Factors Affecting Green Innovation Adoption in Tourism Enterprises: A PLS-SEM Approach

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ABSTRACT: Green innovation is an increasingly important development direction for countries in the context of current climate change. Enterprises in general, and tourism enterprises in particular, are at the center of green innovation because they have a major impact on the environment. This paper focuses on studying the factors affecting the green innovation adoption in tourism enterprises in Thanh Hoa province through the results of Partial least squares structural equation modeling (PLS-SEM) analysis, with a sample survey of 376 businesses. The research results show that all six factors included in the model have a positive impact on green innovation adoption of tourism businesses. In which, organizational support is the strongest influencing factor, followed by human resources, regulatory pressure, relation of external partnerships and collaborations, government support, and finally technology. The results of the study have important implications for managers of tourism enterprises as well as policymakers in developing better solutions and policies to promote green innovation in tourism businesses in Thanh Hoa province in the future.

KEYWORDS: Tourism enterprises, green innovation, influencing factors, PLS-SEM, Thanh Hoa

I. INTRODUCTION

Green innovation is a development approach that is increasingly being promoted by countries around the world, especially in the current context when the impacts of climate change, environmental pollution, and overexploitation of resources are becoming increasingly serious (Cuong & Luyen, 2024). Businesses are at the center of green innovation because they dominate most economies and are also the main actors impacting the environment. According to the Ministry of Science and Technology (2023), green innovation is the development and commercialization of new methods to solve environmental problems through technological improvements including products, processes, organizational and marketing improvements. Green innovation helps businesses access markets, increase profitability along the value chain; helps businesses meet increasingly stringent standards and regulations, attract investment and helps businesses increase productivity and technological capacity (Cuong & Luyen, 2024). On the other hand, businesses, while considered to be the driving force of macroeconomic growth, are also leading players in environmentally exploitative activities (Gadenne et al., 2009). Chen et al. (2018) state that in Europe, small and medium-sized enterprises cause 60-70% of environmental pollution, while the situation in developing countries is more difficult to measure, but potentially even more alarming

In Vietnam, green growth is a major and consistent strategy of the Party and State in socio-economic development. In 2021, the Prime Minister approved the "National Strategy on Green Growth for the 2021-2030 period, with a vision to 2050". For the tourism industry, the Prime Minister requested to promote the green transition process by "developing programs on green lifestyle and culture and developing green tourism products; developing and applying a green growth-oriented tourism development model at tourist areas and attractions; developing criteria and implementing green tourism labeling for tourism businesses". Identified as a spearhead economic sector, Vietnam's tourism industry is characterized by its heavy reliance on the natural environment. Therefore, for tourism to develop sustainably, it must inevitably follow the direction of green tourism. Green tourism is a type of tourism that operates in a way that minimizes environmental impacts, contributes positively to biodiversity conservation, uses renewable energy, and promotes natural and cultural heritage, and develops environmentally friendly products. The Vietnam Tourism Development Strategy to 2030 has also clearly stated: "Develop sustainable and inclusive tourism, based on green growth, maximizing the contribution of tourism to the sustainable development goals". However, the implementation process in reality still has many limitations and has not made any significant breakthroughs, although there have

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been many documents and activities related to green tourism and green growth-oriented tourism development that have been urgently implemented.

As a land of "spiritually favorable location and outstanding people", Thanh Hoa possesses a diverse and rich treasury of tangible and intangible cultural heritage, with over 1,500 relics and scenic spots. Along with this are many unique and distinctive traditional cultural festivals and a rich and attractive local cuisine. Accordingly, Thanh Hoa province has continuously been among the leading localities in Vietnam's tourism landscape. Search volume for Thanh Hoa tourism has rapidly increased, ranking among the top in the country. The growth of Thanh Hoa's tourism industry has demonstrated confidence in its strong recovery and development; at the same time, it has been gradually affirming its important position and role in socio-economic development, contributing to job creation, poverty eradication, ensuring social security, and preserving and promoting the cultural values of Thanh Hoa. According to a report by Thanh Hoa Department of Culture, Sports and Tourism, by October 2024, there were 2,386 tourism enterprises in the province, welcoming nearly 14.7 million tourists, with total tourism revenue reaching over 32,440 billion VND, an increase of 38.5% over the same period. With this potential, tourism businesses will truly become a spearhead for the province's economy in the coming time.

This paper focuses on studying the factors influencing the application of green innovation in tourism enterprises in Thanh Hoa province through the results of multiple regression analysis, with a sample survey of 376 businesses. The results of the study have important implications for business managers as well as government policymakers to promote green innovation in tourism businesses, towards sustainable tourism development in the future.

II. LITERATURE REVIEW AND PROPOSED RESEARCH MODEL

A. *Green Innovation*

Green innovation is a term that refers to technological advancements used to manage the environment, prevent pollution, reduce waste, and conserve energy (Zhang et al., 2019). According to Castellacci & Lie (2017), green innovation or eco-innovation is the process that contributes to the creation of new products and technologies aimed at reducing environmental risks, such as pollution and the negative consequences of resource exploitation. Green innovation can improve market position, attract customers, provide green services, and allow for achieving a competitive advantage (Luo & Zhang, 2021). Kemp (2010) defines green innovation as the use of modern methods, both in production processes and management, through which environmental risks and pollution, negative impacts on resources, and energy use can be minimized. Similarly, Damanpour (1992) defines green innovation as changes in product, process and management policy that affect the internal and external environment.

According to Shahzad et al. (2020), green innovation is a key factor directly influencing sustainable business performance. Shaukat et al. (2013) found that each type of innovation increases the economic and financial efficiency of the enterprise; therefore, there is an incentive for businesses to adopt innovation, while the adoption of green innovation can also enhance the image of the business in the market. Tariq et al. (2019) concluded that green product innovation increases financial efficiency, company profits, and reduces financial risk. The extent to which such practices are adopted in businesses depends on the commercial benefits and drivers for green innovation (Forbes et al., 2013). Chen (2008) also explained that if businesses are willing to adopt green innovation, this will lead to real economic growth, social satisfaction, and environmental protection all increasing in any economy.

B. *Factors Influencing Green Innovation Adoption in Enterprises*

External Environmental Factors

Government Support

Financial incentives or subsidies from the government and credit availability from state banks for green innovation encourage SMEs to adopt green innovation (Hojnik & Ruzzier, 2016). Additionally, Scupola (2003) also affirmed that government policies, such as providing financial incentives, technical resources, pilot projects, and training programs, are factors that encourage businesses to adopt green innovation. Furthermore, due to limited resources, businesses need additional resources and government support to implement green initiatives (Pinget et al., 2015). Therefore, this study developed the following hypothesis:

H1: Government support has a positive impact on green innovation adoption in tourism enterprises.

Regulatory pressure

Regulatory pressure on businesses is also an important factor in encouraging businesses to adopt green innovation, as non-compliance with government environmental regulations can be very costly for companies (Berrone et al., 2013). Similarly, Zhu et al. (2005) concluded that strong government rules and laws on environmental protection are a positive factor in the

adoption of green practices by companies. Environmental legal pressure motivates companies to adopt green innovation, thereby improving cost efficiency and company profits (Chan et al., 2016). Strict rules and regulations related to environmental protection increase the rate of green innovation adoption in SMEs. Therefore, the following hypothesis is proposed:

H2: Regulatory pressure has a positive impact on green innovation adoption in tourism enterprises.

Relation of external partnerships and collaborations

Relation of external partnerships and collaborations are considered an essential factor to promote green innovation in businesses. Dhull & Narwal (2016) clarified that relationships with suppliers and the provision of suppliers' advancements to green production and processes increase green practices in companies. The literature also indicates that if companies want to produce without harming the environment, then cooperation and interdependence between corporations, (De Marchi, 2012), customers, distributors, suppliers, and universities (Cainelli et al., 2012) is necessary. Therefore, this study has developed the following hypothesis to analyze the actual situation:

H3: Relation of external partnerships and collaborations have a positive impact on green innovation adoption in tourism enterprises.

Organizational Factors

Human Resources

The availability of skilled human resources and the adherence of managers to green practices are considered key factors driving businesses to pursue green innovation (Wu et al., 2012). Adopting green innovation is a complex process that requires significant changes in current operating procedures; it is human resource intensive and depends on employee development and engagement (Del Brio & Junquera, 2003). To overcome the knowledge barrier to adopting green innovation, employees need to be extensively trained to learn the fundamentals of innovation. Employees with learning ability will increase their absorptive capacity through training programs to be able to promote the adoption of green innovation (Christmann, 2000). Thus, a positive link between the adoption of green innovation and the quality of human resources is expected for businesses, and the following hypothesis is proposed:

H4: Human resources have a positive impact on green innovation adoption in tourism enterprises.

Organizational Support

Organizational support refers to the extent to which an organization facilitates its employees to use a particular technology or system (Naujokaitiene et al., 2015). Promoting innovation and ensuring the availability of creative funding and technical resources significantly influences the adoption of green innovation (Clohessy & Acton, 2019). Most green innovations require coordination and cooperation between different departments of an organization during implementation. To ensure their success, green projects are often supported and encouraged by higher management. The main task of senior management is to ensure the availability of resources and to distribute them proficiently so that the company can adopt green practices to achieve environmental competitive advantage (González-Benito & González-Benito, 2006). Therefore, the author proposes the following hypothesis regarding the relationship between organizational support and the application of green innovation:

H5: Organizational support and green innovation adoption in tourism enterprises have a positive relationship.

Technology

Investing in green technology is an opportunity for businesses to achieve a competitive advantage in the market (Ministry of Science and Technology, 2023). Geffen & Rothenberg (2000) explain that technology is constantly changing; therefore, to shorten product life cycles and maintain competitiveness, companies should invest in environmental innovation. In addition, the application of green technology increases the efficiency and competitiveness of businesses; therefore, companies should consider green business competitors in their business strategy (DeBoer et al., 2017). Furthermore, the adoption of green technology can be beneficial for a company in terms of achieving environmental certification, which helps to improve the company's overall reputation. Similarly, the relative advantage of green technology has a positive impact on the application of green innovation (Kousar et al., 2017). Therefore, the hypothesis about the relationship between technology and the application of green innovation is:

H6: Technology has a positive impact on green innovation adoption in tourism enterprises.

C. *Proposed Research Model and Measurement Scales*

Based on the above literature review and proposed hypotheses, the author proposes a research model of the factors influencing green innovation adoption in tourism businesses in Thanh Hoa province, as shown in Figure 1. The dependent variable is green innovation adoption in tourism businesses, and the six independent variables include: Government support, Regulatory pressure, Relation of external partnerships and collaborations, Human resources, Organizational support, and Technology.

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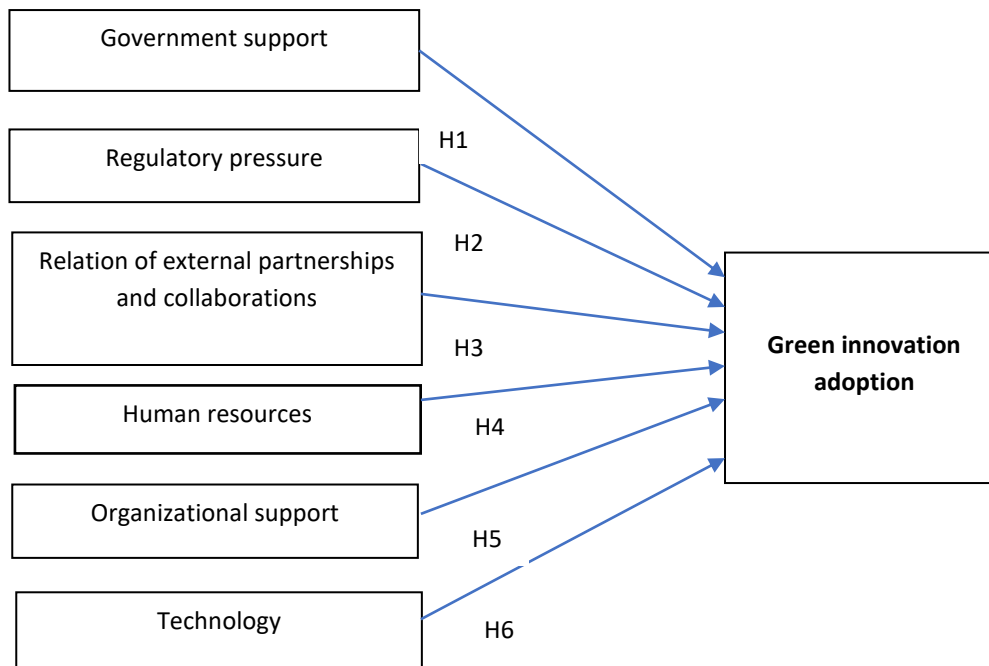

Figure 1. Proposed research model

Based on previous studies, the author has developed and adjusted the scales for the factors in the research model. The results of measuring 6 factors in the model are presented in Table 1. The observed variables are evaluated by businesses according to a 5-level Likert scale, from strongly disagree: 1 point; disagree: 2 points; neutral: 3 points; agree: 4 points to strongly agree: 5 points.

Table 1. Measurement scales of variables in the research model

Code	Scale	Source
GI	**Green innovation**	
GI1	Enterprises selected less polluting materials in the product design and development stage	Jun et al. (2019**)**
GI2	Enterprises selected materials that consume less energy in product development	
GI3	The company's products are easy to reuse, recycle and decompose	
GI4	The company's production process emits less toxic substances into the environment	
GS	**Government support**	
GS1	The government has a policy of financial support to adopt green innovation	Weng & Lin (2011); Jun et al. (2019**)**
GS2	The government supports technology to adopt green innovation	
GS3	The government has support for human resource training for green innovation	
GS4	Businesses can easily access green innovation support policies from the government	Jun et al. (2019**)**
RP	**Regulatory pressure**	
RP1	The government sets environmental regulations for business activities	Jun et al. (2019**)**
RP2	Relevant associations require businesses to comply with environmental protection regulations.	Chan et al., 2016
RP3	Local authorities also issue regulations on environmental protection for businesses	Jun et al. (2019**)**

RP4	Business operations must strictly comply with environmental protection regulations.	Chan et al., 2016
REPC	**Relation of external partnerships and collaborations**	
REPC1	The business has environmental certification from suppliers	Jun et al. (2019)
REPC2	Enterprises cooperate with stakeholders in sharing knowledge about green innovation	Jun et al. (2019)
REPC3	Businesses are committed to complying with environmental regulations with stakeholders	Dhull & Narwal (2016)
REPC4	Businesses cooperate with organizations in environmental protection	Dhull & Narwal (2016)
HR	**Human Resources**	
HR1	Employees are able to learn new technologies easily	Jun et al. (2019)
HR2	Employees are able to share knowledge about green innovation with each other	Jun et al. (2019)
HR3	Employees are always ready to apply green innovation	Wu et al.(2012)
HR4	Employees are always aiming at the issue of environmental protection of the company's activities	Wu et al.(2012)
OS	**Organizational support**	
OS1	Business leaders commit to applying green innovation	Jun et al. (2019)
OS2	Businesses always encourage employees to apply green innovation	Jun et al. (2019)
OS3	Businesses provide resources for employees in adopting green innovation	Jun et al. (2019)
OS4	Business leaders are always ready to support employees in issues when implementing green innovation activities.	Weng & Lin (2011)
Te	**Technology**	
Te1	The company's current technology is suitable for applying green innovation	Weng & Lin (2011)
Te2	Enterprises can easily integrate green technology into existing operating systems	Jun et al. (2019)
Te3	Enterprises are willing to invest in technology innovation to serve the application of green innovation	Jun et al. (2019)
Te4	Green technology can bring higher economic benefits to businesses	Ministry of Science and Technology (2023)

Source: Author's synthesis

III. METHODOLOGY

This study employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach to test the research hypotheses regarding the relationships between factors influencing green innovation adoption. Data were collected from 386 tourism businesses in Thanh Hoa province using a convenience sampling method.

The sample size was determined using Slovin's formula (1960) to ensure representativeness of the population, with:

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

Where:

- n is the sample size;
- N is the population size;
- e is the margin of error (the author chose 0.05).

At the time of the survey, there were 2386 tourism businesses in Thanh Hoa province. Therefore, the minimum required sample size was 342 businesses. To ensure objectivity and reliability, this study targeted a quantitative research sample of 400 questionnaires. After the survey, the author collected 376 valid questionnaires, meeting the requirements for analysis. The data collected from the survey questionnaires were processed and analyzed using SMART PLS 3.0 software with the following analyses:

- Reliability testing of the scales through Cronbach's alpha and composite reliability coefficients;

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- Convergent and discriminant validity testing through Average Variance Extracted (AVE) and Heterotrait-Monotrait Ratio (HTMT) matrix;
- Collinearity testing of the observed variables through outer Variance Inflation Factor (VIF) / inner VIF; and
- Evaluation of the PLS-SEM structural model to test the research hypotheses

IV. RESEARCH RESULTS AND DISCUSSION

A. Measurement Model Evaluation

According to Hair et al. (2022), for the measurement model, the quality of observed variables is reflected through the outer loading. If this coefficient is >= 0.7: Very good, < 0.4: Rejected. The data analysis results of the observed variables in this study show that the outer loadings of all variables are > 0.7, thus ensuring the quality of the observed variables for further analysis.

Regarding the reliability test of the scales in the measurement model, also according to Hair et al. (2022), Cronbach's alpha and Composite reliability values ranging from 0.6 to 0.7 are considered acceptable, and values ranging from 0.7 to 0.9 are considered satisfactory. If the construct has a value lower than 0.6, it is considered to lack internal consistency reliability. The results of the reliability test of the scales from the survey data in this study are shown in Table 2.

Table 2. Reliability and Convergent Validity

	Cronbach's Alpha	rho_A	omposite Reliability	Average Variance Extracted (AVE)
GI	0.902	0.904	931	0.773
GS	0.846	0.849	896	0.683
HR	0.894	0.906	927	0.76
OS	0.878	0.889	916	0.732
REPC	0.886	0.909	92	0.742
RP	0.899	0.907	93	0.768
Te	0.842	0.869	892	0.675

Source: Data processing results of the authors

The data analysis results show that both Cronbach's alpha and Composite reliability values are greater than 0.7, thus ensuring the internal consistency and reliability of the scales. Next, the convergent validity of the scales is examined based on the Average Variance Extracted (AVE) index. According to Hair et al. (2022), when the AVE index is ≥ 0.5 (the latent variable explains at least 50% of the variance of each observed variable), the scales ensure convergent validity. According to the data analysis results in Table 2, the AVE values of all factors are above 0.5, demonstrating the convergent validity of the construct for further analysis.

The discriminant validity of the scales in this study is examined through the Heterotrait-Monotrait Ratio (HTMT). If the HTMT value is high, it indicates that there is a discriminant validity issue. According to Henseler et al. (2015), the threshold value is 0.90. If the value of the construct is greater than 0.9, it indicates a lack of discriminant validity. The data analysis results in this study show that all HTMT values in Table 3 are lower than the threshold value of 0.9. Therefore, all scales ensure discriminant validity.

Table 3. Discriminant Validity – Heterotrait – Monotrait Ratio (HTMT) - Matrix

	GI	GS	HR	OS	REPC	RP	Te
GI							
GS	0.467						
HR	0.536	281					
OS	0.550	343	0.261				
REPC	0.383	203	0.254	0.185			
RP	0.579	518	0.524	0.419	0.366		
Te	0.316	282	0.190	0.169	0.318	0.287	

Source: Data processing results of the authors

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B. Evaluation of PLS-SEM Structural Model

For the structural model, the study first examines the multicollinearity of the independent variables (Inner VIF). If the VIF value is > 5, it indicates the possibility of collinearity between the independent variables, and the model is no longer reliable for testing the research hypotheses. If the VIF value remains low < 5 or > 3.3, it indicates a potential multicollinearity issue (Hair et al., 2022). In this study, all VIF values are less than 3. Therefore, there is no multicollinearity issue between the variables in the structural model.

Next, the study evaluates the extent to which the independent variables reflect the dependent variables of the model. The data analysis results show that the R^2 of the green innovation adoption (GI) variable is 0.488. This means that the influencing factors in the model explain 48.8% of the variance in green innovation adoption in tourism businesses, while the remaining 51.2% is attributed to system error and other factors outside the model.

Regarding the PLS-SEM model: In this study, the structural model is estimated with a maximum number of iterations set at 5000 and a stopping criterion of 0.00000001. The results show that after running the algorithm, it converged with fewer iterations than expected (Figure 2). The estimation results of the research model with relationships (paths) show the regression coefficients and p-values for testing the statistical significance of the regression coefficients. The results show that at a 5% significance level (95% confidence level), government support (GS), regulatory pressure (RP), external relationships and partnerships (REPC), human resources (HR), and organizational support (OS) all have an impact on the adoption of green innovation by tourism businesses in Thanh Hoa province. Among these factors, organizational support has the strongest influence, while government support has the least influence. The technology factor does not have a significant influence on green innovation adoption at the 5% significance level. However, at the 10% significance level or 90% confidence level, technology also affects the adoption of green innovation by businesses.
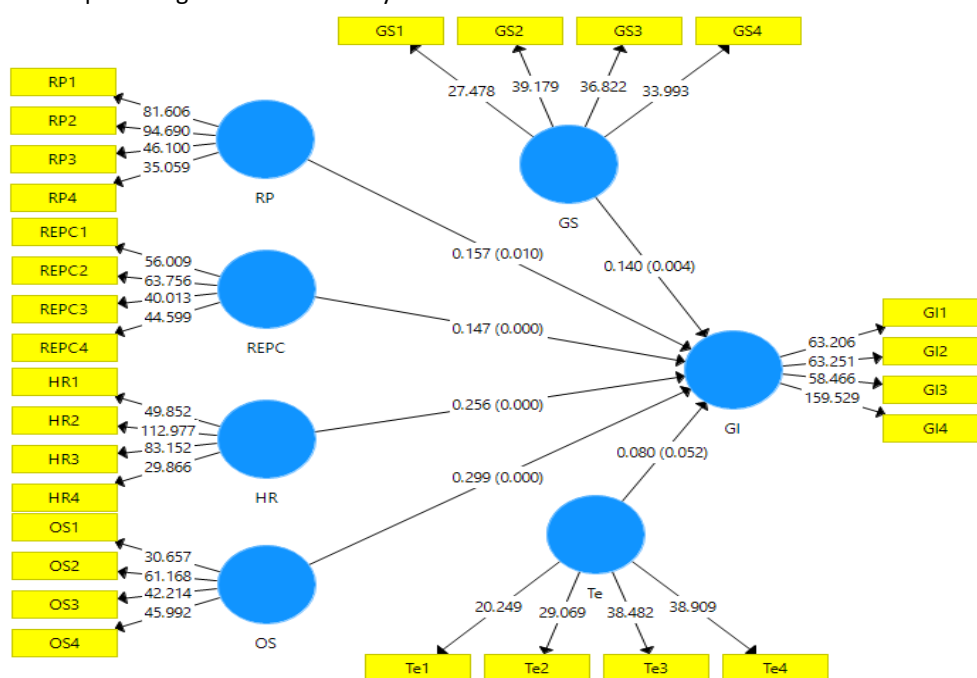

Figure 2. PLS-SEM Model Estimation Results

C. Hypothesis Testing Results and Discussion

The results of the hypothesis testing of the model are shown in Table 4. Accordingly, after testing with the PLS-SEM model, at the 10% significance level, all 6 hypotheses are accepted. However, at the 95% confidence level, the 6th hypothesis about the influence of technology on green innovation adoption in tourism businesses in Thanh Hoa province is rejected.

Table 4. Results of Hypothesis Testing

Hypothesis	Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Test results (Significance level of 10%)
H1	GS -> GI	0.140	0.142	0.049	2.857	0.004	Accept
H4	HR -> GI	0.256	0.255	0.057	4.504	0.000	Accept

H5	OS -> GI	0.299	0.299	0.050	6.028	0.000	Accept
H3	REPC -> GI	0.147	0.149	0.041	3.597	0.000	Accept
H2	RP -> GI	0.157	0.156	0.061	2.585	0.010	Accept
H6	Te -> GI	0.080	0.082	0.041	1.944	0.052	Accept

Source: Data processing results of the authors

The study results show that at a 10% significance level, all 6 factors included in the model have a positive impact on the adoption of green innovation in tourism businesses in Thanh Hoa province. Among these factors, organizational support has the greatest impact, while technology has the smallest impact.

Regarding organizational support, which includes the commitment of the business leadership to adopting green innovation, encouraging employees to apply green innovation, providing resources for employees in green innovation, and leaders being ready to support employees in issues related to green innovation activities, the research results show that these are the factors that have the greatest impact on the adoption of green innovation by tourism businesses in Thanh Hoa (with an impact coefficient of 0.299). In fact, the commitment of managers to green practices is considered the main driving force for companies to adopt green innovation, a conclusion also drawn by previous research by Wu et al. (2012). In addition, Lin & Ho (2011) also affirmed that providing rewards to employees for green behavior can motivate them to apply green innovation. In the case of Thanh Hoa province, management commitment related to greening tourism businesses was confirmed during the data collection process for this study, showing that if the top management of businesses commit to green innovation goals and provide resources for employees in green innovation as well as always being ready to support employees in issues related to green innovation activities, it can be achieved.

The second most influential factor on the adoption of green innovation in tourism businesses in Thanh Hoa province is human resources. In fact, in all business activities, people are always the first concern and also the factor that has a great influence on the success or failure of the business. In addition to the leadership and determination of the business leaders, employees are the next subjects who decide on the application of green innovation in tourism businesses. In businesses where employees can easily learn new technologies, share knowledge about green innovation with each other, and are always ready to apply green innovation towards environmental protection, the application of green innovation in the business will soon be feasible. This result is also consistent with the conclusion in a previous study by Wu et al. (2012) that the availability of skilled internal human resources is considered a key driver for companies to adopt green innovation.

Regulatory pressure is the third most influential factor affecting the adoption of green innovation in tourism businesses in Thanh Hoa province. According to this result, regulatory pressure for green innovation is also an important factor to encourage businesses to adopt green innovation, and non-compliance with government environmental policies can be costly for companies. In fact, for tourism businesses in Thanh Hoa province, the government, local authorities, and related associations setting environmental regulations for business activities will motivate businesses to carry out green innovation activities. Especially in the tourism sector, businesses need to strictly comply with regulations on environmental protection. This result is also consistent with the previous conclusions of Berrone et al. (2013). In addition, Zhu et al. (2005) also concluded that strong government rules and laws on environmental protection positively impact green activities in companies. Environmental regulatory pressure encourages companies to adopt green innovation, thereby improving cost efficiency and profits for companies (Chan et al., 2016).

The next factor affecting green innovation adoption in tourism businesses is relationships of external partnerships and collaborations, including businesses having environmental certifications from suppliers, cooperating with stakeholders in sharing knowledge about green innovation, committing to comply with environmental regulations with stakeholders, and cooperating with organizations in environmental protection. The research results demonstrate that external relationships and partnerships also positively promote the adoption of green innovation by tourism businesses. Previous research by Dhull & Narwal (2016) also clarified that environmental partnerships with suppliers and the provision of supplier advancements to green production and processes increase green innovation in companies. The literature has also identified that if companies want to produce goods without harming the environment, cooperation and interdependence between corporations (De Marchi, 2012), customers, distributors, suppliers, and universities (Cainelli et al., 2012) are necessary.

Regarding the influence of government support on the adoption of green innovation in tourism businesses, such as the government having policies to support finance, technology and techniques, and human resource training for green innovation, the research results show that these policies have a positive impact on the application of green innovation in businesses. In particular, when businesses can easily access government support policies for green innovation, the process of implementing green innovation activities takes place more smoothly and quickly. This finding is also consistent with some previous studies,

such as the study by Scupola (2003), which explained that government policies such as providing financial incentives, technical resources, pilot projects, and training programs are factors that encourage businesses to adopt green practices. Moreover, financial incentives or subsidies from the government and easy credit systems from banks for green innovation encourage businesses to adopt green innovation (Hojnik & Ruzzier, 2016). For Vietnam, the Prime Minister has issued Directive No. 44 on implementing some key tasks and solutions to accelerate the implementation of the National Strategy on Green Growth for the 2021-2030 period, with a vision to 2050. Accordingly, the Prime Minister assigned the Ministry of Culture, Sports and Tourism to complete the legal framework and policy mechanisms for green tourism development; effectively develop and implement the Tourism System Planning for the 2021-2030 period, with a vision to 2045; and develop a synchronous and effective set of standards for green tourism development. This policy will be a premise to promote green innovation activities in tourism businesses in the coming time.

Finally, for tourism businesses in Thanh Hoa province, although the research results have not yet confirmed the influence of technology on green innovation adoption at significance level of 5%), it is clear that technology is always an important factor in the process of implementing green activities of businesses. The application of green technology helps to enhance the company's reputation and increase economic benefits by capturing a larger market share. Similarly, the application of green technology also helps companies achieve environmental standard certifications. Therefore, businesses are more willing to adopt green technology when they understand that green technology has more financial and economic benefits than existing technology. Therefore, there is a favorable and significant relationship between the relative benefits of green technology and green innovation.

V. CONCLUSIONS AND RECOMMENDATIONS

This study examined the influence of six factors on green innovation adoption in tourism businesses in Thanh Hoa province through the analysis of a PLS-SEM model, with a sample survey of 376 businesses. The results show that all six factors included in the model have a positive impact on green innovation adoption in tourism businesses. Among them, organizational support is the most influential factor, followed by human resources, regulatory pressure, relationships of external partnerships and collaborations, government support, and finally, technology. Based on the findings and results of this study, the author proposes several recommendations for tourism businesses as well as policymakers to promote green innovation adoption in tourism businesses as follow:

For the Government: Develop specific regulations on green innovation and criteria for identifying green innovation enterprises as a basis for developing and implementing policies to support and promote this activity in businesses; Focus on completing the legal framework and policy system to support green innovation, including regulations on standards and technical regulations; tax, finance, and investment policies; market and consumption policies; and education, training, research and development policies; Develop policies for the environmental industry for products, equipment and technologies, along with encouraging linkages between industries, sectors and localities in implementing green innovation and other tools; Focus on solutions to encourage and support research and development activities and investment to improve the level and ability to apply science and technology in businesses; Encourage domestic and international organizations to promote partnerships with tourism businesses to share knowledge about green innovation and invest in modern and environmentally friendly technologies; and Develop cooperation mechanisms between the government and businesses to enhance mutual understanding of environmental protection and the benefits of green activities.

For tourism businesses: The decision to adopt green innovation comes first from the business leaders, so organizational support is a factor that needs to be focused on and implemented drastically. This includes the commitment of business leaders to adopt green innovation, encourage employees to apply green innovation, and provide resources for employees in green innovation. Business leaders must always take the lead and be ready to support employees in issues related to green innovation activities; Develop human resource development strategies that adapt to the requirements of green innovation and have extensive knowledge of environmental and sustainability-related fields, focusing on education and training solutions to contribute to improving the quality of human resources; Strengthen linkages and cooperation with stakeholders in sharing knowledge about green innovation, commit to comply with environmental regulations with stakeholders, and cooperate with organizations in environmental protection; Gradually invest in green technology within the business; and Ensure conditions to access government support policies most effectively, grasp and make the most of government support programs to promote the application of green innovation, towards sustainable tourism development in accordance with the general trend of the times.

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