, P.Pinang | | Banting, Selangor |
| Seberang Perai, P. Pinang | | |
| Segamat, Johor | | |
| Seremban, Negeri Sembilan | | |
| Sungai Petani, Kedah | | |
| Tanjung Malim, Perak | | |
| Temerloh, Pahang | | |

Table 2. Descriptive statistics for O₃ in High Pollution Regions (HPR), Medium Pollution Regions (MPR) and Low Pollution Regions (LPR) in 2018

| LPR | | MPR | | HPR | |
|--------------------|----------|--------------------|----------|--------------------|----------|
| Mean | 0.01427 | Mean | 0.017886 | Mean | 0.019971 |
| Standard Deviation | 0.002884 | Standard Deviation | 0.003559 | Standard Deviation | 0.003259 |
| Kurtosis | -1.05289 | Kurtosis | 0.142809 | Kurtosis | -0.15084 |
| Skewness | 0.321582 | Skewness | 0.618614 | Skewness | 0.266054 |
| Minimum | 0.010328 | Minimum | 0.012233 | Minimum | 0.014308 |
| Maximum | 0.019553 | Maximum | 0.024376 | Maximum | 0.026628 |

Figure 2 and Table 3 provide a detailed classification of monitoring stations based on the hourly average ozone concentrations using the AHC method for the year 2022. According to the analysis, the stations were categorized into three clusters: High Pollution Region (HPR), Medium Pollution Region (MPR), and Low Pollution Region (LPR). In 2022, nine stations were classified under HPR, 20 under MPR, and 16 under LPR.

The geographical distribution of these stations reveals that most of the HPR stations are located in the central region of Peninsular Malaysia, with a few in the northern region. The stations in the MPR are more widely spread, covering all regions of Peninsular Malaysia. In contrast, the LPR stations are primarily located in Sabah, Sarawak, and the eastern region of Peninsular Malaysia, indicating relatively better air quality in these areas. Table 4 shows the descriptive statistics for ozone

concentrations in these regions for 2022. The mean hourly average ozone concentration was recorded at 0.01244 ppm for LPR, 0.015773 ppm for MPR, and 0.018442 ppm for HPR. These statistics indicate that the HPR stations, although fewer in number, recorded the highest average ozone concentrations, reflecting more severe pollution levels.

The land use classification of these stations further provides insights into the pollution levels. In the HPR, five stations are located in suburban areas, and four in urban areas, indicating that both suburban and urban regions in these clusters are experiencing high pollution levels. In the MPR, a majority of the stations (17) are situated in suburban areas, with five in urban areas, making it the region with the greatest number of stations. Lastly, in the LPR, 13 stations are in suburban areas, two in urban areas, and one in a background area, emphasizing that suburban regions play a significant role in the overall air quality assessment.

This detailed classification and analysis help in understanding the distribution of ozone pollution across different regions and land use categories, providing a basis for targeted air quality management strategies in Malaysia.

Table 3. List of stations based on High Pollution Regions (HPR), Medium Pollution Regions (MPR) and Low Pollution Regions (LPR) 2022

| CLUSTER 1 (HPR) | | CLUSTER 2 (MPR) | | CLUSTER 3 (LPR) | |
|-------------------------------|--------------------------------|-------------------------|------------------------------|----------------------|--|
| Bandaraya Melaka, Melaka | Alor Setar, Kedah | Minden, P.Pinang | Seberang Perai, P. Pinang | Labuan, W.P. Labuan | |
| Seremban, Negeri Sembilan | Balik Pulau, P.Pinang | Pasir Gudang, Johor | Nilai, Negeri Sembilan | Miri, Sarawak | |
| Port Dickson, Negeri Sembilan | Batu Pahat, Johor | Pegoh Ipoh, Perak | Petaling Jaya, Selangor | Kota Kinabalu, Sabah | |
| Batu Muda, W.P. Kuala Lumpur | Bukit Rambai, Melaka | Seberang Jaya, P.Pinang | Besut, Terengganu | Bintulu, Sarawak | |
| Cheras, W.P. Kuala Lumpur | Cheras, W.P. Kuala Lumpur | Segamat, Johor | Kota Bharu, Kelantan | Sandakan, Sabah | |
| Putrajaya, W.P. Putrajaya | Indera Mahkota Kuantan, Pahang | Sungai Petani, Kedah | Kuala Terengganu, Terengganu | | |
| Banting, Selangor | Jerantut, Pahang | Taiping, Perak | Tawau, Sabah | | |
| Shah Alam, Selangor | Kangar, Perlis | Tangkak, Johor | Keningau, Sabah | | |
| Klang, Selangor | Kota Tinggi, Johor | Tanjung Malim, Perak | Sibu, Sarawak | | |
| | Langkawi, Kedah | Tasek Ipoh, Perak | Tanah Merah, Kelantan | | |
| | Larkin, Johor | Temerloh, Pahang | Kuching, Sarawak | | |

Table 4. Descriptive statistics for O₃ in High Pollution Regions (HPR), Medium Pollution Regions (MPR) and Low Pollution Regions (LPR) in 2022

| LPR | | MPR | | HPR | |
|--------------------|----------|--------------------|----------|--------------------|----------|
| Mean | 0.01244 | Mean | 0.015773 | Mean | 0.018442 |
| Standard Deviation | 0.002056 | Standard Deviation | 0.002864 | Standard Deviation | 0.003785 |
| Kurtosis | -1.41271 | Kurtosis | -0.78895 | Kurtosis | 2.07734 |
| Skewness | -0.02127 | Skewness | -0.43766 | Skewness | 0.331262 |
| Minimum | 0.00965 | Minimum | 0.010089 | Minimum | 0.011868 |
| Maximum | 0.015488 | Maximum | 0.019997 | Maximum | 0.025921 |

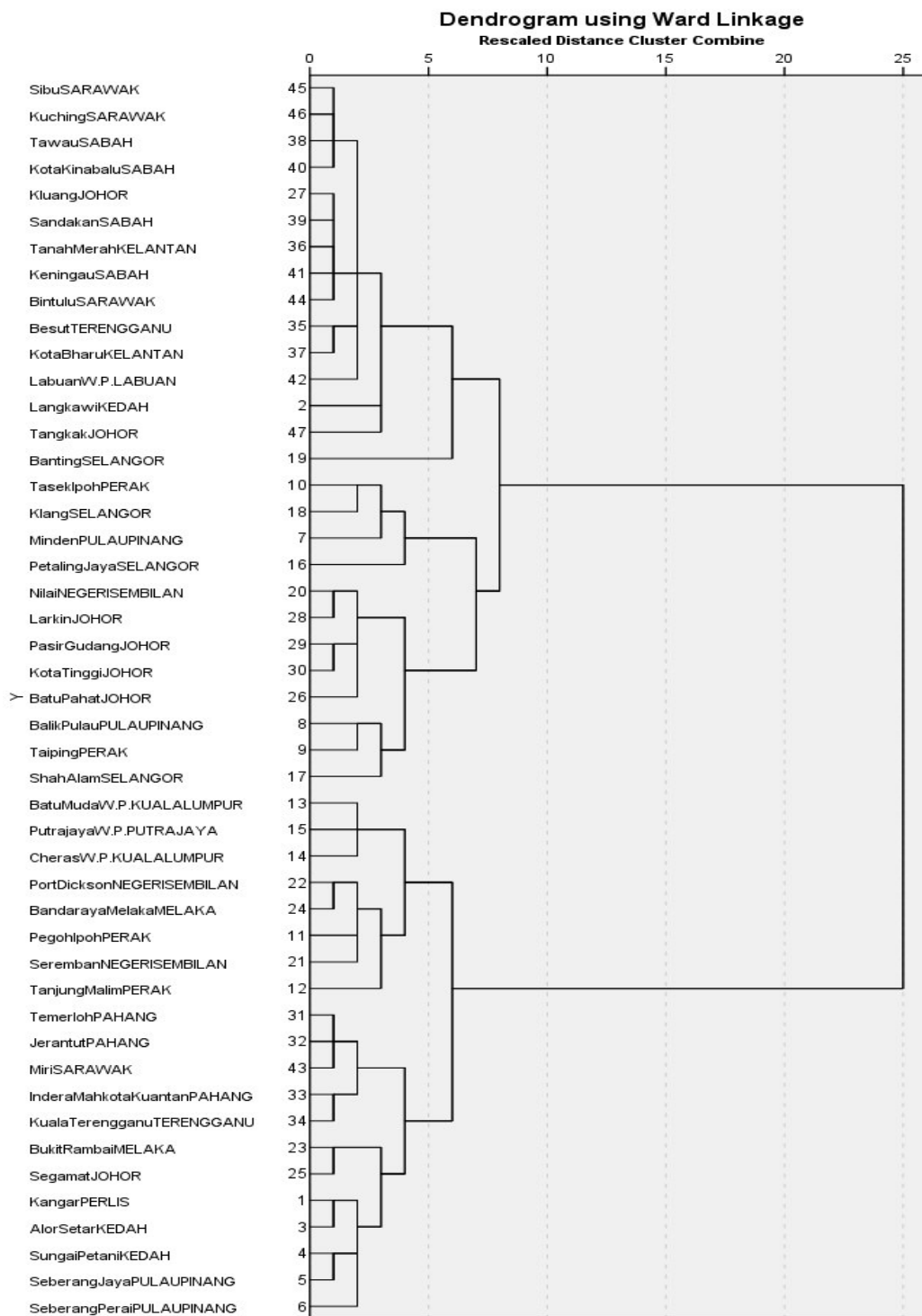


Figure 2. Stations cluster in 2022

5. CONCLUSIONS

Based on the findings, it appears that the categories of monitoring stations set by the Department of Environment do not necessarily reflect the actual readings of O₃ concentrations. This discrepancy suggests that the categorization of these stations might have been determined

based on factors beyond just ozone levels, such as land use patterns and the presence of other pollutants. These additional considerations could explain why the current classification system does not align perfectly with the observed ozone pollution data.

However, despite this misalignment, certain monitoring stations—namely Melaka, Batu Muda, Cheras, Port Dickson, Putrajaya, and Seremban—have consistently been categorized within the High Pollution Regions (HPR) for both 2018 and 2022. This consistency indicates that these locations are particularly prone to higher levels of ozone pollution, regardless of the broader categorization criteria used by the Department of Environment. The persistent high pollution levels in these areas could be attributed to ongoing urbanization, industrial activities, and vehicular emissions, which are significant contributors to ozone formation.

This observation underscores the need for a more refined categorization approach that considers the specific pollutants of concern, such as O₃, to better reflect the actual air quality conditions at each monitoring station. It also highlights the importance of focused air quality management and mitigation strategies in regions like Melaka, Batu Muda, Cheras, Port Dickson, Putrajaya, and Seremban, where high ozone levels have been consistently recorded.

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EVALUATION OF SOIL CHEMICAL PROPERTIES AND SOYBEAN YIELD IN AN AGROFORESTRY SYSTEM BASED ON TEAK TREES ON ARBORETUM LAND

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ABSTRACT

Soybean is one of the most important food commodities in Indonesia and also it has high value. The needs continue to increase each year, but not offset by increased production become an issue that must be addressed. One attempt to increase soybean production is through the cultivation in agroforestry systems through improving the quality of soil fertility. This research aims to study the effect of various doses of litter teak and NPK fertilizer on chemical soil fertility and the potential of soybeans yield in agroforestry systems based teak crops. Experiments using a Randomized Complete Block Design (RCBD) with two factors, namely litter teak doses (0 ton ha⁻¹, 2.500 ton ha⁻¹, 5.000 ton ha⁻¹, 7.500 ton ha⁻¹) and doses of NPK fertilizer (60-60-60 and 60-120-60) on Grobogan soybean varieties. The variables measured were pH, organic matter content, N-total soil, cation exchange capacity (CEC), plant tissue of N, P-total soil, and component production. Data analysis using analysis of variance F-test based on the level of 5% and significantly different variables followed by Tukey's method level of 5%. The results showed that combination treatment with various doses of teak litter NPK fertilizers can increase total nitrogen content of the soil with the highest yield of 1.69% on S1D2 treatment, but to organic matter, CEC, pH, and total soil P not significant effect. The highest component of soybean varieties found at Grobogan, namely 0.83 tons ha⁻¹ in the treatment S1D1. The result was still below the average of the national soybean production.

Keywords: Agroforestry, Litter Teak, Soil Chemical Properties, Soybean.

1. INTRODUCTION

Arboretum of North Sumatra University is a green area planted with many tree. The Arboretum area is located in Kwala Bekala, Deli Serdang Regency, Province of North Sumatra (USU). The existence of USU Arboretum area is useful for biodiversity preservation and at least can improve/maintain the climate conditions around it. The objectives of this study were to identify the distribution of trees, determine the diversity of tree species and analyze the effect of tree stands in the USU Arboretum Area to the environment. Soybeans (*Glycine max* L.) are an important commodity with high economic value. Besides as food, soybeans can also be used as raw materials for industry and animal feed. Soybean development also contributes to the national economy (Gross Domestic Product of the food crop sub-sector) although the value is still relatively small compared to other food crop commodities. The Central Statistics Agency (2013) stated that soybean production in 2013 decreased by 7.47% compared to 2012. This makes soybeans supply insufficient so that imports had to be carried out. Many soybeans have been cultivated in protected forests. The forests are not the right areas for soybean cultivation due to the function and as result the crop will experience high pod emptiness. The pods emptiness is originate from soil fertility,

not a lack of light or water, because soybeans are C3 plants that are relatively tolerant to low irradiation while water requirements are met by rainwater. Soybean pods filling requires high nutrient availability, especially N and P. The high nutrient requirements are not only due to the high protein content of the grains but also due to the immobilization of N elements for organic matter decomposition. Generally, the limiting factors for agroforestry systems performance are soil fertility, water, and light related to the interaction of plants and trees (Purnomo and Sitompul 2005). The combination of adding several doses of organic matter with inorganic fertilizers is expected able to overcome the obstacles in cultivating soybeans in the agroforestry system. Therefore, it is necessary to conduct a study on the effect of adding various doses of organic matter with inorganic fertilizers on soil chemical fertility and soybean yields in the agroforestry system.

2. RESEARCH METHODS

This research was conducted from November 2023 to April 2024 at the Arboretum of North Sumatra University (USU) in Kwala Bekala, Deli Serdang, Province of North Sumatra at an altitude of 40 meters above sea level, as shown in Figure 1.

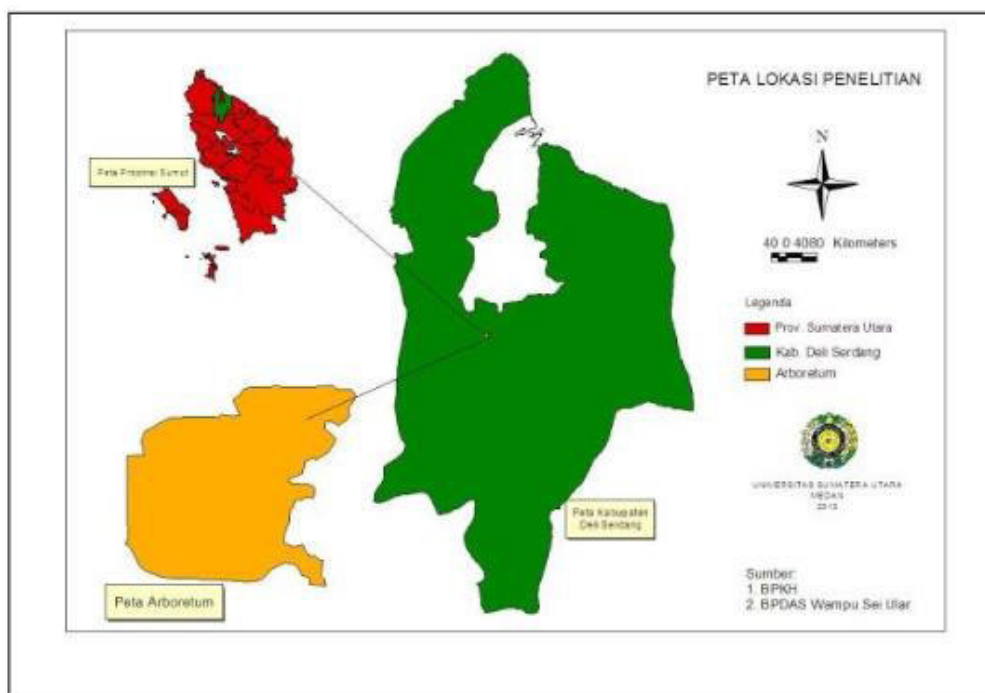


Figure 1. Map of Research Site

Laboratory analysis was conducted at the Soil Chemistry and Fertility Laboratory, Faculty of Agriculture, University of North Sumatra. The materials used in this study included Grobogan variety soybean seeds, urea fertilizer, SP-36 fertilizer, KCl fertilizer, teak litter, and chemicals for laboratory analysis. The tools used for the study included analytical scales, ovens, grinders, cameras, stationery, and tools for laboratory analysis. The study was arranged using a Complete Randomized Block Design (RAKL) with two factors. The first factor was the provision of various

doses of teak litter consisting of 5 levels, namely 0 tons ha⁻¹, 2,500 tons ha⁻¹, 5,000 tons ha⁻¹, 7,500 tons ha⁻¹, and 10,000 tons ha⁻¹. The second factor was NPK fertilization consisting of 2 levels, namely NPK 60-60-60 and NPK 60-120-60. Based on these 2 factors, 10 treatment combinations were obtained. Each treatment was repeated 3 times so that 30 experimental plots were obtained. The research stages were land preparation, planting, maintenance, and plant observation. The soil variables observed included soil pH, total N, CEC, organic matter, total P, and N absorption. The observed plant variables were plant biomass and soybean yield. The data obtained were analyzed using analysis of variance based on the F test 5%. If there is a significant effect, it is continued with the Tukey test at 5%.

3. RESULTS AND DISCUSSION

The results of statistical analysis based on the F and Tukey tests at 5% levels on the observed variables showed that the combination treatment of various doses of teak litter with NPK fertilizer had a significant effect on the total N content of the soil, as seen in Table 1. Result for variables of Organic Matter, Cation Exchange Capacity (CEC), pH, N Absorption, Total P, Plant Biomass, and Seed Weight of 1 Plant, shown at Table 2.

Table 1.

| Treatment | Total N (%) |
|-----------|-------------|
| S1D1 | 0,91 c |
| S1D2 | 1,69 a |
| S2D1 | 1,04 bc |
| S2D2 | 1,63 ab |
| S3D1 | 1,08 abc |
| S3D2 | 1,28 abc |
| S4D1 | 1,42 abc |
| S4D2 | 1,05 abc |
| S5D1 | 1,12 abc |
| S5D2 | 1,47 abc |

Note: The same letters indicate no significant difference in the Tukey's test at 5%.

Analysis statistical results show that on the total soil N, the combination treatment of various doses of teak litter with NPK fertilizer have very significant effect on the total soil N ($P = 0.003$). Based on the Tukey test at 5%, S1D2 treatment was significantly different from S1D1 and S2D1, while S2D2 was only significantly different from S1D1. The highest total soil N was found in S1D2 treatment, which was a combination of 0 ton ha⁻¹ of teak litter with NPK fertilizer 60-120-60 with an increase of 85.7% compared to S1D1 and an increase of 62.5% compared to S2D1. The increase in total N was more related to the use of NPK fertilizer than the addition of teak litter. Although teak litter contains various nutrients needed by plants, the amount is not yet sufficient to meet the needs of plants. In addition, teak litter is difficult to decompose that actually causes soil microorganisms to move away. According to Buckman and

Brady (1982), fertilizers that have undergone hydrolysis in the soil will produce ammonium carbonate which will undergo a rapid nitrification process in presenting NH_4^+ ions or NO_3^- ions so that the total N content of the soil can increase. Observations on Organic Material, Cation Exchange Capacity (CEC), pH, N Absorption, Total P, Plant Biomass, and Grain Weight of Plant, the combination treatment of various doses of teak litter with NPK fertilizer did not show a significant effect as shown in table 2.

Table 2. Results of the Tukey test at 5% on organic matter, CEC, pH, and total P

| Treatment | OM (%) | CEC | Soil pH | Total P |
|-----------|--------|-------|---------|---------|
| S1D1 | 2,22 | 17,80 | 4,87 | 6,48 |
| S1D2 | 2,20 | 21,25 | 5,17 | 6,02 |
| S2D1 | 2,30 | 19,76 | 5,17 | 6,81 |
| S2D2 | 2,21 | 21,60 | 5,00 | 5,97 |
| S3D1 | 2,26 | 21,07 | 4,93 | 6,19 |
| S3D2 | 2,15 | 19,53 | 5,37 | 6,20 |
| S4D1 | 1,92 | 19,33 | 5,43 | 6,24 |
| S4D2 | 2,13 | 18,27 | 5,57 | 6,05 |
| S5D1 | 2,14 | 20,80 | 5,53 | 6,54 |
| S5D2 | 2,10 | 18,13 | 4,73 | 6,60 |

Based on the analysis of variance on the content of soil organic matter, the combination treatment of various doses of teak litter with NPK fertilizer showed no significant effect ($P = 0.249$). Alfisols are known to have low organic matter content. This low organic matter is caused by the slow decomposition process which is thought to be influenced by the low quality of the litter, which has a lignin content of 14.54% with a C/N ratio of 32 (Purwanto et al. 2014). According to Palm *et al.* (1991), litter have high quality if the C/N ratio is less than 25, and the lignin content is <15%. Based on the analysis of variance, the combination treatment of various doses of teak litter with NPK fertilizer does has no affect on the Cation Exchange Capacity (CEC). Soil CEC is closely related to organic fertilizer, in this case teak litter. Teak litter that has been decomposed into organic fertilizer acts as a colloid that is able to absorb cations. The role of organic matter in soil chemical properties is to increase the capacity of absorption and exchange of cations in the soil (Karieen 2008). Because the content of organic matter from the decomposition of teak litter in the soil is low, the absorption of cations in the soil which is also low. The results of the analysis of variance showed that the combination of various doses of teak litter with NPK fertilizer did not have significantly effect on pH of H_2O . This is thought to be related to the use of organic fertilizer in the form of teak litter, which is known to have a low C/N ratio. The decomposition process of organic matter with a low C/N ratio will run slowly and produce organic acids which then release H^+ and OH^- ions into the soil solution thus affect changes in soil pH (Minardi 2009). Together with nitrogen, phosphorus is needed by soybeans in filling grains. Based on the results of the analysis of variance, the combination treatment of various doses of teak litter with NPK fertilizer did not significantly affect the total P of the soil. This is thought to be related

to soil pH. According to Djajadi *et al.* (2002), P is more available at a pH approaching to neutral. It is known that the pH of the research site is at a low to moderate, makes P element being in the form of a complex compound with Al and Fe which is less available to plants.

Soybean Yield in Agroforestry Land

Table 3. Tukey test at 5% on plant biomass and grains weight

| Treatment | Biomass at 15 HST (g) | Biomass at 30 HST (g) | Biomass at 45 HST (g) | Harvest Biomassa | Grains Weight (ton/ha) |
|-----------|-----------------------|-----------------------|-----------------------|------------------|------------------------|
| S1D1 | 2,22 | 17,80 | 4,87 | 6,48 | 0,83 |
| S1D2 | 2,20 | 21,25 | 5,17 | 6,02 | 0,67 |
| S2D1 | 2,30 | 19,76 | 5,17 | 6,81 | 0,47 |
| S2D2 | 2,21 | 21,60 | 5,00 | 5,97 | 0,67 |
| S3D1 | 2,26 | 21,07 | 4,93 | 6,19 | 0,71 |
| S3D2 | 2,15 | 19,53 | 5,37 | 6,20 | 0,47 |
| S4D1 | 1,92 | 19,33 | 5,43 | 6,24 | 0,67 |
| S4D2 | 2,13 | 18,27 | 5,57 | 6,05 | 0,69 |
| S5D1 | 2,14 | 20,80 | 5,53 | 6,54 | 0,32 |
| S5D2 | 2,10 | 18,13 | 4,73 | 6,60 | 0,68 |

According to observations and data analysis on plant biomass, the combination treatment of teak litter with NPK fertilizer showed no significant effect on each stage of growth, namely 15 HST, 30 HST, 45 HST, and at harvest. This is because the treatments were not yet able to meet the needs of important nutrients such as N, P, and K. The addition of teak litter and NPK fertilizer was not yet able to provide nutrients for plant needs. In addition, the presence of teak trees between soybean plants also reduces the intensity of sunlight so that the rate of photosynthesis will also be hampered. The results on plant biomass also affect the weight of soybean grains. Data analysis show that the combination treatment of teak litter with NPK fertilizer have no significant effect on the weight of soybean grains per hectare. Many factors contributed such as relatively low soil fertility and the low quality of teak litter. In addition, low solar radiation reaching the plants because it is blocked by teak trees also inhibits the photosynthesis process so that the yield of soybean grains are less than optimal. The weight of soybeans per hectare in this study is still below the average national production of 1 ton ha⁻¹. These yield are also still far below the average production of Grobogan soybean varieties under suitable conditions, which is 2.77 tons ha⁻¹ (BPTPI 2023).

4. CONCLUSION

The addition of a combination of various doses of teak litter with NPK fertilizer can increase the total N content of the soil, but has not been able to increase the yield component of Grobogan soybean varieties in a teak-based agroforestry cultivation system. Research is needed on other types of litter given to determine the best type of litter.

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ASSESSING THE STATUS OF ENVIRONMENTAL CORPORATE SOCIAL RESPONSIBILITY AND GREEN PRACTICE WITH COMPETITIVENESS OF HOTEL THE CASE OF 4-5 STAR HOTELS IN KHANH HOA, VIETNAM

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ABSTRACT

Competitiveness, a topic of extensive research across various fields, has become a key focus in tourism studies. Early conceptualizations of competitiveness emphasized the importance of quality of life and environmental factors. The industrialisation of the past 150 years has led to significant depletion of natural resources and a disregard for environmental concerns, resulting in a surge of greenhouse gases and heightened climate risks. Consequently, a company's ability to manage its social and environmental impacts throughout its value chain has become a critical factor in its competitive advantage. This study explores the theoretical basis for the role of environmental corporate social responsibility (ECSR) and green practices in enhancing hotel competitiveness. A two-round, in-depth interview study was conducted with managers of 83 4-5 star hotels in Khanh Hoa, Vietnam. The interviews were based on questionnaires aligned with ASEAN Green Hotel criteria and hotel competitiveness assessment criteria. In the first round, managers discussed the current state of green practices at their hotels. In the second round, they self-assessed the level of competitiveness. The results indicate that most hotels are actively implementing environmentally sustainable practices. However, 5 star hotels were generally perceived as more competitive than 4 star hotels. This study offers practical management implications for enhancing ECSR activities and green practices in the Khanh Hoa hotel industry, providing valuable insights for professionals in this field.

Keywords: Competitiveness, Environmental Corporate Social Responsibility, Green Practice, Hotel, Khanh Hoa.

1. INTRODUCTION

Along with Vietnam's efforts to promote tourism development in 2023, Khanh Hoa has seen changes in tourism activities with outstanding results. In 2023, Khanh Hoa organised events and festivals to attract domestic and foreign tourists. Total revenue from tourists in the whole province of Khanh Hoa exceeded the revenue in 2018 and reached more than 80% compared to the same period in 2019, reaching 33,968 billion VND, an increase of 243% compared to the same period in 2022. According to the "Tourism Business Performance Report in 2023" of the Department of Tourism, the province had 1.217 accommodation establishments with more than 65,544 rooms, an increase of 69 accommodation establishments compared to 2022. The number of 3 to 5-star accommodation establishments was 105, an increase of 3 compared to 2022. The number of accommodation establishments recognised with 4 and 5-star hotels was 83. However, the number of rooms accounted for 40% of the total number of rooms in the whole province, associated with famous hotel brands in the world, such as InterContinental, Best Western, Six Senses, Radisson,

Eastin Grand, Accor Hotels & Resorts, Marriot, etc. The remaining 1,055 establishments with over 39 thousand rooms do not register star rating recognition by the 2017 Vietnam Tourism Law provisions. The average room occupancy rate of accommodation establishments in Khanh Hoa province before 2019 was consistently over 50%. The 4 and 5-star accommodation establishments achieved the highest occupancy rate of over 68%. In 2023, the average room occupancy rate reached 44.40%, in which 4 and 5-star accommodation establishments continued accounting for the highest room occupancy rate, over 54%.

Table 1. Operating status of hotels in Khanh Hoa

| Criteria | Unit | 2019 | 2020 | 2021 | 2022 | 2023 |
|------------------------------------|-------|-------|-------|-------|-------|-------|
| <i>Hotel category</i> | | | | | | |
| - 1 to 2-star | Hotel | 101 | 95 | 28 | 29 | 11 |
| - 3 to 5-star | Hotel | 86 | 85 | 92 | 102 | 105 |
| <i>Average room occupancy rate</i> | | | | | | |
| - 4 to 5-star hotels | % | 52,61 | 10,64 | 7,72 | 24,28 | 44,40 |
| - 1 to 3-star hotels | % | 68,15 | 14,80 | 11,96 | 31,87 | 54,92 |
| - Others | % | 35,82 | 5,71 | 4,89 | 17,57 | 40,84 |
| - Others | % | 59,31 | 11,42 | 4,14 | 14,86 | 30,26 |

Source: Department of Tourism (2024)

As can be seen, the number of tourist accommodation establishments in Khanh Hoa is significant, along with the rapid recovery of the tourism industry after the COVID-19 pandemic, which has put tremendous pressure and created fierce competition among accommodation businesses. After two years of reopening tourism activities, many accommodation establishments have returned to operation. Some accommodation establishments, especially 4 and 5-star hotels, regained operating capacity before the pandemic. However, besides contributing to the achievements of the province's tourism, the hotel industry in Khanh Hoa province faces several disadvantages: undiversified value-added products, separated and localised organising mechanisms, and decent service quality; lower competitiveness compared to other tourist destinations at a similar scale. In addition, despite the trend of environmental protection and business operations associated with social responsibility and sustainable development, many hotels in Khanh Hoa have not yet implemented green transformation or applied green criteria in their business.

This study synthesises research on the role of Environmental Corporate Social Responsibility (ECSR) and Green Practice in hotel competitiveness. In addition, the status of ECSR and Green Practice implementation in 83 4-5 star hotels in Khanh Hoa is analysed, and managerial implications are proposed to encourage the implementation of ECSR and Green Practice, thus increasing the competitiveness of the hotel industry of Khanh Hoa.

2. LITERATURE REVIEW

2.1. Environmental Corporate Social Responsibility issues

Corporate social responsibility as a new phenomenon in business activities started in about 1950s (Jintao Lu et al., 2020). The main global CSR initiative Global Compact was presented by the UN in 1999, integrating ten universal principles that include the areas of human and labour

rights, environment and anti-corruption (Coulmont et al., 2017). This agreement seeks that all business companies would contribute to sustainable development, i.e., would reduce pollution through technological innovation and decrease the number of equipment that would cause pollution in the organisation.

The concept of ECSR first emerged from environmental management and CSR. ECSR is a crucial and distinct aspect of CSR (Rahman & Post, 2012). Some scholars argue that ECSR covers the impact of a business's products, operations, and facilities on the environment. By reducing energy waste and carbon dioxide emissions, productivity is maximised while reducing the use of resources to lessen the impact on future generations (Mazurkiewicz, 2004). ECSR is also viewed as an environmentally friendly activity, which, apart from exceeding the requirements of environmental regulations, takes responsibility for the adverse external effects of their operations (Kozlowski, 2014).

From a broader perspective, ECSR is focused on the eco-activities of specific companies and the prevention or limitation of adverse environmental impacts created by enterprises, covering the areas of corporate governance, credibility, and environmental performance. Rahman & Post (2012) believes that ECSR should include the indicators of disclosed governance, disclosed credibility, and disclosed environmental performance. From an individual perspective, ECSR includes environmental information on waste disposal, including valuable environmental information on wastewater and emissions (Guenther et al., 2006). According to A. Dahlsrud (2008), ECSR towards the environmental company's policy that assures cleaner environment, sustainable use of resources and raw materials in activities and solves other problems related to nature.

Based on a review of the literature, ECSR is mainly focused on corporate governance (Mazurkiewicz, 2004; Williamson et al., 2006), credibility (Bansal & Roth, 2000; Guenther et al., 2007), environmental performance (Williamson et al., 2006), environmental vision and strategy (Cramer, 2005), environmental spending (Guenther et al., 2006), and internal environmental initiatives (Gilley et al., 2000).

2.2. Green Practice

The strong growth and development of the global tourism industry have created urgent demands for environmental protection (ASEAN, 2016). The ASEAN Green Hotel Standards were developed to meet these urgent demands and promote sustainable tourism development. The ASEAN Green Hotel Standards is an initiative to promote sustainable tourism practices in the region by promoting environmentally friendly and energy-saving applications and providing guidelines and methods for countries to implement the ASEAN Green Hotel Standards.

Some studies have also confirmed that social responsibility towards the environment can lay the foundation for green innovation, preventing and minimising negative environmental impacts. This is considered a significant advantage in creating a company's competitive advantage (Galindo-Martín et al., 2020). Besides practising ECSR, following the ASEAN Green Hotel Standards will help hotels enhance their competitiveness.

The ASEAN Green Hotel Standards consist of 11 groups of criteria with 80 evaluation criteria, including (1) Environmental Policies and Actions, (2) Using Green Products, (3) Community Collaboration, (4) Human Resource Development, (5) Solid Waste Management; (6) Efficient Energy Use; (7) Water Usage; (8) Air Quality Management; (9) Noise Pollution Control; (10) Waste Treatment Management; And (11) Chemical Treatment Management.

2.3. Environmental Corporate Social Responsibility Issues and Green Practice with Competitiveness

Competitiveness has been widely applied to evaluate the performance of various industries, including the hotel industry (Roy, 2011). Research on hotel competitiveness has focused on identifying the determinants or factors affecting hotel competitiveness. For example, a hotel's brand image is believed to be a key determinant contributing to a hotel's competitiveness (Brown and Ragsdale, 2002; Kim and Kim, 2005; Prasad and Dev, 2000). Other studies consider customer satisfaction and service quality as determinants of hotel competitiveness (Akbaba, 2006; Campos Soria, González García, and Roperó García, 2005; Mattila and Oneill, 2003; Reynolds and Thompson, 2007). Productivity is another factor influencing hotel competitiveness (Barros, 2005; Barros and Alves, 2004; Sigala, 2004).

Researchers assert that environmental issues are gradually significantly impacting an organisation's daily operations and competitiveness. In the long run, these issues affect an organisation's performance and competitiveness (Chen et al., 2020). Organizations need to protect the environment and the public interest from environmental, social, and public concerns (Lu et al., 2020). Organizations are encouraged to combine CSR events with social and economic goals to gain the support of stakeholders and competitiveness in the market (Orazalin, 2019).

Translating their goals into behaviour and incorporating environmental sustainability factors into marketing strategies will help businesses increase their competitiveness (Chang, 2016). This creates significant value, providing a competitive advantage and outperforming competitors (Barboza, 2019). Ultimately, companies that incorporate environmental initiatives into their strategic decisions will improve their performance and protect the environment. In addition, Bolton & Mattila (2015) found that organisations with the best environmental performance will enjoy higher benefits and lower perceived risks, enhancing their competitiveness in the market. To evaluate the competitiveness of hotels, this study employs the criteria of Competitive position (Market share; Brand reputation), Competitiveness at the market mix level (Product/service quality; Product/service category; Price competitiveness; Product/service promotional activities; Distribution channel system); And Competitiveness at the resource level (Hotel location; Room capacity; Quality of personnel; Labor productivity; Financial capability; Technical facilities; Public hygiene problem; Security and safety issues; Corporate culture).

3. RESEARCH METHOD

The study focused on in-depth interviews with managers of 4-5 star hotels in Khanh Hoa province, Vietnam. Based on the theoretical framework analyzed above, a questionnaire was

developed based on 11 ASEAN Green Hotel criteria and 16 criteria for assessing hotel competitiveness. Interviewers will ask questions directly to managers based on this questionnaire.

Data were collected through 2 rounds of in-depth interviews with managers of 83 4-5 star hotels in July 2024. In round 1, managers were asked about the level of green practices implemented by their hotels using the 11 ASEAN Green Hotel Criteria. A five-point Likert scale was used to measure the level of implementation, with 1 indicating "Do not know the standard" and 5 indicating "Excellent implementation".

After assessing green activities, managers were interviewed about the competitiveness of the hotel. The same five-point Likert scale was used, with 1 indicating "Very poor performance" and 5 indicating "Excellent performance". The objective was to assess managers' perceptions and self-assessment of the competitive position of the hotel.

Descriptive statistics were conducted to analyze the collected data, including calculating the mean implementation score and standard deviation for each green hotel criterion. This analysis provides detailed information about the overall green activities and competitiveness between the 4- and 5-star hotel groups.

4. ENVIRONMENTAL CORPORATE SOCIAL RESPONSIBILITY AND GREEN PRACTICE WITH COMPETITIVENESS OF 4 TO 5-STAR HOTELS IN KHANH HOA

4.1. Environmental Corporate Social Responsibility Practices

ECSR implementation has become popular in several countries. With the change in market behaviour and attitude, the hotel industry is aware that implementing ECSR in the long term will reinforce brand image, positively impact operation results, and enhance overall hotel competitiveness. However, in Vietnam in general and Khanh Hoa in particular, ECSR implementation poses some issues. Few businesses in the hotel industry implement social responsibility, mainly in large 4-5-star hotels with international partners or target markets. Selected case studies are examined to comprehend the current situation in Khanh Hoa.

IHG Group has developed the Green Engage (GE) - a global sustainability management system since 2008, which plays a vital role in developing IHG's responsible business plan "Journey to Tomorrow". This system allows hotels to track total energy consumption, carbon emissions, water usage, waste generation and social contributions. IHG Group has implemented this system, and it is a mandatory standard for all hotels in the global IHG, including Intercontinental Nha Trang Hotel and Six Senses Resort Ninh Van Bay in Vietnam. Furthermore, Six Senses Ninh Van Bay Resort has invested in a large organic vegetable garden for many years. In 2022, Six Senses Ninh Van Bay launched the Ninh Van Greens complex, considered the first resort with a solar energy ecosystem in Vietnam to provide sustainable energy for the resort.

Another case is Marriot International Group - Sheraton Nha Trang Hotel. In 2023, the hotel launched a series of experiential activities for guests with the desire to convey the message "Go Green", such as a new menu designed based on plant products, workshops sharing how to make

exfoliating mixtures with entirely organic ingredients grown in hotel's Sky Garden on 6th floor and using them in spa treatments at the hotel's Shine Spa for Sheraton. The hotel also uses environmentally friendly packaging such as paper straws, cups, bags, and boxes at restaurants and bars. Amenities in the rooms have also been replaced to minimise environmental harm, along with many educational entertainment activities for children, such as making crafts from recycled materials, free planting trees with the Kid's Club planting kit, etc. In daily activities at the hotel, energy savings are also enhanced, such as using one key card lock for each room to encourage automatic power off when guests leave the room and setting the eco mode of the air conditioner in every department. Furthermore, the hotel organises annual community events such as "Earth Hour and cleaning Nha Trang beach.

Accor Group - Novotel Nha Trang Hotel has started to make commitments to society, the environment, and community contribution since 1994. In 2021, Novotel Nha Trang Hotel celebrated the Earth Hour 2021 event with many meaningful activities. The theme "Speak up for nature" promoted and raised public awareness about the connection between human impacts on nature and the causes of epidemics, especially COVID-19. Every year on April 21, Novotel Nha Trang Hotel works on the Planet 21 environmental protection project - Green Planet Day, launched by Accor Group by organising activities such as planting trees, collecting waste on Nha Trang beach, etc.

Resorts in Khanh Hoa have also invested in building vegetable gardens and farms for visitors to experience. Champa Island Resort is a pioneer in green tourism, having installed solar panels. This resort has vegetable gardens and tangerine gardens for visitors. Alma Resort Cam Ranh and The Anam Cam Ranh also have built green vegetable gardens, fruit gardens, and poultry farms for visitors to visit and experience. At The Anam Cam, an 8,500m² organic farm is being developed. The farm grows many types of vegetables, fruits, and herbs and is also a "home" to ducks, chickens, geese, rabbits, goats, guinea fowl, turkeys... The resort has created many farm discovery programs for children and adults to learn about sustainable farming methods and interact with friendly animals. These free activities, such as collecting eggs and growing vegetables, are scheduled daily at a particular time.

In the other case, in 2023, Alma Resort Cam Ranh acted as the chair, establishing an alliance to collect plastic waste in the Bai Dai beach area, with the participation of 12 resorts in this area. As a result of this activity, the activity collected 1.5 tons of plastic waste with the participation of more than 300 volunteers from 13 resorts. On Earth Day 2024, Alma Resort Cam Ranh completed the installation of 4,470 solar panels on the entire roofing system of 196 villas, two buildings with 384 apartments, the lobby, and the machine room area. With a total area of 23,290m², the solar energy system is expected to meet 25% to 35% of the resort's electricity needs. This will save hundreds of billions of VND in electricity costs and reduce thousands of tons of carbon emissions (CO₂) over 25 years. With a sustainable strategy, human resources management also monitors energy usage, resource conservation, recycling, pollution reduction, waste treatment, etc.

It can be seen that 4-5 star hotels in Khanh Hoa are aware of implementing social responsibility in the long term, which will bring plenty of benefits to the business, reduce operating costs, improve business performance, increase brand image and enhance the hotel's

competitiveness. However, few hotel businesses systematically practice social responsibility activities for many reasons.

4.2. Green Practice

In addition to implementing green practices and social responsibility in the hotel industry, the state management of Khanh Hoa province has also organised many activities since 2019 to raise awareness of social responsibility issues in accommodation establishments. Specifically, in 2019, the Department of Tourism coordinated with the Nha Trang - Khanh Hoa Tourism Association to organise the Launching Ceremony and the Contest on "Anti-plastic Waste in Accommodation Establishments". During this ceremony, the Nha Trang - Khanh Hoa Tourism Association organised a signing ceremony of a commitment to implement the anti-plastic waste movement for seven accommodations in Khanh Hoa province, including Liberty Central Nha Trang Hotel, Rosaka Nha Trang Hotel, Green World Nha Trang Hotel, The Art Nest Nha Trang Hotel, MerPerle Hon Tam Resort, Tran - Vien Dong Hotel, Nha Trang Horizon Hotel. In 2020, at Quinter Nha Trang Hotel, the Department of Tourism organised a scientific seminar and exhibition on reducing greenhouse gas emissions and using environmentally friendly products in accommodations and tourist areas. During the workshop, there was also an exhibition of 14 businesses with green technology products and environmentally friendly tourism products to introduce to other hotels in Khanh Hoa. The same year, the Department of Tourism coordinated with Outbox Destination Management and Consulting Services Co., Ltd. and Informa Markets Exhibition Services Company to organise a workshop on "Going Green in the Hotel Industry" with the theme "Break Barriers - Sustain Together". About 30 accommodation establishments in Khanh Hoa province participated in this program. In 2024, within the framework of the Nha Trang Sea Tourism Festival, Nha Trang - Khanh Hoa Tourism Association and Vietsolutions Group Joint Stock Company organised a workshop on "Sustainable Development for Khanh Hoa Tourism - Hotel Industry". Within the framework of the workshop, the Nha Trang - Khanh Hoa Tourism Association and Vietsolutions Group signed a memorandum of understanding on implementing sustainable development solutions for the hotel industry of Khanh Hoa.

The results of in-depth interviews with management from 83 4-5-star hotels in Khanh Hoa indicated that over 90% of 5-star hotels have completely implemented and performed well on all 11 ASEAN Green Hotel Standards. The average score for these 11 criteria exceeded 4.36 points. Notably, 5-star hotels excelled in the categories of "Water Usage"; "Air Quality Management"; And "Noise Pollution Control". However, only a few 5-star hotels have partially implemented specific standards, such as "Using Green Products" (4 hotels), "Solid Waste Management" (8 hotels), and "Efficient Energy Use" (4 hotels). 5 star hotels in Khanh Hoa are now mandated to implement green practices as an integral part of their development strategy. Notably, those aspiring to join international hotel chains such as IHG, Accor, Marriott... are required to adhere to stringent environmental sustainability standards set by these corporations. This aligns with our findings that all 5 star hotels in Khanh Hoa have adopted green practices.

A significant number of four-star hotels have only partially implemented the standards. The average score for the 11 criteria in this group was 3.44 points. 4 star hotels performed best in “Solid Waste Management,” “Water Usage,” and “Chemical Treatment Management.” However, they lagged in “Community Collaboration” and “Using Green Products,” with many hotels only partially implementing these standards. The analysis of 4 star hotels reveals a similar development status. As these establishments are primarily owned and operated by private entities, independent of international hotel chains, their adoption of green practices is driven by a sense of corporate social responsibility and a recognition of the financial benefits. Basic green practices such as solid waste management, water conservation, and chemical treatment are commonly implemented.

Table 2. Results of the implementation of the ASEAN Green Hotel Standards by 4 to 5-star hotels in Khanh Hoa, Vietnam

| Indicator | No knowledge of the standard | | Aware but not acting | | Done in part | | Completely carried out | | Excellent implementation | |
|---|------------------------------|--------|----------------------|--------|--------------|--------|------------------------|--------|--------------------------|--------|
| | 4 star | 5 star | 4 star | 5 star | 4 star | 5 star | 4 star | 5 star | 4 star | 5 star |
| <i>Environmental Policies and Actions</i> | 0 | 0 | 0 | 0 | 10 | 0 | 18 | 20 | 8 | 27 |
| <i>Using Green Products</i> | 0 | 0 | 0 | 0 | 18 | 4 | 10 | 32 | 8 | 11 |
| <i>Community Collaboration</i> | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 20 | 8 | 27 |
| <i>Human Resource Development</i> | 0 | 0 | 0 | 0 | 10 | 0 | 18 | 30 | 8 | 17 |
| <i>Solid Waste Management</i> | 0 | 0 | 0 | 0 | 0 | 8 | 18 | 13 | 18 | 26 |
| <i>Efficient Energy Use</i> | 0 | 0 | 0 | 0 | 10 | 4 | 18 | 13 | 8 | 30 |
| <i>Water Usage</i> | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 8 | 18 | 39 |
| <i>Air Quality Management</i> | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 14 | 8 | 33 |
| <i>Noise Pollution Control</i> | 0 | 0 | 0 | 0 | 10 | 0 | 18 | 14 | 8 | 33 |
| <i>Waste Treatment Management</i> | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 16 | 8 | 31 |
| <i>Chemical Treatment Management</i> | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 20 | 18 | 27 |

Source: The research of Authors (2024).

Table 3. Descriptive statistics of the ASEAN Green Hotel Criteria by 4 to 5 star hotels in Khanh Hoa, Vietnam

| Indicator | Mean | | Variance | | Standard Deviation | |
|---|--------|--------|----------|--------|--------------------|--------|
| | 4 star | 5 star | 4 star | 5 star | 4 star | 5 star |
| <i>Environmental Policies and Actions</i> | 3.94 | 4.57 | 0.51 | 0.25 | 0.71 | 0.50 |
| <i>Using Green Products</i> | 3.72 | 4.15 | 0.66 | 0.30 | 0.81 | 0.55 |
| <i>Community Collaboration</i> | 3.44 | 4.57 | 0.71 | 0.25 | 0.84 | 0.50 |
| <i>Human Resource Development</i> | 3.94 | 4.36 | 0.51 | 0.24 | 0.71 | 0.49 |
| <i>Solid Waste Management</i> | 4.50 | 4.38 | 0.26 | 0.59 | 0.51 | 0.77 |
| <i>Efficient Energy Use</i> | 3.94 | 4.55 | 0.51 | 0.43 | 0.71 | 0.65 |
| <i>Water Usage</i> | 4.50 | 4.83 | 0.26 | 0.14 | 0.51 | 0.38 |
| <i>Air Quality Management</i> | 4.22 | 4.70 | 0.18 | 0.21 | 0.42 | 0.46 |
| <i>Noise Pollution Control</i> | 3.94 | 4.70 | 0.51 | 0.21 | 0.71 | 0.46 |
| <i>Waste Treatment Management</i> | 4.22 | 4.66 | 0.18 | 0.23 | 0.42 | 0.48 |
| <i>Chemical Treatment Management</i> | 4.50 | 4.57 | 0.26 | 0.25 | 0.51 | 0.50 |

Source: The research of Authors (2024).

4.3. Competitiveness of 4 to 5-star hotels in Khanh Hoa

For the second round of in-depth interviews, hotel managers were asked about their hotel's competitiveness. The assessment criteria included Competitive position, Competitiveness at the market mix level, And Competitiveness at the resource level. Hotel managers self-assessed their hotel's performance using a 5-point Likert scale. 5-star hotels demonstrated a higher level of competitiveness, with an average score of 4.23 across all criteria, indicating good to excellent performance. Notably, 5-star hotels achieved the highest average scores in "Financial Capability"; "Corporate Culture" at 4.91 points and "Technical Facilities" at 4.85 points.

As assessed by their managers, 4-star hotels exhibited a lower level of competitiveness, with average scores ranging from 3.94 to 4.78, indicating a good performance. 4-star hotels rated themselves higher in "Distribution channel system" (4.78 points) and "Price Competitiveness" (4.50 points). However, they scored lower in the "Product/Service category" and "Technical facilities" (3.94 points).

Table 4. Results of the competitiveness of 4-5 star hotels in Khanh Hoa, Vietnam

| Indicator | Very poor performance | | Poor performance | | Normal | | Good Performance | | Excellent Performance | |
|--|-----------------------|--------|------------------|--------|--------|--------|------------------|--------|-----------------------|--------|
| | 4 star | 5 star | 4 star | 5 star | 4 star | 5 star | 4 star | 5 star | 4 star | 5 star |
| Market share | 0 | 0 | 0 | 0 | 8 | 0 | 20 | 24 | 8 | 23 |
| Brand reputation | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 14 | 8 | 33 |
| Product/service quality | 0 | 0 | 0 | 0 | 10 | 0 | 8 | 14 | 18 | 33 |
| Product/service categories | 0 | 0 | 0 | 0 | 10 | 6 | 18 | 24 | 8 | 17 |
| Price competitiveness | 0 | 0 | 0 | 0 | 0 | 4 | 18 | 22 | 18 | 21 |
| Product/service promotional activities | 0 | 0 | 0 | 0 | 0 | 6 | 28 | 23 | 8 | 18 |
| Distribution channel system | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 33 | 28 | 14 |
| Hotel location | 0 | 0 | 0 | 0 | 8 | 0 | 20 | 9 | 8 | 38 |
| Room capacity | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 13 | 18 | 34 |
| Quality of personnel | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 27 | 8 | 20 |
| Labor productivity | 0 | 0 | 0 | 0 | 10 | 0 | 18 | 18 | 8 | 29 |
| Financial capability | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 4 | 8 | 43 |
| Technical facilities | 0 | 0 | 0 | 0 | 10 | 0 | 18 | 7 | 8 | 40 |
| Public hygiene problem | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 17 | 8 | 30 |
| Security and safety issues | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 9 | 8 | 38 |
| Corporate culture | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 4 | 8 | 43 |

Source: The research of Authors (2024).

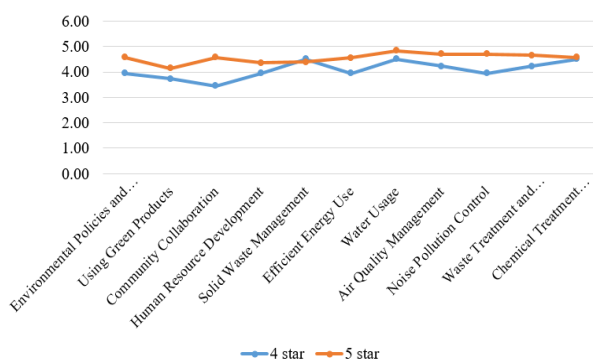
After analysing the ECSR, Green practices and competitiveness of 4 to 5-star hotels in Khanh Hoa, Vietnam, our research found that 5-star hotels in Khanh Hoa have been more proactive in adopting ASEAN Green Hotel Standards, significantly improving their operational efficiency and brand reputation. 5-star hotels in Khanh Hoa have demonstrated a strong commitment to sustainability by actively participating in the ASEAN Green Hotel Standards program. By investing in energy-efficient technologies, reducing waste, and promoting sustainable practices, these hotels

have minimised costs and attracted environmentally conscious travellers. In contrast, while 4-star hotels have made some progress, they have lagged in fully embracing green initiatives. 4-star hotels could consider implementing targeted sustainability programs, seeking certifications, and leveraging government incentives to enhance their competitiveness.

Table 5. Descriptive statistics of the competitiveness of 4-5 star hotels in Khanh Hoa, Vietnam

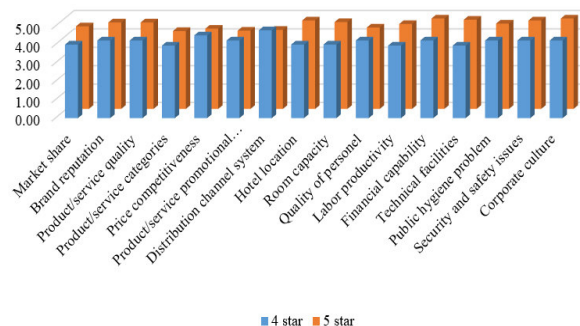
| Indicator | Mean | | Variance | | Standard Deviation | |
|--|--------|--------|----------|--------|--------------------|--------|
| | 4-star | 5-star | 4 star | 5 star | 4 star | 5 star |
| Market share | 4.00 | 4.49 | 0.46 | 0.26 | 0.68 | 0.51 |
| Brand reputation | 4.22 | 4.70 | 0.18 | 0.21 | 0.42 | 0.46 |
| Product/service quality | 4.22 | 4.70 | 0.75 | 0.21 | 0.87 | 0.46 |
| Product/service categories | 3.94 | 4.23 | 0.51 | 0.44 | 0.71 | 0.67 |
| Price competitiveness | 4.50 | 4.36 | 0.26 | 0.41 | 0.51 | 0.64 |
| Product/service promotional activities | 4.22 | 4.26 | 0.18 | 0.46 | 0.42 | 0.67 |
| Distribution channel system | 4.78 | 4.30 | 0.18 | 0.21 | 0.42 | 0.46 |
| Hotel location | 4.00 | 4.81 | 0.46 | 0.16 | 0.68 | 0.40 |
| Room capacity | 4.00 | 4.72 | 1.03 | 0.20 | 1.01 | 0.45 |
| Quality of personnel | 4.22 | 4.43 | 0.18 | 0.25 | 0.42 | 0.50 |
| Labor productivity | 3.94 | 4.62 | 0.51 | 0.24 | 0.71 | 0.49 |
| Financial capability | 4.22 | 4.91 | 0.18 | 0.08 | 0.42 | 0.28 |
| Technical facilities | 3.94 | 4.85 | 0.51 | 0.13 | 0.71 | 0.36 |
| Public hygiene problem | 4.22 | 4.64 | 0.18 | 0.24 | 0.42 | 0.49 |
| Security and safety issues | 4.22 | 4.81 | 0.18 | 0.16 | 0.42 | 0.40 |
| Corporate culture | 4.22 | 4.91 | 0.18 | 0.08 | 0.42 | 0.28 |

Source: The research of Authors (2024).



Source: The research of Authors (2024).

Figure 1. Green Practice of 4-5 star hotels in Khanh Hoa



Source: The research of Authors (2024).

Figure 2. Competitiveness of 4-5 star hotels in Khanh Hoa

5. CONCLUSION AND MANAGEMENT IMPLICATION

This study emphasizes the key role of ECSR and green activities in enhancing the competitiveness of hotels based on the synthesized theoretical foundation. Through in-depth interviews with managers of 4-5 star hotels in Khanh Hoa, Vietnam, the results of the study show that all 4-5 star hotels in Khanh Hoa, Vietnam are aware of and are implementing the ASEAN Green Hotel criteria. In particular, 100% of 5 star hotels are fully and well implementing all 11 assessment criteria in this standard. All hotels have invested in building wastewater treatment systems, effectively using water and other energy sources. All 5-star hotels have replaced plastic and single-use products with reusable products. The study also found that the competitiveness of 5-star hotels is also assessed as good, surpassing that of 4-star hotels, especially in terms of financial criteria, technical facilities and corporate culture. While 4 star hotels are more competitive in terms of price and distribution channel system. This can be explained because the 5 star hotel system will have clearer customer segments, must comply with regulations on distribution channels and prices when belonging to international corporations. By strategically integrating sustainable initiatives with the environment, these hotels can significantly improve their financial performance, build a positive corporate culture, optimize their technical facilities, and gain competitive advantages in distribution channels and pricing.

These findings highlight the need for a comprehensive approach to green implementation, including environmental management, employee engagement, community involvement, and customer satisfaction. By investing in sustainable technology, promoting responsible practices, and building a sustainable culture, hotels can not only contribute to a healthier planet, but also reap the rewards of enhanced competitiveness and long-term success.

Several recommendations have been made to promote green practices in 4-5 star hotels in Khanh Hoa, Vietnam. First, from a business perspective, hotel managers and owners can leverage ECSR practices. Hotel managers in Khanh Hoa need to develop a sustainable development strategy, invest in energy-saving systems such as solar power systems, wastewater treatment systems and reusable products. In addition to strategies for efficient energy use, hotels also need to pay attention to stakeholders such as local communities and employees, attracting the response and participation of these subjects will help green activities become more effective. Hotels should regularly organize training sessions to raise awareness of ECSR and green practices for employees, and at the same time develop a reward and punishment system when employees implement green practices of the hotel. Second, on the management side, departments and branches need to develop and complete a set of green transformation criteria applicable to accommodation establishments. On that basis, the document guides hotels on measures, implementation strategies and sanctions for violations of ECSR and Green practices. To further encourage green activities in the accommodation service industry, Khanh Hoa authorities can consider implementing a Green Certification program for hotels. This program will recognize hotels that meet specific environmental standards and sustainability criteria. By providing incentives or benefits to certified hotels, such as tax breaks or preferential government contracts, the government can encourage more hotels to adopt green practices and contribute to the province's sustainable development goals.

The recommendations outlined in this study provide a roadmap for 4-5 star hotels in Khanh Hoa to embark on a green transformation journey. By aligning their strategies with the provincial government's vision for sustainable development and leveraging the support of stakeholders, these 4-5 star hotels can position themselves as leaders in the hospitality industry and contribute to a more sustainable future for the region.

While this research has yielded valuable insights into the current state of environmental sustainability practices and competitiveness within Khanh Hoa's 4- and 5-star hotels, it is essential to acknowledge certain limitations. Firstly, this study has focused primarily on a descriptive analysis of existing practices and competitive capabilities. Future research could delve deeper into the causal relationships between ECSR and a hotel's competitiveness. Secondly, the scope of this study has been limited to the environmental dimension of CSR. Future research should broaden its focus to encompass other stakeholders and dimensions of CSR, such as social, employee, and customer-related aspects.

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MANAGEMENT SOLUTIONS FOR DOMESTIC SOLID WASTE IN RURAL MOUNTAINOUS AREAS: A CASE STUDY IN TRUNG MON COMMUNE, TUYEN QUANG, VIETNAM

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ABSTRACT

This study addresses the growing issue of domestic solid waste management (DSWM) in rural mountainous areas, with a focus on Trung Mon Commune in Tuyen Quang Province, Vietnam. The research applied the DPSIR framework to systematically analyze the current waste management situation, identifying the key drivers, pressures, and impacts that shape the waste disposal practices in the area. Field surveys, interviews, and waste quantification studies were conducted across 310 domestics to assess waste generation rates and local awareness regarding waste management. The findings underscore significant infrastructure deficits, limited public awareness, and inadequate policy enforcement as the main barriers to effective waste management. Based on these findings, the paper proposes a multi-pronged management strategy that includes educational campaigns, infrastructure investment, and policy improvements to enhance the sustainability of DSWM in rural, mountainous regions.

Keywords: Domestic solid waste management, DPSIR framework, rural areas, environmental sustainability

1. INTRODUCTION

Domestic solid waste management (DSWM) is a growing concern in developing countries, especially in rural areas where infrastructure is often lacking. While much research has focused on urban solid waste management, rural regions face their own unique set of challenges, including geographic isolation, lower population densities, and limited public services. In the rural mountainous areas of northern Vietnam, such as Trung Mon Commune, these challenges are compounded by rapid demographic changes and shifting economic practices, which have resulted in increased waste generation without corresponding improvements in waste management infrastructure. The purpose of this study is to explore the current waste management practices in Trung Mon Commune, utilizing the DPSIR framework to identify the driving forces behind waste generation, the pressures placed on local waste management systems, the current state of those systems, the environmental and social impacts, and the community's response. Based on these findings, management solutions are designed to enhance the sustainability of waste management practices in this rural, mountainous region. This study contributes to the limited body of research on rural waste management in Vietnam and provides a framework for understanding and addressing the complex issues of DSWM in other developing rural regions globally.

2. LITERATURE REVIEW

Global perspectives on domestic solid waste management

Currently, Domestic solid waste (DSW) is a global issue that directly impacts the quality of

life and the socio-economic development activities of countries. Governments are actively seeking the best solutions to tackle this problem. Effective DSW management is central to future sustainable environmental policies (Bernd Bilitewski et al., 1996). DSWM poses a global challenge with population growth and higher living standards. DSW includes waste from domestics, commerce, and services, requiring efficient management systems to protect both the environment and public health. According to the World Bank's 2018 Global Waste Report, total global DSW production is estimated at approximately 2.01 billion tons per year. This figure is expected to increase by 70%, reaching 3.40 billion tons by 2050. High-income countries generate about 34% of global waste despite comprising only 16% of the world's population.

Common DSW treatment methods include landfilling, incineration, recycling, and composting. Landfilling remains the primary method, accounting for over 37% of global waste. However, this approach presents issues with soil and groundwater pollution. Incineration, which reduces waste volume and allows energy recovery, accounts for about 11% and is widely used in developed countries. Recycling and composting make up 19% and 16%, respectively, contributing to reduced landfill burden and greenhouse gas emissions. Several European countries, including Germany, Sweden, and the Netherlands, have adopted advanced waste management policies. Germany has achieved a recycling rate of over 60% through a complex recycling system and stringent regulations. Sweden, utilizing waste-to-energy incineration, landfills less than 1% of its total waste. Japan, known for its effective and scientific MSW management system in Asia, uses incineration with energy recovery for over 70% of its waste. The country also emphasizes source separation, recycling, and waste reduction.

Waste treatment technologies play a crucial role in minimizing the negative impacts of waste on the environment and human health. Widely used technologies include source separation and recycling, landfilling, incineration, and biological treatment. Countries and regions worldwide are striving to develop and implement these technologies to reduce waste's environmental impact. However, technology choices depend on factors like community size, waste characteristics, and available resources in each country. In many European countries and some advanced Asian countries, MSW management has been implemented through effective source separation and treatment, achieving significant economic and environmental benefits. Countries such as the UK, Sweden, the Netherlands, Denmark, Germany, Japan, Singapore, and South Korea have successfully institutionalized MSW management practices, with established routines in sorting and collection and strict public adherence to regulations. These countries have implemented policies to reduce DSW at the source, facilitate sorting, recycling, reuse, and thermal recovery. As a result, DSW has been effectively minimized and thoroughly managed (Hoornweg Daniel et al., 2012). Additionally, DSW treatment capacities in these countries have exceeded domestic waste generation, leading to waste imports from neighboring nations for treatment, a practice that began in 2015.

In contrast, developing countries, including Vietnam, face two major issues in DSWM: how to collect all generated waste and how to process it in an environmentally friendly manner. Developing countries encounter numerous challenges in DSWM, such as inadequate infrastructure, limited funding, and low public awareness. Uncontrolled landfilling leads to environmental

pollution and public health risks. According to Atsushi Terazono et al. (2005), landfilling is the primary waste treatment method in many Asian countries, especially China and India, where the rate exceeds 90%. Nguyen Manh Khai et al. (2016) suggest that short-term DSWM goals in Vietnam focus on collection and landfilling, with long-term objectives of reduction and recycling. Research by R. Lalitha S. Fernando (2019) indicates that DSWM in some Asian countries has faced implementation challenges due to administrative issues, such as inadequate land for waste disposal, insufficient facilities for composting and final recycling, lack of integrated waste management programs, and limited modern technology, legal frameworks, labor productivity, public awareness, and appropriate government intervention. Previous studies before 2020 highlight that, while low-cost, landfilling remains the primary waste treatment method in Asia, including Vietnam. However, this approach has significant drawbacks and fails to meet environmental criteria for sustainable development. Advanced technology and the growth of the circular economy offer major opportunities for DSWM. Circular economy models, which emphasize reuse, recycling, and waste reduction, are increasingly encouraged. Additionally, waste-to-energy incineration and automated sorting technology are enhancing treatment efficiency. Overall, DSWM is a complex challenge requiring collaboration among governments, businesses, and communities. Adopting advanced methods, effective management policies, and raising public awareness will help address this issue, promoting a cleaner and more sustainable living environment.

Domestic solid waste management in Vietnam

The concept of a "Circular Economy" emerged globally in the 1990s. However, since 2020, when Environmental Protection Law No. 72/2020/QH14 was enacted, this concept has been formally introduced under Article 142, signaling a new direction in domestic solid waste management (DSWM) in Vietnam. According to this law, "a Circular Economy is an economic model in which activities related to design, production, consumption, and services aim to reduce the extraction of raw materials, extend product life cycles, limit waste generation, and minimize adverse environmental impacts." Consequently, sub-law documents and research studies since 2020 have approached DSWM from various perspectives. Furthermore, waste management in general and DSWM specifically, aimed at emission reduction and resource management, are considered foundational to achieving an effective circular economy.

In Vietnam, the generation of DSW continues to rise nationwide from 2016 to 2021, with an average increase of 10%–16% in urban areas annually. The total daily DSW generated nationwide is approximately 64,018 tons (in 2019), with urban areas producing 35,624 tons/day and rural areas generating 28,394 tons/day. In general, DSW generation in rural areas is influenced by population density and consumption needs. Plain regions typically produce more DSW than mountainous areas, with an estimated 81,121 tons/day across provinces and cities, where approximately 25% of localities generate over 1,000 tons/day (Nguyen Thanh Yen, 2022). A study by Nguyen Mai Lan and Mai Huong Thao (2022) identified limitations in environmental management by relevant authorities, with a collection rate of only 85.6% and waste treatment technologies that do not fully meet environmental sanitation standards. Additionally, there are weaknesses in awareness and

attention to management and environmental protection, especially in DSWM, in Dong Anh District, Hanoi. However, this study only identified existing limitations and did not propose solutions to improve the quality of DSWM in the studied area. Through an analysis of the challenges and difficulties in DSWM in Tien Yen District, Quang Ninh Province, author Bui Thi Ngoc Lan (2023) proposed three solution groups: planning and setting up suitable waste treatment facilities, implementing source separation, and improving the effectiveness of local DSWM policies. However, the proposed solutions stem from qualitative research, so their effectiveness and suitability are not well-assessed, and priority for each solution has not been established.

DSWM plays a crucial role in environmental protection and safeguarding public health. Effective and sustainable DSWM requires the participation of all stakeholders. In recent years, studies on community roles in DSWM have been conducted in various areas. Authors Nguyen Viet Anh et al. (2022) assessed public awareness, attitudes, and behaviors regarding DSWM in Hanoi using the SEM network model. The results indicated that "waste knowledge" was the most influential factor on DSWM behavior. Nguyen Hoang Yen (2017) conducted research in four hamlets in Hoa Tien Commune, Hoa Vang District, Da Nang, and authors Hoang Manh Dung and Nguyen Thi Que (2019) conducted research in Da Teh District, Lam Dong Province through surveys and interviews. These studies suggest that surveys and interviews with stakeholders are effective methods for evaluating the efficiency of DSWM at local levels. Huynh Thi Dan Xuan et al. (2021) utilized the DPSIR model to assess the situation of DSW generation, collection, and management in the Mekong Delta region. This analytical framework is highly useful for assessing the current state of DSWM activities. However, the study only evaluated the situation based on the model without assessing stakeholder awareness, resulting in a lack of specific solutions to mitigate and manage DSW emissions in the region.

Thus, it is evident that studies on DSWM assessment have been conducted in various locations, including Hanoi, Quang Ninh, the Mekong Delta, and Lam Dong. However, as of now, no studies have been conducted in this area within Tuyen Quang Province. Additionally, DSWM studies largely rely on survey, statistical, and inventory methods, with only one study utilizing the DPSIR model and a few recent studies incorporating a circular economy approach. However, these studies only provide a preliminary mention and do not use indicators from the theoretical framework for detailed analysis and evaluation. Therefore, this study aims to apply the DPSIR model to assess the current situation and use a circular economy framework to address local issues, specifically in DSWM activities in Trung Mon Commune, Yen Son District, Tuyen Quang Province, with the goal of proposing effective and suitable solutions for the research area within the context of the country's circular economy development.

3. METHODS

3.1. Study Area

Trung Mon Commune was selected for the study area due to its diversity in living environments and resident conditions. This area includes both rural settlements developing toward urbanization with improved infrastructure and public services, as well as more remote hamlets facing challenges in transportation, sanitation, and DSW collection. Proposed solutions for Trung

Mon Commune are likely to have broader applicability to other communes. Trung Mon Commune is located in Yen Son District, Tuyen Quang Province, approximately 10 km from Tuyen Quang City. The commune covers an area of 11.85 km² and is home to a population of 10,369, with most residents involved in agriculture and small-scale commerce. Despite its proximity to the provincial capital, Trung Mon faces significant challenges related to infrastructure, particularly in terms of waste management. The commune generates approximately 5,910 kg of waste per day, with no formalized system for waste collection or disposal. Waste is typically disposed of through open burning or unsystematic dumping, which contributes to environmental degradation.

3.2. DPSIR framework method

The DPSIR (Driving Forces (D), Pressure (P), State (S), Impact (I), Response (R)) integrated assessment model is used to analyze and propose recommendations for solid waste management activities. The structure of the model includes five parts such as presenting the driving forces related to economic, social and environmental development leading to pressures, thereby changing the state of the environment. This causes impacts that can elicit responses from society to the causes, pressures, state and impacts. The DPSIR framework was employed to structure the analysis of waste management in Trung Mon Commune. Data collected from domestic surveys and governmental reports were categorized into the five components of DPSIR.

Table 1. DPSIR criteria

| Factor | Criteria |
|----------------|---|
| Driving Forces | <ul style="list-style-type: none"> - Average population - Population density - Gender - Income - Domestic size |
| Pressures | <ul style="list-style-type: none"> - Natural population growth rate - Waste generation coefficient |
| State | <ul style="list-style-type: none"> - Percentage of domestics practicing solid waste segregation at source - Percentage of municipal solid waste collected and treated as per regulations - Percentage of solid waste disposed of through landfilling - Percentage of waste disposed of post-treatment - Annual increase rate of solid waste generation - Public satisfaction level regarding solid waste management activities - Awareness of residents and local officials about circular economy-based waste management solutions - Criteria for circular economy in solid waste management |
| Impact | <ul style="list-style-type: none"> - Impact of solid waste on the environment and public health - Impact of solid waste on economic and social development |
| Responses | <ul style="list-style-type: none"> - Legal and policy solutions - Technical solutions - Educational and awareness-raising solutions |

Data analysis was performed using SPSS to quantify the relationships between driving forces, pressures, and the state of the waste management system. Qualitative responses from interviews were also analyzed to assess community attitudes toward waste management and identify potential solutions.

3.3. Data Collection

Field surveys and structured interviews were conducted with 310 domestics across the commune. The survey focused on domestic waste generation rates, disposal practices, and local awareness regarding waste management. The domestics were selected through random sampling to ensure representativeness. Additional data were collected from local government reports, environmental assessments, and observations of waste management practices.

4. RESULTS

4.1. Driving Forces

The primary drivers of waste generation in Trung Mon are the growing population and increased consumption associated with economic development. Between 1999 and 2024, the commune's population increased by approximately 25%, leading to a proportional increase in domestic waste. This demographic shift has been accompanied by a change in consumption patterns, with residents increasingly purchasing packaged goods, electronics, and disposable items, all of which contribute to the rising volume of domestic solid waste.

Trung Mon Commune spans 11.85 km² with a population density of 416 people/km², which significantly impacts solid waste management. High-density areas generate more waste and face challenges like limited space for treatment and higher collection costs. The gender ratio is 101.44 males per 100 females, with men and women showing different consumption and recycling behaviors. Domestic income, averaging 7-8 million VND per month, influences waste generation, with higher income leading to more waste, including packaging and electronics. Domestic size, around 4-5 people, affects waste production, with larger domestics creating more total waste but potentially less per capita. These factors are essential for designing effective waste management strategies.

Table 2. DSWM classified by domestic size, region and income

| Indicator | Parameter | Amount of DSW (kg/day/domestic) |
|------------------------|---------------------------|---------------------------------|
| Domestic Size | Less than 4 people | 2.1006 |
| | 4 people or more | 2.5193 |
| Area along the highway | Village 5 | 2.85 |
| | Village 8 | 2.31 |
| | Village 16 | 2.07 |
| Far from the highway | Village 1 | 1.21 |
| | Village 9 | 1.27 |
| | Village 14 | 1.81 |
| Income Level | Below 9 million VND/month | 1.7993 |
| | Above 9 million VND/month | 2.4921 |

Data in Table 2 show that the amount of DSW is higher in domestics with more members. At the same time, domestics living in the central area along National Highway 2 have higher levels

of DSW emissions. For example, the amount of DSW generated in the group of domestics living in the area of Village 5 (2.85 kg/day/domestic), Village 8 (2.31 kg/day/domestic) is higher than that in the group of domestics living in the area of Village 14 (1.81 kg/day/domestic) and Village 9 (1.27 kg/day/domestic). In addition, the amount of DSW emissions in domestics with higher business activities is also higher than that in domestics without business activities. Domestics with higher incomes have higher emissions. Thus, these data show that the driving factors, urbanization rate, population growth and income level, have an impact on the generation of DSW in the study area.

4.2. Pressures

The rapid increase in waste generation has placed significant pressure on the local environment and waste management system. The survey revealed that 72% of domestics dispose of their waste through open burning or unsystematic dumping, due to the lack of a formalized waste collection system. This has led to widespread environmental degradation, including soil contamination, water pollution, and air quality deterioration from burning waste. Moreover, the commune's waste collection infrastructure is severely underdeveloped. There are no centralized waste collection points, and waste is rarely collected from remote domestics, leaving residents with few options for proper waste disposal.

Natural population growth rate: According to the report of Trung Mon Commune People's Committee in 2023, the annual natural population growth rate in the commune is about 1.2%, which is considered slightly higher than the national average, fluctuating between 1.0% - 1.1%. Although only slightly higher than the national average, this rate still poses certain challenges for the management of domestic solid waste. Population growth leads to increased consumption and waste production, requiring more effective waste management and treatment measures. According to the Master Plan for the new urban area of Trung Mon, Yen Son district, Tuyen Quang province in Decision No. 179/QD-UBND dated May 22, 2024 of the Provincial People's Committee, the population of this area is forecasted to be about 16,000 people in 2030 and increase to 21,000 people in 2045. Thus, the process of urbanization, population growth and rapid development in the coming time will create great pressure on the solid waste collection and treatment system in Trung Mon commune. Waste generation coefficient: According to the survey results, the average waste generation coefficient in Trung Mon commune is about 0.57 kg/person/day. This coefficient is at the average level between urban and rural areas of the whole country. Specifically, it is higher than the average of rural areas (0.3 - 0.5 kg/person/day) but lower than urban areas (0.7 - 1.0 kg/person/day). The high waste generation coefficient shows the amount of domestic solid waste generated by each individual every day. With the current population of the commune being 10,369 people, the estimated amount of daily domestic waste is 5,910.3 kg/day. With the planned population projection, the amount of domestic solid waste generated can increase to 9,120 kg/day in 2030 and 11,970 kg/day in 2045. This figure does not take into account the possibility of an increase in the waste generation coefficient in the coming period, when Trung Mon commune is developed into a new urban area, with a higher population density, and the increased population density will create greater pressure on the management of domestic solid waste in the area.

4.3. State

The state of the waste management system in Trung Mon is characterized by inadequate infrastructure and low levels of public compliance with waste segregation policies. Only 28% of domestics reported segregating their waste, and even fewer 17% were aware of government regulations regarding waste disposal. The commune lacks formal waste treatment facilities, with most waste either burned or dumped in unauthorized sites. Regarding people's awareness: The survey results show that 91.7% of respondents believe that sorting solid waste at source is meaningful to the environment and daily life. Notably, 93.7% of respondents said that they know which types of waste can be recycled and reused. The remaining 6.3% said that they are still confused and uncertain when sorting. This shows the need for propaganda, dissemination of laws and guidance on sorting solid waste in areas with difficult traffic and travel conditions (Ngoc T.P. 2023). Trung Mon generates approximately 265 tons of domestic waste per day. However, only about 40% of this waste (106 tons/day) is centrally collected and treated. In several areas lacking convenient access to main roads, waste collection services are absent, leaving many households responsible for their own waste disposal, typically through burning, burying, or separating recyclable materials for sale. Of the waste collected, 100% is disposed of through landfilling at the nearby landfill site in Nhu Khe Commune. However, due to limited landfill capacity, a large portion of waste remains untreated and is self-managed by households, which often results in environmental contamination.

DSW in Trung Mon Commune is growing by about 3% annually. This steady rise places significant strain on waste management systems, underscoring the need for enhanced recycling and reduction initiatives to alleviate pressure on landfills. Also, community satisfaction with DSWM activities is around 65%, suggesting that while some aspects of waste management are functional, there is room for improvement, particularly in extending collection services and ensuring more efficient treatment methods. Besides, approximately 75% of surveyed residents and officials were aware of circular economy solutions for DSWM, though the overall understanding and practical application of circular principles in waste management remain limited. Enhancing public awareness of circular economy practices could promote higher engagement in recycling and reuse. Currently, only about 26% of DSW is recycled or reused according to circular economy criteria. This low rate reflects a significant opportunity to expand circular economy initiatives and reduce dependency on landfilling. These findings underscore the need for further infrastructure investments, educational campaigns, and enhanced public engagement to strengthen the state of waste management in Trung Mon Commune.

4.4. Impacts

DSW impacts on both the environment, public health and socio-economic development. The former is shown in around 60% of domestic solid waste (DSW) remains uncollected, often handled independently and improperly, resulting in environmental pollution and health risks. A significant portion is buried locally, forming open-air waste sites that harm both environmental components and public health. While some households compost organic waste, efforts are small-scale and unstandardized, and most waste remains unsorted. Hazardous items such as batteries and used oils

are often mixed in, affecting microbial processes in waste decomposition and intensifying pollution. Waste collection points near residential areas, particularly along National Highway 2, degrade air quality and disrupt traffic, with 81% of surveyed residents noting air pollution impacts and 62% indicating traffic issues. Incinerators, though explored, remain too small to be economically viable and fail to attract investors. Improperly controlled incineration releases pollutants like CO, acids, metals, and carcinogenic dioxins/furans, posing risks such as respiratory and cardiovascular diseases, and cancer (Ministry of Natural Resources and Environment, 2020). The letter is shown in increasing state funding covers DSW collection and transport but excludes land costs, healthcare for pollution-related illness, and transport-related incidents. Waste management efforts include integrated management and recycling at source, where recyclables are sold and organics are composted. However, these methods remain limited, leaving landfilling as the primary disposal method. The current inefficiency in DSW management negatively affects both community health and the region's socio-economic development.

4.5. Responses

Despite the growing waste management problem, responses from local authorities and the community have been limited. Government initiatives have focused primarily on awareness campaigns, but these efforts have had limited reach and effectiveness. Policy enforcement is weak, with few penalties for improper waste disposal and minimal support for waste segregation efforts. Some domestics have adopted small-scale recycling and composting practices, but these efforts remain scattered and uncoordinated.

The study proposes three groups of solutions to enhance solid waste management: (1) Legal and Policy Frameworks, (2) Technical Solutions, and (3) Educational and Community Engagement. Each group includes specific measures, as outlined below:

Legal and Policy Solutions: (*LPS1*) Develop and improve the legal framework for solid waste management; (*LPS2*) Establish financial mechanisms to support solid waste management activities.

Technical Solutions: (*TS1*) Implement waste sorting and collection at the source; (*TS2*) Construct modern infrastructure for domestic solid waste treatment.

Educational and Community Engagement: (*ECE1*) Raise community awareness about solid waste management; (*ECE2*) Organize educational and training programs on waste management; (*ECE3*) Encourage active community participation; (*ECE4*) Build collaborative networks to support sustainable waste management initiatives.

These solutions collectively aim to address solid waste management challenges comprehensively, integrating regulatory, technical, and social aspects for a sustainable approach. The survey results regarding the feasibility of the proposed solutions indicate that the total proportion rating the solutions as feasible or highly feasible ranges from 72% to 89% (Table 3), with an average score of 3.62, reflecting a high feasibility level. Thus, it can be concluded that the proposed solution groups are evaluated as highly feasible, with strong potential for practical application and effective outcomes for the locality.

Table 3. Survey Results on the Feasibility of Proposed Solutions

| Solution | Very Unfeasible | Unfeasible | Uncertain | Feasible | Very Feasible | Total | Average Score |
|----------|-----------------|------------|-----------|----------|---------------|-------|---------------|
| LPS1 | 0 | 2 | 2 | 11 | 3 | 18 | 3.60 |
| LPS2 | 1 | 1 | 1 | 11 | 4 | 18 | 3.64 |
| TS1 | 1 | 1 | 2 | 10 | 4 | 18 | 3.64 |
| TS2 | 0 | 1 | 1 | 10 | 6 | 18 | 3.64 |
| ECE1 | 0 | 1 | 2 | 9 | 6 | 18 | 3.60 |
| ECE2 | 1 | 2 | 2 | 8 | 5 | 18 | 3.60 |
| ECE3 | 0 | 1 | 2 | 9 | 6 | 18 | 3.60 |
| ECE4 | 1 | 2 | 1 | 11 | 3 | 18 | 3.64 |
| Average | | | | | | | 3.62 |

5. DISCUSSION

The findings of this study illustrate critical aspects of domestic solid waste management (DSWM) challenges in Trung Mon Commune, highlighting a range of driving forces, pressures, current states, impacts, and community responses. Through the DPSIR framework, this research presents a structured approach to understanding and addressing these challenges, yielding insights that are valuable for local policy-making and implementation in rural mountainous regions.

The driving forces identified, such as rapid population growth and urbanization, have escalated waste production rates to over 2 kg per household per day. This increased waste generation, driven by shifts in economic practices and consumption patterns, places substantial pressure on the existing waste management system, which is underdeveloped and not equipped to handle high volumes effectively. Besides, this study reveals that waste disposal practices in Trung Mon are predominantly unsystematic, with around 60% of waste uncollected and unmanaged. Consequently, unauthorized dumping and open burning have contributed significantly to environmental degradation, posing direct threats to soil and air quality, as well as public health. The state of waste management infrastructure is insufficient, as only about 40% of waste is collected and sent to the central landfill, leaving a large portion unmanaged. Also, the impacts of poor waste management practices on both environmental and public health are profound. Uncontrolled landfilling and burning have been linked to respiratory issues and pollution. These environmental impacts extend to socio-economic factors, as limited collection and inadequate waste treatment impede sustainable development efforts, creating additional public health costs and limiting economic growth potential. The small-scale implementation of circular economy initiatives, such as recycling and composting, further highlights a gap in adopting sustainable practices at a communal level.

In terms of responses, the commune has made progress by initiating some community-driven waste management practices, such as sorting waste at the source and small-scale composting. However, these efforts remain scattered and lack coordination. To address these challenges comprehensively, this study proposes a multi-pronged approach involving policy, technical, and educational interventions. Legal and policy frameworks, including stricter regulations and

incentive programs, are necessary to strengthen enforcement and compliance. Technical solutions such as improved sorting and centralized treatment facilities are essential for building a more sustainable infrastructure. Educational programs that raise public awareness about the benefits of waste segregation and circular economy principles are equally crucial for fostering community involvement. Therefore, this research underlines the need for a coordinated strategy that integrates policy reform, technical improvements, and educational outreach to enhance DSWM. The high feasibility ratings of proposed solutions suggest strong local support for these strategies, reinforcing their potential applicability and effectiveness. While the study has provided comprehensive insights, future research should expand on these findings by securing additional funding and logistical support to improve survey reach and data quality, thus contributing to a more robust waste management framework for Trung Mon and similar rural communes.

6. CONCLUSION

Proposed solutions, such as enhanced waste collection and source separation, improved treatment and recycling processes, the application of advanced technologies, and increased community awareness, all aim to improve DSWM effectiveness, environmental protection, and sustainable development. These findings are valuable not only for DSWM in Trung Mon but also for shaping sustainable policies and strategies to manage DSW and reduce plastic waste in commune scale. Also, this study introduces a new approach to applying the DPSIR model in DSWM, contributing to more effective and sustainable socio-economic development activities. Insights and experiences from this research can be applied widely to other communes, building an effective and sustainable DSWM system for other communes in developing countries

The results provide a foundation for proposing and implementing education and outreach programs to improve community awareness and action in waste sorting. Activities such as environmental education, training sessions, and motivating waste separation should reflect community insights to enhance living environments, reduce the negative impacts of waste on public health and the natural environment, and foster effective source sorting practices. For circular economy-based waste resource management in commune scale, a comprehensive, integrated strategy combining legal policy, technical solutions, and educational initiatives is essential. Successfully implementing these solutions will reduce environmental pollution, create economic value from waste, and contribute to sustainable local development. Besides, while this research has yielded valuable results, there are some limitations that future studies could address. Findings rely heavily on survey data, which may reflect some respondent misunderstandings due to interview time constraints. Additionally, time and budget limitations for fieldwork impacted research quality. Future studies should consider increasing funding support for similar survey-based research initiatives.

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SOLUTIONS TO REDUCE GREENHOUSE GAS EMISSIONS FROM RICE RESIDUE MANAGEMENT IN THE MEKONG DELTA, VIETNAM

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ABSTRACT

Vietnam is one of the largest rice producers in Asia, generating approximately 43.498 million tons of rice residue per year. The rice residue produced in the Mekong Delta contributes to 54% of Vietnam's total. Burning rice residue is common in this region, a practice that not only contributes to greenhouse gas emissions, exacerbating global warming, but also depletes valuable nutrients such as nitrogen, phosphorus, and potassium, while producing serious air pollutants that affect human health. Therefore, reusing rice residue in agricultural production to improve soil quality and reduce environmental pollution is essential. We conducted this study in three agro-ecological zones of the Mekong Delta, Vietnam: (i) the upper delta zone, (ii) the acid sulfate soil zone, and (iii) the downstream coastal zone. The survey included 1,200 farm households. Results indicated that farmers traditionally used rice residues by burning them in the fields, incorporating them into the soil, using them as animal feed, and for other purposes. Generally, the methods of using rice residue after harvest vary across different agro-ecological zones. In the upper delta zone, farmers primarily burn the residue, while in the coastal zone, they tend to use it as feed for shrimp. The study also assessed the current status of state regulations on rice residue management in agricultural production in the study area, including legal documents, promotion and mobilization efforts, and the pilot implementation of specific rice residue utilization models. We found that the factors influencing farmers' decisions regarding post-harvest rice residue management include economic considerations, environmental impacts, state policies and laws, technology and knowledge, and community attitudes. Based on our findings, we conclude that there are three main groups of solutions for using rice straw to reduce greenhouse gas emissions: (1) improving state management of post-harvest rice residue use, (2) propaganda and community education, and (3) management of rice residue through various techniques.

Keywords: Rice residue management, burning, greenhouse gas emissions reduction, Vietnam.

1. INTRODUCTION

Currently, Vietnam is one of the largest rice producers in Asia, ranking third among rice-exporting countries following India and Thailand. On average, one ha of rice generates about 6.1 tons of waste, equating to approx. 43.498 million tons of rice residue [1, 2]. Traditionally, rice residues were removed from fields to be applied as cooking fuel and fodder for ruminants, and following composting, as organic fertilizer [3].

The Mekong Delta region of Vietnam is known as the world's largest rice bowl and plays a significant role in global food security. The area has 3.964 thousand hectares of rice cultivation, which accounts for 54% of the country's total rice area. It provides rice for domestic consumption and contributes 90% of Vietnam's rice exports, primarily to Africa and Asia [1, 2]. Today, local

farmers have been used five common methods for managing rice residues: burning, incorporated in to soil, animal feed, shrimp farming, and other purposes. Burning of rice residue is common in the area. The burning of agricultural residues leads to greenhouse gas emissions such as methane (CH₄), carbon mono- and dioxide (CO, CO₂), nitrous oxide (N₂O), sulfur dioxide (SO₂), and nitrogen oxides (NO_x) which affects not only the climate but also the human health in rural communities negatively, as it causes severe respiratory diseases [4, 5, 6]. Furthermore, burning crop residues in the field not only depletes valuable nutrients such as nitrogen (N), phosphorus (P), and potassium (K), including depriving soils of organic matter, but also lead to soil fertility losses, soil structure breakdown, moisture content, pH and soil health degradation [7, 8, 9].

The state's management orientation regarding the use of rice residue in production is also reflected in legal documents such as the Environmental Protection Law, Decree 38/2015/ND-CP dated April 24, 2015, which regulates waste and scrap, and Decision No. 622/QĐ-TTg from the Prime Minister dated May 10, 2017, which promulgates the national action plan to implement the 2030 Agenda for Sustainable Development. These documents guide the management of rice residue products by establishing mechanisms and policies that encourage the recycling of rice residue and waste. They promote the application of technology for processing and reusing these materials for animal feed, mushroom cultivation, production of industrial raw materials, biogas, biochar, and organic fertilizers. However, the management of rice residues generates large volumes of organic waste that are currently not being sustainably utilized.

In this study, we examine the state of rice residues and the patterns of crop residue management prevalent in three different sub-ecological zones of the Mekong Delta region of Vietnam. Based on the findings, we also calculate greenhouse gas and particulate matter emissions. We identify the factors affecting farmers' post-harvest rice residue usage behavior in the research area and investigate solutions for state management related to the use of post-harvest rice residues, as well as technical solutions to reduce greenhouse gas emissions in the Mekong Delta region.

2. METHODOLOGIES AND DATA

For our study, we conducted research in three agro-ecological zones of the Mekong Delta: An Giang, Dong Thap, and Long An in the upper delta zone; Can Tho in the acid sulfate soil zone; and Kien Giang and Soc Trang in the downstream coastal zone. We selected these provinces because they represent three ecological zones with varying key characteristics. This selection enabled us to compare different systems of rice residue management and identify regions that allow for a transformation of prevalent practices from both economic and ecological standpoints. Expert interviews were conducted with staff of agricultural extension centers at the province, district. A total of 1,200 households were interviewed. The study used a structured questionnaire to gather information about the rice residue management of household farmers and their rice farming practices during the Winter-Spring rice crop from 2021 to 2023 (W-S), the Summer-Autumn rice crop from 2021 to 2023 (S-A), and the Autumn-Winter rice crop from 2021 to 2023 (A-W). The surveyed information was compiled into an Excel sheet, and calculations were conducted to estimate the greenhouse gas and particulate matter emissions from rice residue burning in the study area.

3. RESULTS AND DISCUSSION

In the Mekong Delta of Vietnam, there are three prevalent cropping seasons: (A) Winter-Spring, (B) Summer-Autumn, and (C) Autumn-Winter (Table 1). Winter-Spring rice is usually planted in November and harvested in February. Summer-Autumn rice is planted in late April and harvested in August. Autumn-Winter rice is planted in August that are harvested in late November or December.

Table 1. Production of Winter-Spring, Summer-Autumn, and Autumn-Winter paddy in the study area from 2021 to 2023.

Unit: Thous. tons

| Zones | Seasons | 2021 | 2022 | 2023 | Compared (%) | | |
|-------------------------|---------|----------|----------|----------|--------------|-----------|---------|
| | | | | | 2022/2021 | 2023/2022 | Average |
| upper delta zone | W-S | 10726.01 | 10918.32 | 10252.79 | 101.79 | 93.90 | 95.59 |
| | S-A | 14762.49 | 19170.68 | 19024.49 | 129.86 | 99.24 | 128.87 |
| | A-W | 6195.25 | 5609.97 | 5023.67 | 90.55 | 89.55 | 81.09 |
| acid sulfate soil zone | W-S | 3154.49 | 3449.65 | 3516.16 | 109.36 | 101.93 | 111.47 |
| | S-A | 4159.11 | 2116.12 | 3149.26 | 50.88 | 148.82 | 75.72 |
| | A-W | 1150 | 1564.85 | 1987.15 | 136.07 | 126.99 | 172.80 |
| downstream coastal zone | W-S | 4154.15 | 4849.28 | 5152.65 | 116.73 | 106.26 | 124.04 |
| | S-A | - | - | - | - | - | - |
| | A-W | 2196.95 | 2689.68 | 2987.98 | 122.43 | 111.09 | 136.01 |

Table 1 shows that the upstream delta zone (An Giang, Dong Thap, and Long An provinces) has very high production of winter-spring, summer-autumn, and autumn-winter paddy. Specifically, winter-spring rice peaked in 2022 at 10,918.32 thousand tons but decreased slightly in 2023 to 10,252.79 thousand tons. The autumn-winter crop increased sharply from 14,762.49 thousand tons in 2021 to 19,170.68 thousand tons in 2022, then decreased slightly to 19,024.49 thousand tons in 2023. Meanwhile, the summer-autumn crop showed a continuous decline from 6,195.25 thousand tons in 2021 to 5,023.67 thousand tons in 2023.

In the acid sulfate soil zone (Can Tho city), winter-spring rice production increased continuously from 3,154.49 thousand tons in 2021 to 3,516.16 thousand tons in 2023. However, autumn-winter rice fluctuated significantly, decreasing from 4,159.11 thousand tons in 2021 to 2,116.12 thousand tons in 2022, then increasing to 3,149.26 thousand tons in 2023. Summer-autumn rice also tended to increase, growing from 1,150 thousand tons in 2021 to 1,987.15 thousand tons in 2023.

In the downstream coastal zone (Soc Trang, Kien Giang), winter-spring rice production showed a continuous increase from 4,154.15 thousand tons in 2021 to 5,152.65 thousand tons in 2023. However, these provinces do not cultivate autumn-winter rice due to natural conditions and saline intrusion. The summer-autumn crop in this region also tends to grow, increasing from 2,196.95 thousand tons in 2021 to 2,987.98 thousand tons in 2023.

Based on the production of winter-spring, summer-autumn, and autumn-winter paddy in the study, we calculated the rice residue production (Table 2).

Table 2. Production of Winter-Spring, Summer-Autumn, and Autumn-Winter rice residue in the study area from 2021 to 2023.*Unit: Thous. tons*

| Zones | 2021 | 2022 | 2023 | Compared (%) | | |
|-------------------------|----------|----------|----------|--------------|-----------|---------|
| | | | | 2022/2021 | 2023/2022 | Average |
| upper delta zone | 31683.75 | 35698.75 | 34300.95 | 112.67 | 96.08 | 108.26 |
| acid sulfate soil zone | 8463.6 | 7130.62 | 8652.57 | 84.25 | 121.34 | 102.23 |
| downstream coastal zone | 6351.1 | 7538.96 | 8140.63 | 118.70 | 107.98 | 128.18 |
| Total | 46498.45 | 50368.55 | 51094.15 | 108.32 | 101.44 | 109.88 |

Table 2 shows that the total rice residue production of the six provinces in this region has gradually increased from 46,498.45 thousand tons in 2021 to 51,094.15 thousand tons in 2023, representing a 9.88% increase over three years. In the upper delta zone, rice residue production has fluctuated significantly. In 2021, it reached 31,683.75 thousand tons and increased sharply to 35,698.75 thousand tons in 2022, an increase of 12.67%. However, in 2023, rice residue production decreased to 34,300.95 thousand tons, reflecting a decline of 4.08% compared to the previous year. This fluctuation may be influenced by weather factors and farming practices, such as floods and changes in cultivation methods.

In the acid sulfate soil zone, rice residue production also experienced notable fluctuations. In 2021, it reached 8,463.6 thousand tons but decreased sharply to 7,130.62 thousand tons in 2022, a drop of 15.75%. However, in 2023, rice residue production in this region rebounded strongly to 8,652.57 thousand tons, an increase of 21.34% over the previous year. This indicates the adaptability of farmers and the optimization of cultivation management in response to weather and market fluctuations.

In the downstream coastal zone, rice residue production has shown steady growth. In 2021, it reached 6,351.1 thousand tons and increased to 7,538.96 thousand tons in 2022, a rise of 18.7%. Continuing into 2023, rice residue production further increased to 8,140.63 thousand tons, up 7.98% compared to the previous year. This steady growth reflects the stability and transformation of local agricultural production.

In the study area, there are four types of rice residue management employed by people in the Mekong Delta region: burning, selling, using as animal feed, and incorporating into the paddy soil. Table 3 indicates that in the upper delta zone, burning in the fields accounts for a large proportion, while a very small amount is incorporated into the soil, and even less is sold or used as animal feed. In the acid sulfate soil zone, rice residue production is lower, but burning still constitutes a significant portion, followed by incorporation into the soil and selling.

In the downstream coastal zone, there is a notable difference in rice residue usage compared to the other two regions; no rice residue is burned here. Instead, a very high proportion is used as animal feed, with the remainder being incorporated into the soil or sold for other purposes. This analysis highlights the differences in rice residue utilization across the regions of the Mekong Delta.

When considering the entire Mekong Delta region, the burning rate remains high but has decreased over the years: 81% in 2021, 69% in 2022, and 63% in 2023. The rate of incorporating rice residue into the soil has increased over the same period: 14% in 2021, 17% in 2022, and 21% in 2023. The rate of using rice residue as animal feed has also changed significantly, indicating a positive trend in the utilization of post-harvest straw: 0% in 2021, 8% in 2022, and 8% in 2023. Additionally, changes in the way rice residue management is used after harvest lead to significant variations in greenhouse gas emissions between regions.

Table 3. The rice residue management of Winter-Spring, Summer-Autumn, and Autumn-Winter rice residue in the study area from 2021 to 2023

Unit: Thous. tons

| Zones | 2021 | | | | 2022 | | | | 2023 | | | |
|--------------------|-------|------|------|------|-------|------|------|------|-------|------|-------|------|
| | 1* | 2* | 3* | 4* | 1* | 2* | 3* | 4* | 1* | 2* | 3* | 4* |
| upper delta | 29600 | 0 | 2084 | 0 | 31712 | 0 | 3987 | 0 | 28337 | 0 | 5964 | 0 |
| acid sulfate soil | 4885 | 1125 | 2453 | 0 | 2882 | 1354 | 2895 | | 3933 | 1599 | 3121 | 0 |
| downstream coastal | 0 | 921 | 1565 | 3865 | 0 | 1585 | 2000 | 3954 | 0 | 2570 | 1587 | 3984 |
| Total | 34485 | 2046 | 6102 | 0 | 34594 | 2939 | 8882 | 3954 | 32270 | 4169 | 10672 | 3984 |

Note: *(1) Burning; (2) Selling; (3) incorporated into the soil; (4) Animal feed.

Table 4. Greenhouse gas and particulate matter emissions from rice residue burning in the study area

Unit: Tons

| Zone | 2021 | | | | 2022 | | | | 2023 | | | |
|-------------------|-----------------|------------------|-------------------|------------------|-----------------|------------------|-------------------|------------------|-----------------|------------------|-------------------|------------------|
| | CO ₂ | N ₂ O | PM _{2.5} | PM ₁₀ | CO ₂ | N ₂ O | PM _{2.5} | PM ₁₀ | CO ₂ | N ₂ O | PM _{2.5} | PM ₁₀ |
| upper delta | 36910589 | 41225 | 358154 | 402553 | 39544228 | 41225 | 383709 | 431276 | 35336700 | 36839 | 342882 | 385388 |
| acid sulfate soil | 6091919 | 3746 | 59112 | 66440 | 3593280 | 3746 | 34867 | 39189 | 4904301 | 5113 | 47588 | 53487 |
| Total | 43002508 | 44971 | 417266 | 468993 | 43137508 | 44971 | 418576 | 470465 | 40241002 | 41951 | 390470 | 438875 |

Note : *Particulate matter (PM), (PM_{2.5} refers to particles that are 2.5 μm or smaller, while PM₁₀ refers to particles that are 10μm or smaller).

The table 4 shows that CO₂ emissions fluctuate unevenly between years, but there is an overall positive trend. In the upper delta zone, where rice residue burning after harvest is concentrated, CO₂ emissions are substantial, reaching 36,910,589 tons in 2021, 39,544,228 tons in 2022, and 35,336,700 tons in 2023. Although this area has a relatively high level of greenhouse gas emissions, it is gradually shifting in a more positive direction. In the midstream area, CO₂ emissions have sharply decreased over the years: 6.09 million tons in 2021, 3.59 million tons in 2022, and 4.9 million tons in 2023.

Factors affecting greenhouse gas emissions from post-harvest rice residue include:

(1) State management of post-harvest rice residue use: Currently, state management is oriented at the macro level through legal documents such as the Environmental Protection Law,

decrees on solid waste management, decisions approving greenhouse gas waste management projects, and decisions approving adjustments to the national strategy on integrated solid waste management through 2005, with a vision for 2050. These documents set a target that by 2025, 80% of agricultural residue resulting from agricultural production must be collected, reused, or recycled into materials, fuels, and environmentally friendly products. However, the specific decentralization of state management regarding post-harvest rice residue has not been clearly defined in terms of stakeholders, plans, implementation organizations, and mechanisms for inspection, examination, supervision, and enforcement.

(2) The ways in which farmers use post-harvest rice residue significantly impact greenhouse gas emissions. Research has shown that areas where post-harvest rice residue is burned produce substantial greenhouse gas emissions, as evidenced by the high levels of CO₂ in these regions. In contrast, areas where straw is sold or used as animal feed experience a significant reduction in CO₂ emissions, thereby lowering greenhouse gas emissions overall.

(3) Factors influencing the decision to use rice residue among rice-producing households include the following, ranked in order of importance: economic factors, state policies and legal frameworks, community attitudes, environmental considerations, and technological knowledge.

4. CONCLUSION AND POLICY IMPLICATIONS

The study was conducted in three regions that represent the characteristics of the Mekong Delta. The findings indicate that the rice yield in the Mekong Delta is very high, resulting in a significant amount of rice residue being released into the environment. Common methods of post-harvest rice residue management in the area include burning, incorporating it into the soil, selling, and using it as animal feed. These methods vary across the three regions, leading to different levels of greenhouse gas emissions from post-harvest rice residue management. The highest emissions are found in the upper delta zone, followed by the acid sulfate soil zone and, finally, the downstream coastal zone. The causes of greenhouse gas emissions from rice residues are attributed to factors such as state management of post-harvest rice residue treatment, the methods used for rice residue management, and the factors influencing households' decisions to utilize rice residues.

Depending on natural conditions, state management factors, public awareness, and the factors influencing farmers' decisions to use post-harvest rice residue, the impact will vary.

Based on the current status of post-harvest rice residue use, the state of greenhouse gas emissions in the study area, the factors affecting greenhouse gas emissions from post-harvest rice residue, and proposed strategies for reducing these emissions, the study has put forward several solutions:

(1) Improving state management of post-harvest rice residue use: This solution needs to be comprehensively implemented, starting with the drafting of legal documents, developing detailed plans, organizing implementation, and conducting inspections, monitoring, and periodic evaluations of the results.

(2) Solutions for propaganda and community education: Annual campaigns should be implemented on major occasions such as Biodiversity Day (May 22), World Environment Day (June 5), and National Week for Clean Water and Environmental Sanitation (April 15 to May 15). These campaigns should focus on helping people better understand policies and guidelines for rural agricultural development and environmental protection. Additionally, professional training should be organized to guide the collection and treatment of straw, explore effective straw management models, propose local conventions and village regulations, and establish a monitoring board with community participation.

(3) Solutions for applying science and technology: This can be achieved through the implementation of common, simple, and cost-effective treatment methods. We suggest plausible options for utilizing rice residues: i) incorporating them into the soil in combination with alternate wetting and drying water management, as this combination reduces greenhouse gas emissions, improves soil health, increases nutrient use efficiency, minimizes air pollution, and supports high rice yields; ii) using them for mushroom cultivation to convert inedible crop residues into valuable food; iii) using them as animal feed; iv) producing compost; and v) producing biochar. Proper management of rice residues can improve soil properties, reduce air pollution, and enhance the sustainability of crop productivity.

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STUDY ON THE IMPACT OF CLIMATE CHANGE ON PRODUCTIVITY AND RICE PLANT DISEASES IN SEI MERBAU VILLAGE, UJUNG PADANG DISTRICT, SIMALUNGUN REGENCY, NORTH SUMATRA PROVINCE

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ABSTRACT

Climate change has an impact on productivity and pest and disease attacks on rice plants. The study aims to analyze the correlation between climate change and the rate of disease attack. The data used in the study were climate data, namely rainfall and rainy days obtained from BMKG Simalungun data in 2018-2020, rice production data and disease data that attacked rice plants in Simalungun district were taken from the North Sumatra Agriculture and Plantation Service in 2018-2020. This study uses a survey method. The location of the research and the names of the respondents were randomly sampled. To determine the relationship and influence between climate variables and rice productivity and disease, correlation and linear regression tests were used and then continued with description analysis. The average rainfall in Simalungun Regency is above 200 mm/month, it can be concluded that the rainfall in Simalungun Regency is relatively high, the CH in Simalungun Regency during 2018-2020 has been able to meet the optimal needs of rice plants which range from 201-246 mm/month. In the period 2018-2020, the climate that occurred in Simalungun Regency experienced fluctuations that had an impact on the development of rice crop productivity and rice plant diseases in Simalungun Regency every year. BLB (Bacterial Leaf Blight) Disease Attack / Crackle and Blast on Rice Plants in Simalungun Regency in 2018-2020 is relatively mild. There is a significant correlation between rainfall and rainy days on the production and productivity of rice plants in Simalungun Regency.

Keywords: Climate, disease, productivity, rice plants

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BIOGRAPHY



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1. INTRODUCTION

1.1. Background

Climate changes such as increasing temperatures and rainfall intensity have an impact on rice productivity. Increased rainfall will lead to more land being planted. In addition to rainfall, increased temperatures also have some positive effects. The increase in temperature is caused by the increase in CO₂ concentration in the air. Increased CO₂ concentration can increase rice yields because it is related to the level of rice grain sterilization at higher temperatures (Krishnan *et al.*, 2007). Climate change such as increased temperature and rainfall integrity have a positive impact on rice productivity.

Weather is the condition of the earth's atmosphere every day and its predictions in the period of minutes to hours. This weather measurement is based on temperature, humidity, wind, cloud cover, sun, and rainfall. While climate is defined as the average condition of temperature, rainfall, air pressure, and wind in the long term and a wide space, between 30 to 100 years (Suberjo, 2009).

The impact of climate change (DPI) is very much felt in North Sumatra which causes extreme phenomena in the form of floods and droughts that have an impact on rice production. This illustration shows that floods and droughts are national problems that must be resolved gradually by mobilizing all resources and all stakeholders. There are at least several impacts of participatory floods and droughts, namely: Floods and droughts are two different extreme events like two sides of one (Idawanni, 2016).

Climate change is occurring in the tropics. Climate change affects agriculture through its impacts on crop growth, development, and yields. Indonesia's development because more than 60% of its population is highly dependent on agriculture for their livelihood (Manton *et al.*, 2001).

Change climate influence various sector in scale broad (global, continental, country) and in scale more small like province, district, unit ecological, unit eye livelihood and home ladder Change climate characterized by with shift beginning seasons and changes long period rainy season and drought), part big cause loss for society. In scale House stairs, changes climate is very influential climate for those whose work depends on the conditions climate and weather like farmers, in face changes, made a series action resilience for livelihood House ladder can Keep going maintained (Nurhayati, 2021).

1.2. Research purposes

The purpose of this study was to determine the impact of climate change on rice productivity and plant diseases in Sei Merbau Village, Ujung Padang District, Simalungun Regency.

2. RESEARCH MATERIALS AND METHODS

2.1. Time and Place Study

This research was conducted in Sei Merbau Village, Ujung Padang District, Simalungun Regency, North Sumatra. At an altitude of $\pm 25\text{m}$ above sea level with flat topography. This research was conducted from January 2023 to March 2023

2.2. Materials and Methods

2.2.1. Materials

The materials used in this study are climate data consisting of rainfall and rainy days in 2018-2020 obtained from BMKG Simalungun data, Simalungun Regency rice production data in 2018-2020 obtained from the North Sumatra Agriculture and Plantation Service and data on diseases that attack rice plants in Simalungun Regency taken from the North Sumatra Agriculture and Plantation Service in 2018-2020.

2.2.2. Method

Analyzing climate change data that occurred in Simalungun Regency To determine the relationship and influence between climate variables and rice productivity and diseases, correlation and linear regression tests were used. Correlation test is used to determine the closeness of the relationship between climate elements and rice productivity. Regression test is carried out if there is a real relationship between climate (temperature or rainfall) and rice productivity.

2.3. Research Implementation

Data Analysis from BMKG (Meteorology, Climatology, and Geophysics Agency)

Analysis of climate data consisting of rainfall and temperature from BMKG Simalungun for the last 3 years, data taken from 2018-2020

3. RESULTS AND DISCUSSION

3.1. General Description of Climate Conditions in Ujung Padang District, Simalungun Regency, North Sumatra in 2018-2020

Based on climate data obtained from BMKG Simalungun Regency, 2016-2020, it is known that the climate elements recorded at the research location, namely Ujung Padang District, are only rainfall (CH) and rainy days (HH). The CH and HH data obtained and presented in Table 1. Fluctuations in CH and HH since 2016-2020 -in Ujung Padang District, Simalungun Regency are presented in Figures 1 and 2.

Table 1. 1Regency in 2018-2020

| RAINFALL & RAINFALL DAYS OF SIMALUNGUN REGENCY IN 2018-2020 | | | | | | |
|--|----------|-------|-----------|----------|----------|-----------|
| Month | 2018 | | 2019 | | 2020 | |
| | CH | HH | CH | HH | CH | HH |
| | mm/month | day | mm/month | day | mm/month | day |
| January | 289 | 19 | 222 | 15 | 50 | 6 |
| February | 208 | 9 | 258 | 16 | 72 | 7 |
| March | 83 | 10 | 380 | 20 | 195 | 10 |
| April | 53 | 14 | 345 | 18 | 212 | 13 |
| May | 241 | 20 | 364 | 20 | 280 | 14 |
| June | 223 | 12 | 172 | 13 | 116 | 11 |
| July | 115 | 9 | 191 | 6 | 212 | 17 |
| August | 106 | 9 | 199 | 10 | 123 | 9 |
| September | 428 | 22 | 73 | 14 | 224 | 13 |
| October | 537 | 23 | 395 | 17 | 190 | 13 |
| November | 357 | 19 | 171 | 17 | 454 | 21 |
| December | 312 | 17 | 180 | 15 | 285 | 18 |
| Average | 246 | 15.25 | 245,83333 | 15.08333 | 201,083 | 12,666667 |
| Amount | 2952 | 183 | 2950 | 181 | 2413 | 152 |

In Table 1, it can be presented that the average rainfall (CH) in Simalungun Regency in 2018-2020, is classified as above the optimal requirement for rice plant growth, which is around 201-246 mm/month, with an average of 12-15 rainy days each month. The optimal rainfall needed by rice plants is 200 mm/month. And the average rainfall in Simalungun Regency is above 200 mm/month, so it can be concluded that the rainfall in Simalungun Regency is classified as high, the CH in Simalungun Regency during 2018-2020 has been able to meet the optimal needs of rice plants which range from 201-246 mm/month. According to Paski *et al.* (2017), stated that the optimal rainfall that supports the growth and development of rice plants is around 200 mm per month or more, with a distribution for 4 months and the desired rainfall per year is around 1500-2000mm.

In Figure 1, it can be seen that the rainy days in Simalungun Regency for 3 years have fluctuated each year, with the highest rainy days in 2018 (183 hh/year) and the lowest in 2020 (152 hh/year). However, it cannot be concluded that low rainy days can guarantee low rainfall, just as high rainy days do not necessarily result in high rainfall because we cannot determine how many mm of rainfall each rainy day falls.

In Figure 2, it can be seen that rainfall in Simalungun Regency for 3 years has fluctuated each year, with the highest rainfall in 2018 (2952 mm/year) and the lowest in 2020 (2413 mm/year). In 2018-2020, the annual rainfall has met the needs of rice plants, rice plants in one year optimally require 1600-2000 mm of rainfall.

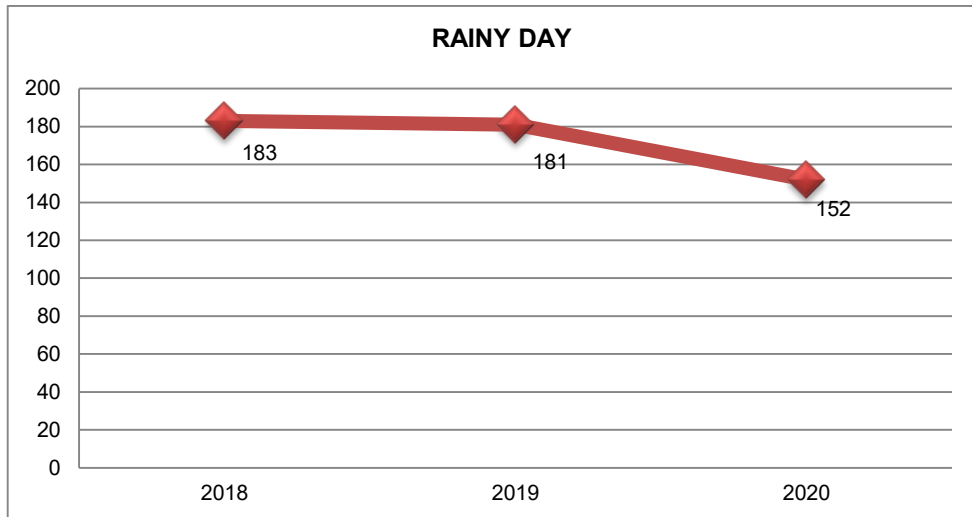


Figure 1. Rainy Days Graph (mm/year) Simalungun Regency in 2018-2020.

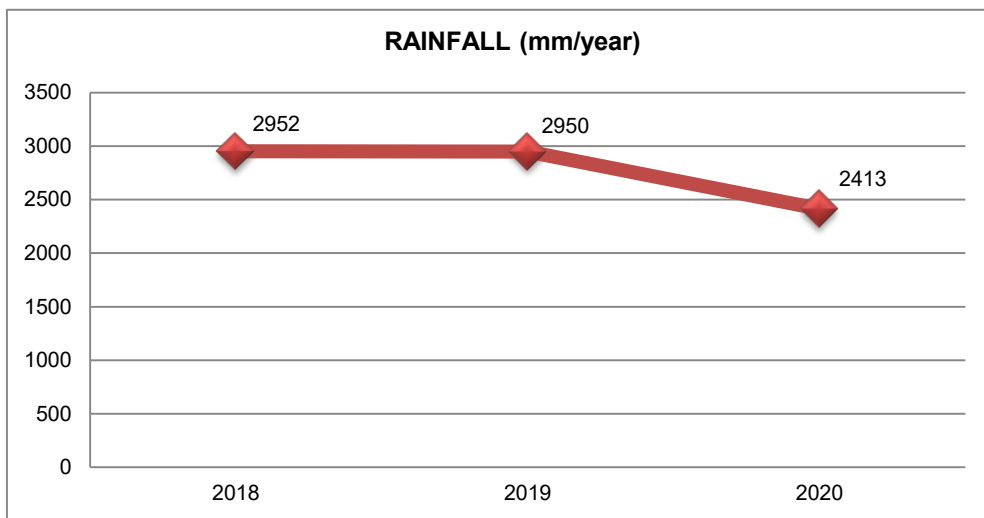


Figure 1. Rainfall Graph (mm/year) Simalungun Regency in 2018-2020

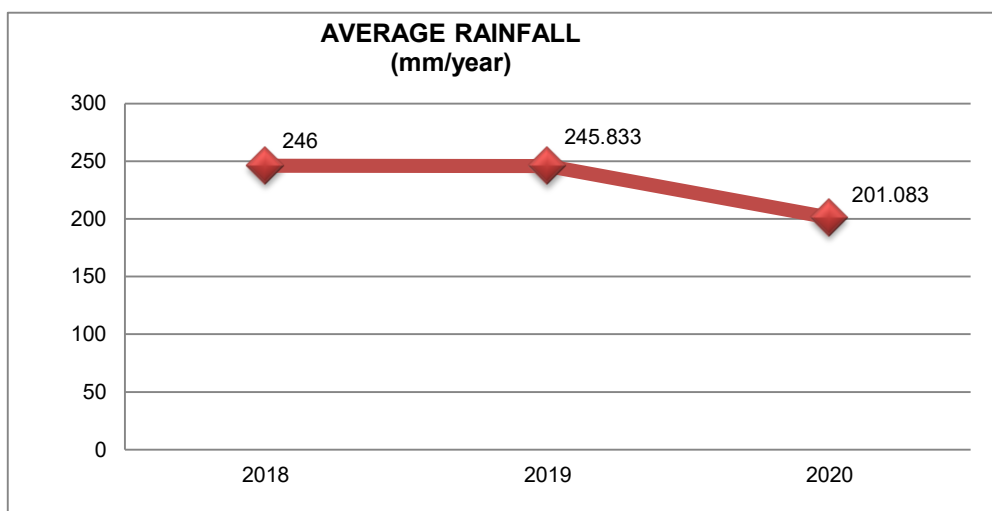


Figure 2. Average Rainfall Graph (mm) for Simalungun Regency in 2018-2020

In Figure 3, it can be seen that the average rainfall in Simalungun Regency for 3 years has fluctuated each year, with the highest average rainfall in 2018 (246 mm/year) and the lowest in 2020 (201.083 mm/year). As we know, the lowest average rainfall in 2020 is because the rainy days in 2020 are also relatively lower and the highest average rainfall in 2018 is because the rainfall in 2018 is relatively higher compared to other years. The rainfall in Simalungun Regency per year can be classified as high.

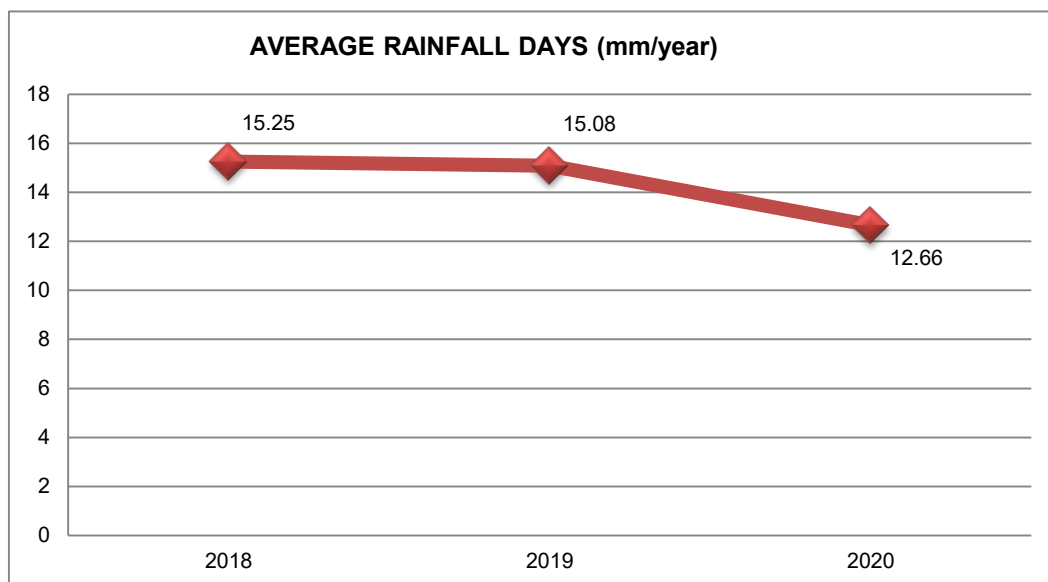


Figure 4. Average Rainy Days Graph (hh/month) Simalungun Regency in 2018-2022

Data related to rice production and productivity, obtained from the Department of Agriculture, Food Crops and Horticulture of North Sumatra Province in 2018-2020 at one research location in Simalungun Regency, Ujung Padang District, Sei Merbau Village, including the total area of rice fields planted, harvested area, production, productivity and diseases that attack rice plants at the research location are presented in tables 2, 3 and 4.

The planting index in Simalungun Regency is generally carried out twice in planting seasons and twice in harvest seasons in a year, but it is likely that some farmers in Simalungun Regency carry out 3 planting seasons and 3 harvest seasons in one year. The data is presented in Table 2.

Table 2. Data on Planted Area (ha/year) and Harvested Area of Rice (ha/year) in Simalungun Regency in 2018-2020

| Data on Planted Area (ha/yr) & Harvested Area (ha/yr) of Simalungun Regency in 2018-2020 | | |
|--|----------------------|------------------------|
| Year | Planted Area (ha/yr) | Harvested Area (ha/yr) |
| 2018 | 85,783 | 77,887 |
| 2019 | 61,873 | 62,599 |
| 2020 | 46,293 | 51,303 |
| Average | 64,650 | 63,930 |
| Amount | 193,949 | 191,789 |

In Table 2, it can be seen that the planted area and harvested area in Simalungun Regency for 3 years experienced fluctuations every year. The fluctuations in land area and harvested area can be seen clearly in Figures 5 and 6.

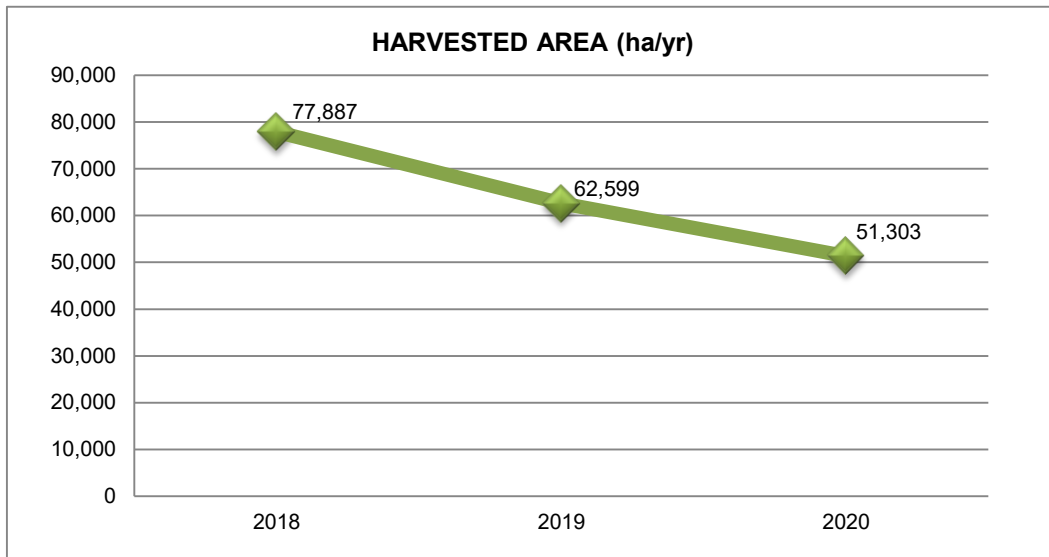


Figure 3. Graph of Harvested Area (ha/year) in Simalungun Regency in 2018-2020

In Figure 5, it is clearly seen that the harvested area in Simalungun Regency for 3 years has fluctuated every year, the highest harvested area was obtained in 2018 (77,887 ha/year), then the lowest harvested area was in 2020 (51,303 ha/year). As we can see in 2018 there was the highest fluctuation in harvested area, this can be influenced by the area of paddy fields planted in Simalungun Regency. In 2020 there was the lowest fluctuation in harvested area, this can be influenced by the low planting area in the area around Simalungun Regency.

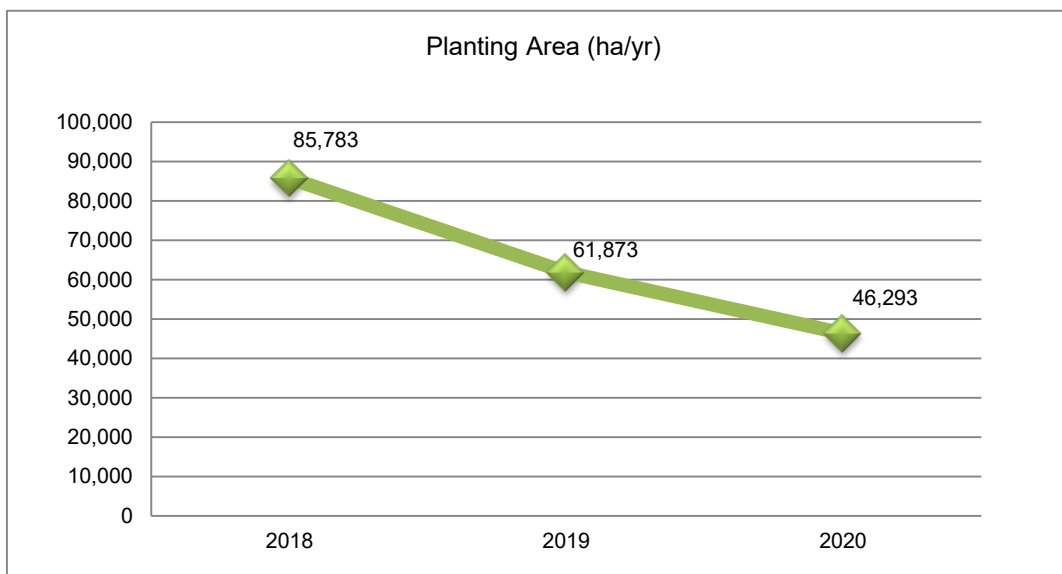


Figure 6. Graph of Planted Area (ha/year) in Simalungun Regency in 2018-2020.

In Figure 6, it is clearly seen that the highest planting area in Simalungun Regency was in 2018 (85,783 ha/year), then fluctuated since 2019-2020, and the lowest planting area was in 2020 (46,293 ha/year). The high planting area can affect the high production of rice crops in Simalungun Regency and the low planting area can affect the production of rice crops in Simalungun Regency because the high and low planting areas that occur in Simalungun Regency can affect the harvested area of rice crops in Simalungun Regency and if the harvested area decreases, the production and productivity of rice crops in Simalungun Regency can also decrease.

Table 3. Production Data (tons) and Productivity Data (tons/ha) in Simalungun Regency in 2018-2020.

| Year | Production (ton/ha) | Productivity (ton/ha) |
|---------|---------------------|-----------------------|
| 2018 | 472,440 | 60.66 |
| 2019 | 335,075 | 53.53 |
| 2020 | 300,200 | 58.52 |
| Average | 369,238 | 57.57 |
| Amount | 1,107,715 | 172.71 |

In table 3, production (tons) and productivity (tons/ha) it is known that the highest rice production during the 3-year period (2018-2020), was in 2018 (472,440 tons/ha) and in 2020 (300,200) rice crop production in Simalungun Regency decreased. That the high and low rice production in Simalungun Regency is closely related to the planting area and harvest area in Simalungun Regency, where the higher the planting area, the higher the harvest area and this has an impact on the high rice production obtained. This is also related to the irrigation system in the rice fields of Simalungun Regency, the rice fields have a higher technical irrigation system when compared to non-irrigation, and there are other things that can affect the high and low production and productivity, namely attacks from pests and diseases on rice plants and care from farmers can also have a major impact on reducing production and productivity of rice plants.

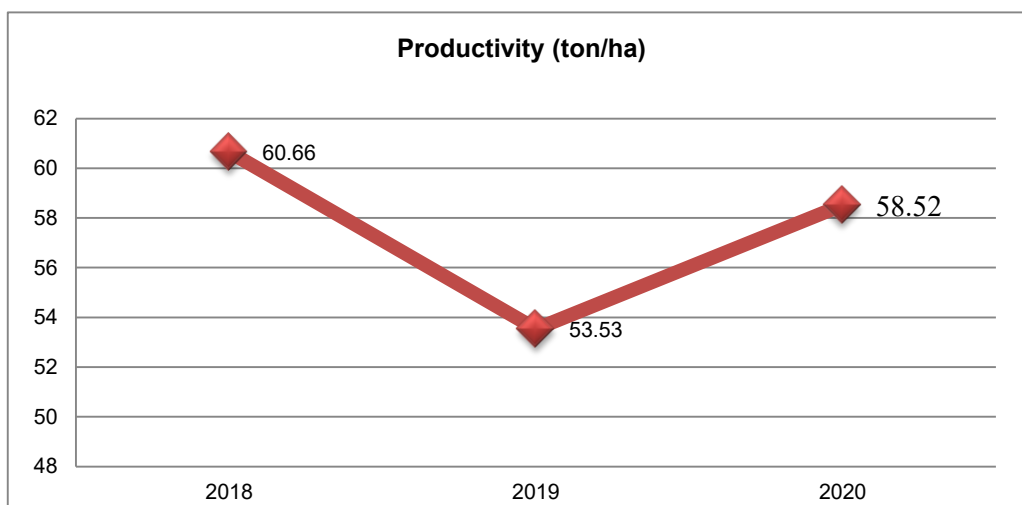


Figure 4. Productivity Graph in Simalungun Regency in 2018-2020

In Figure 7, it can be seen that rice productivity in Simalungun Regency during the 3 years of observation fluctuated each year, the highest productivity was obtained in 2018 (60.66 tons/ha) and the lowest was in 2019 (53.53 tons/ha). As we know, in 2018, the highest productivity was due to several factors such as sufficient rainfall, increasing rainy days, increasing planting area, increasing harvest area, good maintenance and production results which also increased, therefore the results of the productivity value of rice plants will also increase to the highest value from previous years because all factors support increased productivity, but in 2019, rice plant productivity in Simalungun Regency decreased due to rainfall, rainy days, planting area, harvest area and production decreased.

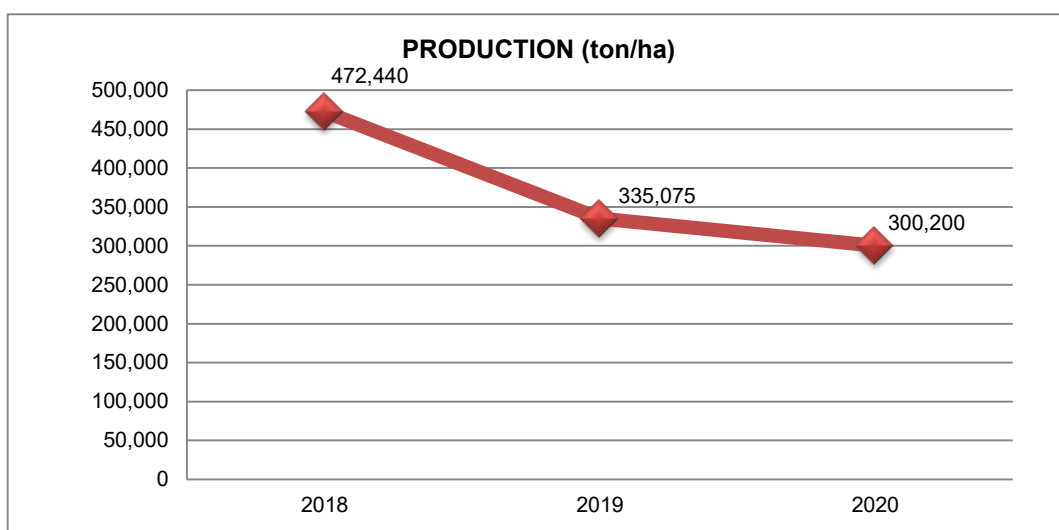


Figure 8. Production Graph (tons) in Simalungun Regency in 2018-2020

Table 4. Observation Data on BLAST Disease Attacks on Rice Plants in Simalungun Regency in 2018-2020

| Year | January | | | | February | | | | March | | | | April | | | | May | | | | June | | | |
|---------|---------|---|---|---|----------|---|---|---|-------|-----|---|---|-------|-----|---|---|------|---|---|---|------|---|---|---|
| | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P |
| 2018 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 10 | 0.5 | 0 | 0 | 4 | 0 | 0 | 0 | 1.9 | 0 | 0 | 0 | 8.5 | 0 | 0 | 0 |
| 2019 | 11 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 17 | 0.5 | 0 | 0 | 23.8 | 1 | 0 | 0 | 14.5 | 0 | 0 | 0 |
| 2020 | 7 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| Average | 7 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 9 | 0.2 | 0 | 0 | 8.3 | 0.2 | 0 | 0 | 10.6 | 0 | 0 | 0 | 10.3 | 0 | 0 | 0 |
| Amount | 20 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 26 | 0.5 | 0 | 0 | 25 | 0.5 | 0 | 0 | 31.7 | 1 | 0 | 0 | 31 | 0 | 0 | 0 |

| July | | | | August | | | | September | | | | October | | | | November | | | | December | | | |
|------|---|---|---|--------|---|---|---|-----------|---|---|---|---------|---|---|---|----------|---|---|---|----------|---|---|---|
| R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P |
| 14 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 4.5 | 0 | 0 | 0 | 3.5 | 4 | 0 | 0 | 8 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 20 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 5.5 | 0 | 0 | 0 | 8.5 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 15 | 0 | 0 | 0 |
| 42 | 0 | 0 | 0 | 40 | 1 | 0 | 0 | 17 | 0 | 0 | 0 | 26 | 4 | 0 | 0 | 19 | 0 | 0 | 0 | 44 | 0 | 0 | 0 |

Note : R (light), S (moderate), B (severe), P (pa).

In the Table 4 above can explained that cumulative For attack Blast disease in Simaungun Regency, has different levels of attack from 2016-2020. The disease attack levels used in this study are R (mild), S (moderate), B (severe) and P (severe). Blast disease is one of the factors causing a decrease in rice plant production because if this disease is left untreated, it will result in death in rice plants.

Table 5. Observation Data on BLB (Bacterial Leaf Blight)/Kersek Disease Attacks on Rice Plants in Simalungun Regency in 2018-2020

| Year | January | | | | February | | | | March | | | | April | | | | May | | | | June | | | |
|---------|---------|---|---|---|----------|---|---|---|-------|---|---|---|-------|---|---|---|------|-----|---|---|------|---|---|---|
| | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P |
| 2018 | 7 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 5.6 | 0 | 0 | 0 | 7.8 | 0.5 | 0 | 0 | 9 | 0 | 0 | 0 |
| 2019 | 11 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 14.5 | 0 | 0 | 0 | 10.5 | 2 | 0 | 0 | 9 | 3 | 0 | 0 |
| 2020 | 23 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 5.2 | 0 | 0 | 0 |
| Average | 14 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 8.7 | 0 | 0 | 0 | 7.77 | 0.8 | 0 | 0 | 7.73 | 1 | 0 | 0 |
| Amount | 41 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 27 | 1 | 0 | 0 | 26.1 | 0 | 0 | 0 | 23.3 | 2.5 | 0 | 0 | 23.2 | 3 | 0 | 0 |

| | July | | | | August | | | | September | | | | October | | | | November | | | | December | | | |
|------|------|---|---|-----|--------|-----|---|------|-----------|---|---|------|---------|---|---|-----|----------|-----|---|------|----------|---|---|---|
| | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P | R | S | B | P |
| 8.5 | 0 | 0 | 0 | 5.5 | 5 | 0 | 0 | 8 | 1 | 0 | 0 | 9.6 | 1 | 0 | 0 | 6.7 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | |
| 9 | 2 | 0 | 0 | 20 | 0 | 0 | 0 | 13.5 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 6.5 | 2 | 2 | 0 | 11 | 0 | 0 | 0 | |
| 12 | 0.5 | 0 | 0 | 18 | 0.5 | 0.5 | 0 | 15 | 0 | 0 | 0 | 6.5 | 0 | 0 | 0 | 3.5 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | |
| 9.83 | 0.8 | 0 | 0 | 14 | 1.8 | 0.2 | 0 | 12.2 | 0.3 | 0 | 0 | 12.7 | 0.3 | 0 | 0 | 5.6 | 0.7 | 0.7 | 0 | 11.3 | 0 | 0 | 0 | |
| 29.5 | 2.5 | 0 | 0 | 43 | 5.5 | 0.5 | 0 | 36.5 | 1 | 0 | 0 | 38.1 | 1 | 0 | 0 | 17 | 2 | 2 | 0 | 34 | 0 | 0 | 0 | |

Note : R (light), S (moderate), B (severe), P (para).

In the Table 5 above can explained that cumulative For attack disease Kersek in Simaungun Regency, has different levels of attacks from 2018-2020. The disease attack rates used in this study were R (mild), S (moderate), B(severe) and P(severe). Symptoms of kersek disease attack are leaf damage that starts from the edge a few cm from the tip, in the form of lines, blisters and then spreads with wavy edges, Within a few days the leaves turn yellow and in severe injuries the leaves are grayish white. Kersek disease is one of the factors causing a decrease in rice plant production because if this disease is left untreated, photosynthesis cannot be maximized, resulting in disrupted plant growth and death of rice plants.

Table 3. Data Production, Productivity and Planted Area, Harvested Area in Simalungun Regency from 2018-2020.

| Year | Rainfall | Rainy day | Planted Area | Harvest Area | Production | Productivity |
|------|----------|-----------|--------------|--------------|--------------|--------------|
| 2018 | 2952 mm | 183mm | 85,783 ha | 77,887 tons | 472,440 tons | 60.66 tons |
| 2019 | 2950mm | 181mm | 63,873 ha | 62,599 tons | 335,075 tons | 53.53 tons |
| 2020 | 2413mm | 152mm | 46, 293 ha | 51,303 tons | 300,200 tons | 58.52 tons |

Table 7. Correlation Analysis of Rainfall, Rainy Days, Planted Area, Harvested Area, Production and Productivity of Rice Plants in Simalungun Regency, 2018-2020

| | CH | HH | Planted Area | Harvest Area | Production | Productivity |
|---------------|---------|---------|--------------|--------------|------------|--------------|
| CH | 1 | | | | | |
| HH | 0.99852 | 1 | | | | |
| Planting area | 0.80116 | 0.83254 | 1 | | | |
| Harvest Area | 0.82144 | 0.85126 | 0.9993978 | 1 | | |
| Production | 0.65901 | 0.69897 | 0.978088 | 0.970275 | 1 | |
| Productivity | -0.2217 | -0.1683 | 0.4059157 | 0.373958 | 0.58729 | 1 |

In Table 1 explained above that day rain and precipitation Rain influential real with development production plant rice in the Regency Simalungun with mark correlation is very high, but rainfall rain and day Rain No influential to productivity plant rice, but productivity plant paddy correlated with development wide plant, area harvest and production plant.

This matter Can explained that the more increasing wide plant, area harvest, rainfall rain and day steady rain so production and productivity are also increasing increase Can seen in the table 6, in 2018 where rain, rainy day wide plant, area harvest, production and productivity also experienced improvement.

Table 8 can be concluded that rainfall rain and day Rain own influence real to development BLB disease but still at the level moderate attacks. Rainfall and days Rain influential to development blast disease then can be concluded If condition moist so plant disease rice also experienced rise.

Based on analysis simple linear regression between productivity and volume rain in Simalungun Regency got equation, namely productivity = 64,808 + -0.00261 rainfall rain. The results of the linear regression test are negative. show that mark variable rainfall Rain as big as -0.00261 It means every improvement rainfall Rain by 1 mm/ year will lower productivity paddy as big as -0.00261 tons..

Correlation value multiple (R) between rainfall rain and productivity of 0.2217 including in category low, thing This can explained that rainfall rain has a big impact to productivity.

From the equation regression that can be obtained mark coefficient determination (R²) of -90.16 % which means rainfall Rain explain that productivity paddy fields are affected rainfall rain and day Rain as big as -90.16 % and 91.16 % are influenced by other factors such as fertilizer, varieties, pests etc.

This matter Can explained that the more increasing wide harvest rainfall steady rain so production and productivity are also increasing increase Can seen in the table 6, in 20 20 Where rainfall and rainy days low However productivity his tall That influenced by fertilizer, maintenance, and irrigation Eat productivity his tall from year 2019.

Equality regression $Y = 63.675 + 0.035 (X)$ describes that the day variable rain (X) in the regression model simple the can be stated if the day variable Rain changed of 1 (one) then change in dependent variable productivity (Y) is as big as mark coefficient from day variable value Rain the.

Table 8. Correlation Analysis of Rainfall, Rainy Days, Planted Area, Harvested Area, Production, Productivity and Rice Plant Diseases in Simalungun Regency, 2018-2020

| | Rainfall | Rainy day | Planted Area | Harvest Area | Production | Productivity | BLB disease | | Blast disease | |
|---------------|-------------|------------|--------------|--------------|------------|--------------|-------------|-------------|---------------|-----|
| | | | | | | | ® | (S) | ® | (S) |
| Rainfall | 1 | | | | | | | | | |
| Rainy day | 0.998517878 | 1 | | | | | | | | |
| Planting area | 0.83446813 | 0.86322241 | 1 | | | | | | | |
| Harvest area | 0.821442087 | 0.85126257 | 0.999730154 | 1 | | | | | | |
| Production | 0.659010161 | 0.69896809 | 0.964391103 | 0.9702747 | 1 | | | | | |
| Productivity | -0.22172964 | -0.1683311 | 0.352313092 | 0.3739583 | 0.58728996 | 1 | | | | |
| BLB ® Disease | -0.14769557 | -0.2013045 | -0.66825994 | -0.685361 | -0.8412182 | -0.931665559 | 1 | | | |
| (S) | 0.998258 | 0.99356742 | 0.800502333 | 0.7863641 | 0.61348648 | -0.278874486 | -0.08908563 | 1 | | |
| disease ® | 0.15521555 | 0.10122041 | -0.41485532 | -0.43588 | -0.64073 | -0.99770637 | 0.95412176 | 0.213229832 | 1 | |
| (S) | 0.612542198 | 0.65465367 | 0.946722645 | 0.9539483 | 0.99818677 | 0.634943689 | -0.87223882 | 0.564839546 | -0.685782202 | 1 |

Based on analysis simple linear regression between productivity and rainy days in Simalungun Regency got equation, namely productivity = $63.6757 + 0.0354$ day rain. The results of the linear regression test are positive. show that mark variable day Rain as big as 0.0354 It means every improvement day Rain by 1 mm/ year will up productivity paddy as big as 0.0354 tons.

Correlation value multiple (R) between day rain and productivity as big as 0.1683 including in very category strong, thing This can explained that rainfall rain has a big impact to productivity.

From the equation regression that can be obtained mark coefficient determination (R²) of -94.33 % which means rainfall Rain explain that productivity paddy fields are affected day Rain as big as -94.33 % and 95.33 % are influenced by other factors such as fertilizers, varieties, and pests etc.

This matter Can explained that the more increasing wide harvest rainfall steady rain so production and productivity are also increasing increase Can seen in the table 6, in 20 20 Where rainfall and rainy days low However productivity his tall That influenced by fertilizer, maintenance, and irrigation Eat productivity his tall from year 2019.

5. CONCLUSION AND SUGGESTIONS

5.1. Conclusion

Based on discussion and description that has been explained in the chapters previously, then can be concluded that

- Impact study change climate to productivity and disease in plants rice in sei merbau village sub-district end field regency Simalungun is done with use location survey methods and climate data collection from BMKG office, production data, productivity and pests plant disease rice is taken from office service agriculture.

- Climate data for the 3 years that have been obtained are compared every the year with see results development productivity and pests plant disease rice in sei merbau village sub-district end field regency simalugun.

- In 2018-2020, the climate in Simalungun Regency fluctuated every year, which could have an impact on the development of rice plant productivity and rice plant diseases in Simalungun Regency every year.

- The existence of level significant correlation that is real between rainfall rain and day Rain to production and productivity plant rice in the Regency Simalungun.

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