THE IMPACT OF THE GREEN ECONOMY DEVELOPMENT STRATEGY ON OPERATIONAL EFFICIENCY OF ECOTOURISM BUSINESSES

Nguyen Van Nhung*

Ho Chi Minh City University of Industry and Trade

*Email: nhungnv@huit.edu.vn

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ABSTRACT

The article examines the impact of green economy development strategy on the operational performance of ecotourism enterprises in Vietnam. Research results indicate 5 influencing factors including: (1) Digital technology application in tourism (DTA); (2) Digital transformation support policies (DTS); (3) Sustainable tourism startup ecosystem (STE); (4) Raising community awareness of green tourism (RCA) and (5) Business model innovation in tourism (BMI). Based on these research findings, the author proposes several management implications to help ecotourism enterprises develop solutions to improve operational performance and promote sustainable tourism development in the context of green economy.

Keywords: Green economy, ecotourism, digital technology, sustainable startups, innovation, sustainable development.

1. INTRODUCTION

The Fourth Industrial Revolution is creating profound changes in the way ecotourism businesses operate globally. According to Gössling et al. (2020), the development of the green economy has fundamentally changed how the ecotourism industry is organized and operated [1]. Chen et al. (2021) pointed out that ecotourism businesses applying green economy development strategies can increase operational efficiency by up to 35% and reduce environmental impact by 20-25% compared to traditional businesses [2].

In Vietnam, the ecotourism industry faces increasing pressure to transform towards a green economy. According to Nguyen and Tran (2022), approximately 40% of ecotourism businesses have implemented green economy initiatives in their business activities, but this number remains low compared to the Southeast Asian average of 60% [3]. Le et al. (2023) show that Vietnamese ecotourism businesses face many challenges in the green transformation process, particularly regarding resources and the ability to apply digital technology [4].

Data from Vietnam's tourism sector indicates that the country's ecotourism market reached a value of $25 billion in 2023, with an average growth rate of 12-15% per year (Pham & Do, 2023) [5]. However, the sustainability of ecotourism activities remains suboptimal, with the tourism industry's sustainable development index reaching 3.8/5, lower than the regional average of 4.2/5. Liu and Wang (2022) suggested that applying green economy development strategies can help improve this index through process optimization and digital technology application in tourism activities [6].

The COVID-19 pandemic significantly impacted the ecotourism industry and accelerated the need to transform towards a green economy. According to Galvani et al. (2020), the pandemic forced ecotourism businesses to accelerate digitalization and adopt sustainable solutions to meet market needs and maintain business operations [7]. Sharma et al. (2021) emphasized that businesses with strong green economic development strategies showed better resilience and adaptation during crisis periods [8].

In this context, research on the impact of green economic development strategies on ecotourism business performance in Vietnam, particularly in the Mekong Delta region, holds great significance both academically and practically. Dogru et al. (2019) believe that understanding the impact of green economic development strategies is a key factor in building an effective sustainable tourism development strategy [9]. The study results will provide a scientific basis to help ecotourism businesses make decisions on digital technology application and business model innovation in the context of increasingly strong green economic development.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Theoretical Foundation

2.1.1. Green Economy and Ecotourism Theory

The green economy is defined as an economy that improves human well-being and social equity while significantly reducing environmental risks and ecological scarcity (UNEP, 2011) [10]. According to Barbier (2020), the green economy creates a new business environment where enterprises can innovate their business models and optimize operational processes towards sustainability [11].

Kuo et al. (2022) developed a theory on the impact of green economy development strategy on ecotourism business models, emphasizing the role of this strategy in creating new value and improving operational efficiency [12]. They point out that green economy development strategy can promote three core elements in ecotourism business model innovation: process digitization, resource optimization, and customer experience enhancement.

2.1.2. Literature Review

Research on the impact of green economy development strategies on ecotourism business performance has grown rapidly in recent years, focusing on various aspects of green transformation in the tourism industry. The main research directions include: the impact of digital technology application on operational efficiency, the role of support policies in business model innovation, and challenges in implementing green economy initiatives.

Font and McCabe (2017) studied the impact of digital technology application in tourism on Asian ecotourism enterprises' operational efficiency [13]. Results show that businesses applying digital technology can reduce environmental impact by 20-25% and increase resource efficiency by 30-35% through process optimization and improved customer experience.

Regarding digital transformation support policies, Buhalis and Law (2008) analyzed how policies support improving digital transformation efficiency by creating favorable environments and providing decision-making support tools [14]. Their research indicates that appropriate support policies can help increase digital transformation success rates by up to 40% in ecotourism businesses.

In the Vietnamese context, Tran et al. (2021) studied the readiness of ecotourism businesses to develop in the green economy direction [15]. They found that although awareness of green economy benefits has increased, many challenges remain regarding resources and technology integration capabilities in implementation.

The research trend on sustainable tourism startup ecosystems is gaining increasing attention. Zhang and Li (2019) developed an assessment framework for startup ecosystem development in sustainable tourism, emphasizing the role of innovation and multi-sector cooperation in promoting sustainable development in ecotourism [16].

Regarding raising public awareness of green tourism, Dolnicar (2020) studied how raising public awareness promotes innovation in ecotourism models [17]. They point out that communities with high green tourism awareness can become important driving forces for businesses to adopt more sustainable business models, especially in ecotourism and community tourism.

Zeppel (2006) focuses on research on the impact of business model innovation in green transformation [18]. Their research results show that although initial investment costs for green business models may be high, in the long run, they help businesses improve operational efficiency through resource optimization and better meet environmentally conscious customer needs.

Buhalis and Sinarta (2019) analyze the relationship between digital technology application and business efficiency in ecotourism [19]. Their research determined that the level of digital technology adoption is strongly correlated with the competitiveness and revenue growth of ecotourism businesses.

Recent studies have also highlighted the importance of stakeholder engagement in green tourism initiatives. Byrd et al. (2009) emphasized that successful implementation of green economy strategies requires collaboration between tourism businesses, local communities, government agencies, and tourists [20]. Similarly, Bramwell and Lane (2011) argued that sustainable tourism development is most effective when it involves comprehensive stakeholder participation and long-term commitment [21].

The role of innovation in sustainable tourism has been further explored by Hall and Williams (2008), who identified key areas where technological and business model innovations can drive sustainability improvements in the tourism sector [22]. Their work provides a foundation for understanding how digital transformation and green economy principles can be integrated effectively.

3. RESEARCH MODEL

Based on theoretical foundations and synthesis of relevant studies, the author proposes a research model to study the impact of green economy development strategy on the operational efficiency of ecotourism businesses in the Mekong Delta region with five influencing factors: (1) Digital Technology Application in Tourism (DTA); (2) Digital Transformation Support Policies (DTS); (3) Sustainable Tourism Startup Ecosystem (STE); (4) Raising Community Awareness of Green Tourism (RCA); and (5) Business Model Innovation in Tourism (BMI).

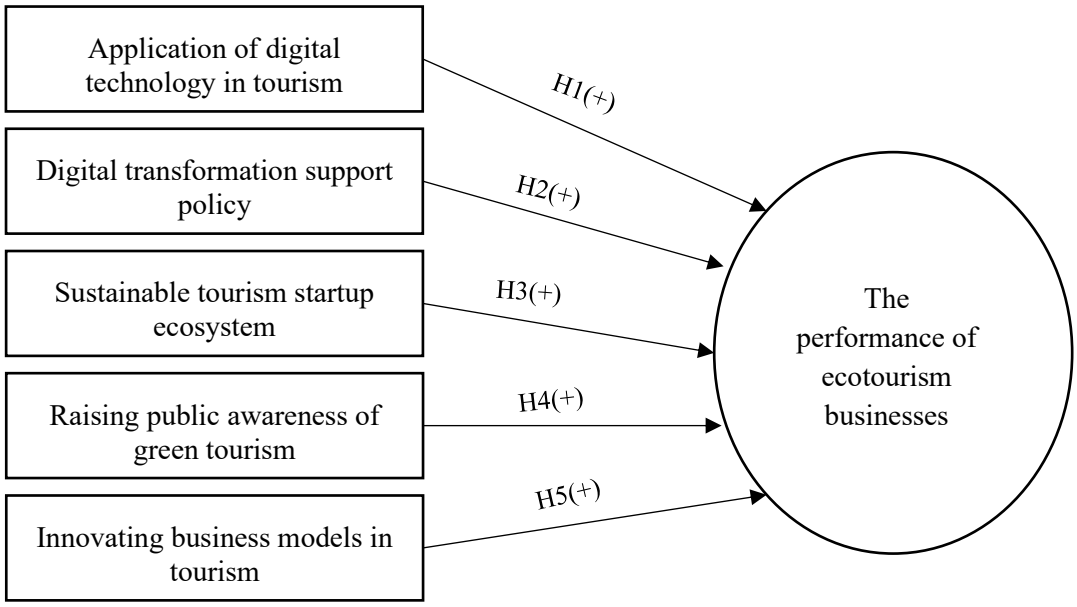

Figure 1: Proposed research model

Source: Recommended author

H1: DTA has the same relationship with the performance of ecotourism businesses.

H2: DTS has the same relationship with the operational efficiency of ecotourism businesses.

H3: STE has the same relationship with the performance of ecotourism businesses.

H4: RCA has the same relationship with the performance of ecotourism businesses.

H5: BMI has the same relationship with the performance of ecotourism businesses.

4. RESEARCH METHODOLOGY

This study employs both qualitative and quantitative research methods. The qualitative research method is used to design scales and construct questionnaires. Survey data was collected from 320 ecotourism businesses operating in the Mekong Delta region through direct surveys from March 15, 2025, to April 15, 2025. The final dataset comprised 282 valid responses, processed using SPSS 29.0 software.

The sampling method employed was stratified random sampling, ensuring representation across different types of ecotourism businesses (eco-lodges, tour operators, nature-based attractions) and various scales of operations (small, medium, and large enterprises). Data collection involved face-to-face interviews with business owners or senior managers responsible for strategic decision-making in their organizations.

The measurement scales were adapted from established instruments in the literature, with modifications to suit the Vietnamese ecotourism context. All constructs were measured using five-point Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree).

5. RESEARCH RESULTS

5.1 Cronbach's Alpha Reliability Test

The Cronbach's Alpha test results for all factors show coefficients > 0.7, and the corrected item-total correlations of variables are > 0.3 (Table 1). Therefore, the measurement variables are satisfactory and used in subsequent exploratory factor analysis (EFA).

Table 1. Results of scale reliability analysis

No.	Factor	Initial Observation Variable	Remaining Observation Variables	Cronbach's Alpha Coefficient	Eliminated variables
1	Application of digital technology in tourism (DTA)	4	4	0.839	
2	Digital Transformation Support Policy (DTS)	5	5	0.863	
3	Sustainable tourism startup ecosystem (STE)	4	4	0.840	
4	Raising public awareness of green tourism (RCA)	4	4	0.885	
5	Innovation of business model in tourism (BMI)	4	4	0.876	
6	Operational efficiency of ecotourism enterprises (HQDT)	4	4	0.764	
	Sum	25	25		

5.2 Exploratory Factor Analysis (EFA)

For independent variables, results show KMO = 0.849 > 0.5, indicating appropriate factor analysis. Bartlett's test Sig. = 0.001 < 0.05 significance level, indicating that observed variables are correlated. Eigenvalue = 6.446 > 1, indicating good information summarization by extraction factors. Total variance explained = 70.073% (> 50%), showing that five extraction factors explain 70.073% of observed data variation.

For the dependent variable, analysis results give KMO = 0.756 > 0.5, indicating appropriate factor analysis. Bartlett's test Sig. = 0.001 < 0.05 significance level. Eigenvalue = 2.355 > 1, indicating good significance of extraction factors. Total variance explained = 58.880% > 50%, showing that one extraction factor explains 58.880% of observed data variability.

5.3 Multiple Linear Regression Analysis

Table 2. Regression results

Ingredient	The coefficient has not yet adjust		Adjusted Multiplier	t	Significance Level – Sig.	Multiline Statistics	
	B	Standard Error	Beta			Acceptance	VIF
Constant	-.269	.165		-1.630	.104		
DTA	.125	.035	.135	3.615	<.001	.845	1.183
DTS	.347	.037	.363	9.323	<.001	.777	1.287
STE	.292	.036	.311	8.191	<.001	.814	1.229
RCA	.223	.031	.280	7.091	<.001	.754	1.327
BMI	.134	.039	.161	3.460	<.001	.542	1.845
Adjusted R2 = 0.675							
F = 114.749 (Sig. ANOVA = 0.01)							

The VIF variance magnification coefficient of the variables is from 1.183 – 1.845 < 3, indicating that there is no serious multi-collilinear phenomenon. The regression result for the corrected R2 coefficient = 0.675 shows that the regression model is consistent with 67.5% of the variability of the dependent variable explained by independent variables.

ANOVA analysis of variance shows that the value of F = 114.749 and has a significance level of Sig. = 0.001 < 0.05, which means that the regression model is consistent with the collected data and the input variables are statistically significant with a significance level of 5%.

The degree of influence of the factors is arranged in order from largest to smallest through the following normalized regression equation:

HQDT = -0.269 + 0.363×DTS + 0.311×STE + 0.280×RCA + 0.161×BMI + 0.135×DTA

6. CONCLUSIONS AND MANAGEMENT IMPLICATIONS

The research results show that factors affecting ecotourism business operational efficiency in the Mekong Delta region, in decreasing order of influence, include: (1) Digital Transformation Support Policies; (2) Sustainable Tourism Startup Ecosystem; (3) Raising Community Awareness of Green Tourism; (4) Business Model Innovation in Tourism; and (5) Digital Technology Application in Tourism. Based on these results, the author proposes several management implications:

6.1. Digital transformation support policies

Regulatory agencies need to develop and implement comprehensive digital transformation support policies for ecotourism businesses, including financial incentives, technical assistance, and human resource training. Specifically, dedicated support funds should be established for ecotourism businesses to invest in digital technology, with concessional loans or grants for deploying digital platforms and smart management systems.

The establishment of digital support centers where ecotourism businesses can access consulting services and technology implementation support will help reduce technical capacity barriers. Intensive digital skills training programs for ecotourism industry employees should be developed, focusing on areas such as data analytics, digital marketing, and online management.

Additionally, policies should encourage public-private partnerships in developing digital infrastructure for tourism, such as high-speed internet at ecotourism destinations, smart environmental monitoring systems, and open data platforms for sustainable tourism. Developing standards and regulations on data security and privacy in digital tourism is also important to ensure sustainable industry development.

6.2 Sustainable tourism startup ecosystem

Management agencies and businesses need to build a comprehensive sustainable tourism startup ecosystem in the Mekong Delta region. Specifically, sustainable tourism innovation centers should be established where startups can access resources, share knowledge, and develop innovative ecotourism solutions. Green venture capital funds need to be established to provide capital for highly sustainable ecotourism startup projects.

Intensive training programs on sustainable tourism entrepreneurship should be developed, focusing on skills such as green tourism service design, sustainable resource management, and developing unique ecotourism experiences. Regulatory agencies also need to create mechanisms connecting ecosystem stakeholders, including tourism businesses, educational institutions, investors, local communities, and tourists, to create comprehensive support networks for sustainable tourism initiatives.

6.3. Raising community awareness of green tourism

Ecotourism businesses need to implement multi-channel communication campaigns to raise public awareness of green tourism values and benefits. This includes using social media, organizing workshops, and developing educational materials on sustainable tourism. Communication content should focus on ecotourism's positive impact on local environment, culture, and economy, as well as specific guidance on responsible travel.

Developing environmental education programs in schools and communities is also important, helping build early environmental protection awareness and creating future generations of responsible tourists and tourism entrepreneurs. Businesses should actively participate in local environmental initiatives, such as beach cleanups, tree planting, and biodiversity conservation, not only to improve the environment but also demonstrate commitment to sustainable tourism.

6.4. Business model innovation in tourism

Ecotourism businesses need to proactively innovate their business models to adapt to green economy trends and meet increasing market demands. One approach is developing circular economy models in tourism, where resources are maximally reused and recycled, waste is minimized, and products and services are designed for longer lifecycles.

Community partnership models should be encouraged, where tourism businesses work closely with local communities to develop and deliver authentic, mutually beneficial travel experiences. This can include community-run tours, homestay accommodations, and traditional cultural activities that generate income for locals while preserving culture and environment.

6.5. Digital technology application in tourism

Ecotourism businesses need to invest significantly in digital technology applications to optimize operations and improve customer experiences. Specifically, mobile applications should be developed allowing tourists to discover, book, and experience ecotourism services conveniently. Features such as virtual reality (VR) and augmented reality (AR) can be integrated to provide interactive and educational experiences about natural ecosystems and local cultures.

Implementing smart destination management systems using IoT sensors and big data analytics will help businesses effectively track and manage environmental impacts, tourist flows, and natural resources. Blockchain technology can also be applied to ensure transparency and accountability in ecotourism supply chains, allowing tourists to verify product and service origins and sustainability.

7. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations that should be acknowledged. First, the research focuses specifically on the Mekong Delta region, which may limit the generalizability of findings to other regions in Vietnam or other countries. Second, the cross-sectional nature of the study prevents the establishment of causal relationships between variables. Future research could employ longitudinal designs to better understand the dynamic relationships between green economy strategies and business performance over time.

Additionally, this study relies primarily on quantitative methods. Future research could benefit from mixed-method approaches that incorporate qualitative insights from in-depth interviews with industry stakeholders. Finally, the study focuses on five specific factors influencing operational efficiency. Future research could explore additional variables such as regulatory frameworks, technological infrastructure, and market conditions that may also impact ecotourism business performance in the context of green economy development

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TÓM TẮT

TÁC ĐỘNG CỦA CHIẾN LƯỢC PHÁT TRIỂN KINH TẾ XANH ĐẾN HIỆU QUẢ HOẠT ĐỘNG CỦA CÁC DOANH NGHIỆP DU LỊCH SINH THÁI

Nguyễn Văn Nhung*

Trường Đại học Công Thương Thành phố Hồ Chí Minh

*Email: nhungnv@huit.edu.vn

Bài viết nghiên cứu tác động của chiến lược phát triển kinh tế xanh đến hiệu quả hoạt động của các doanh nghiệp du lịch sinh thái tại Việt Nam. Kết quả nghiên cứu xác định 5 yếu tố ảnh hưởng chính bao gồm: (1) Ứng dụng công nghệ số trong du lịch (DTA); (2) Chính sách hỗ trợ chuyển đổi số (DTS); (3) Hệ sinh thái khởi nghiệp du lịch bền vững (STE); (4) Nâng cao nhận thức cộng đồng về du lịch xanh (RCA); và (5) Đổi mới mô hình kinh doanh trong du lịch (BMI). Dựa trên những phát hiện này, tác giả đề xuất một số hàm ý quản trị nhằm hỗ trợ các doanh nghiệp du lịch sinh thái xây dựng giải pháp nâng cao hiệu quả hoạt động, đồng thời thúc đẩy phát triển du lịch bền vững trong bối cảnh kinh tế xanh.

Từ khóa: Kinh tế xanh, du lịch sinh thái, công nghệ số, khởi nghiệp bền vững, đổi mới sáng tạo, phát triển bền vững.