Green Logistics Management Practices: A Study on the Hospitality Sector

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Abstract

This study aims to assess the effects of the factors on green logistics management practices in the hospitality sector. A quantitative methodology is applied to evaluate a particular population or sample, and research instruments with PLS-SEM are used in this study. Our sample and data were collected via an online survey focusing on managers at hotels in Da Nang city. The results show that GLMP practice in hotels is influenced by the following five factors: government environmental regulations, economic pressure, supply chain collaboration, internal green logistics awareness, and customer pressure. In addition, the result also reveals that government environmental regulations can affect increasing the green logistics management practice through customer pressure, supply chain collaboration, and internal green logistics awareness.

Keywords: *Green Logistics, Green Logistics Managements, Green Logistics Managements Practices*

INTRODUCTION

Producing and transporting goods requires a lot of effort and time. Furthermore, transportation routes and infrastructure are very limited, making trade between countries with large amounts of goods difficult. But, with the development of science and technology today, that problem has improved because the supply chain, that development has made the supply chain more flexible and diverse (An Dong, 2022). It has helped improve the quality of economic activities, increasing the level of trade transactions between chains (OECD, 2000), which is also the in-depth development that the economy is aiming for. Furthermore, countries also promote open trade policies (free trade, FTAs, etc.), attracting many manufacturers and traders, increasing GDP not only for the world, but also Vietnam (Dezan Shira and Associates, 2021). Those has created a significant increase in support for expanding the scale, level of transactions and trade in the economy (The World Bank, 2018), and is also economic development in the direction of the economy wide that the economy has. In addition, when the components in the supply chain are closely linked, it will make the chain more efficient, businesses will reduce production costs, increase flexibility, and increase product quality (Abdullah AlSagheer and Maryam Ahli, 2011). Typically, in the automobile manufacturing industry, having good links in the supply chain between manufacturers, component suppliers and dealers will help automakers optimize production and transportation processes. delivery, ensuring product quality, increasing supply capacity and reducing production costs.

However, the consequences of development and trade are the degradation of the natural environment, toxic waste, water pollution, loss of biodiversity, and climate change (Mary Huang, 2015). heavy on the environment. Therefore, building a green logistics is a very urgent issue, especially in the tourism and hospitality sector, because it is known to be one of the tourism-intensive sectors in energy use. (Cingoski and Petrevska, 2018) or a large number of emissions and waste are released into the environment (Singh et al., 2014). Therefore, developing a green logistics helps the hotel industry minimize its impact on the environment, protect social benefits, save costs, and effectively use natural ecological resources. improve service quality while still ensuring stable revenue and profits for businesses while creating competitive advantage as well as brand recognition in the eyes of customers (StudyCorgi, 2023; Chanran and Bhattacharya, 2019 ; Cingoski and Petrevska, 2018).

Green logistics management refers to an innovative perspective on procurement and practices that monitor and improve environmental performance within the firm activities. This is an increasingly popular concept due to corporate sustainability efforts (Oliveira et al., 2018). Green logistics are not only seen as drivers of environmental improvements, such as reducing the use of toxic chemicals and materials, energy consumption, waste generation and air pollution, but they also contribute to promoting economic efficiency and competitive

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advantage (Rao and Holt, 2005). Green logistics management requires the integration and coordination of business segments and strategic alliances including inbound logistics, internal supply chain and production processes, outbound logistics, logistics Contrast, customer requirements, responsiveness, quality and efficiency. Introducing green logistics practices in different segments of the business process leads to a coordinated green logistics. The efficiency provided by supply chain partners results in the overall improvement of the business organization (Green et al., 2012). A hotel's green logistics is a network of different organizations and processes involved in providing components of a hotel's green services and products (Cho et al., 2012), extending from suppliers to hotel customers (Zhang et al., 2008), and directly contribute to the value of hotel environmental green services (Al-Aomar and Hussain, 2017; Schwartz et al., 2008).

Da Nang is one of the major tourist cities in Vietnam, voted by Asia's leading prestigious travel magazine Smart Travel Asia as one of the most attractive destinations in Asia. Here, there are many large-scale and high-quality hotels such as: InterContinental Danang Sun Peninsula Resort, or famous tourist locations and resorts, along with natural beaches, many attractive festival events or even friendly people, pleasant, humid atmosphere, delicious food with not too expensive prices are all tourist attractions, factors that contribute to helping Da Nang be considered an ideal destination when traveling. According to information from the Department of Tourism of Da Nang city, in 2022, Da Nang will welcome 3.69 million tourists, of which international visitors are estimated to reach 483,000, domestic visitors are estimated to reach 3.2 million. , increasing 4.6 and 3 times respectively compared to 2021 (Dieu Vu and Khanh Luan, 2022), has contributed a significant part to the overall tourism revenue of the entire city. This shows that Da Nang has a fairly high sustainable development rate in tourism. Therefore, a green logistics for the hotel sector is essential to help improve the quality of hotel services here better and better.

However, the development of Green logistics management in the hotel industry in Da Nang is still facing many barriers and challenges, leading to many hotels in the area not being able to implement the green model well while the pollution situation continues to increase. Environmental pollution has become increasingly serious in recent years. Furthermore, from previous studies, they only addressed the issue of Green logistics management in the entire economy or in industry, such as in automobiles, or in the context of developed economies (Flavia Cristina Silva et al., 2017; Tasmia Jannat Tumpa et al., 2019) this may not be generalizable to the hotel industry and furthermore there are studies that mention the hotel sector but none that really focus in depth on the Da Nang region. Therefore, researching the barriers to Green logistics management in the hotel industry in Da Nang is a topic of great urgency and practical significance. The research results are intended to help businesses in the industry find appropriate solutions and directions to promote green logistics practices, thereby helping to enhance the competitiveness and sustainable development of the hotel industry in Da Nang.

HYPOTHESIS DEVELOPMENT

Internal Green Logistics Awareness - IGLA

Internal employee awareness can be considered key factors for work efficiency (Alrowwad et al., 2016). Raid Al-Aomar and Matloub Hussain (2017) mentioned that the lack of awareness, training and skills needed to carry out sustainable activities will have an impact on the implementation of the supply chain Green in business. Besides, the lack of management awareness of cost savings due to GSCM implementation is also considered one of the barriers to their application in businesses (Kamalakanta Muduli, 2012). Managers' attitudes and knowledge about environmental issues are considered one of the important internal factors affecting the success of green logistics management (Kerdpitak, 2019). In the above discussion, the hypothesis is proposed as follows:

Hypothesis 1: Internal green logistics has a positive effect on green logistics management practices.

Supply Chain Collaboration - SUCO

Suppliers are an important entity in every restaurant and hotel because they will cooperate with suppliers to purchase the necessary ingredients to provide daily hotel services. Therefore, to implement a green supply chain in hotels, purchasing green goods to provide its services from cooperation with suppliers in the supply chain is

indispensable. Green Procurement in Hotels is a sustainable and environmentally responsible procurement strategy in the hospitality industry. It includes selecting products, materials, equipment, services, and raw materials that have a low environmental impact, produced using environmentally friendly resources and production processes. (Dinu, V., 2020). But for green purchasing to take place smoothly, there must be cooperation from suppliers in the supply chain system. Helen Walker and colleagues have pointed out that concerns about internal information being leaked, especially information about green logistics issues of businesses or lack of information from suppliers, have been raised. affects suppliers' commitment to providing green products and services, affecting the implementation of green logistics management. Cooperating with suppliers can help hotels build long-term and trustworthy relationships while helping hotels ensure a stable supply source, meeting customer needs, and good execution capabilities. The higher the SCM (Teller, C., et al., 2016). From the above arguments, the following hypothesis has been proposed:

Hypothesis 2: Supply chain collaboration has a positive effect on green logistics management practices.

Economic Pressure - ECOP

Xu, Xun and colleagues (2015) pointed out that implementing green activities or applying GSCM requires significant financial costs in hotel management. Costs such as initial investment costs, maintenance costs and staff training costs so that they have enough skills to implement GSCM account for a large part of the hotel's financial operations. With initial costs, hotels need to invest in equipment and software to support management, monitoring, and optimization of supply chain processes. For example, green information systems or Internet connections also play an important part in supporting green logistics management in hotels (Ra'ed Masa'deh et al., 2017); Hotlan Siagian et al., 2019). Thanks to its convenience, hotels can easily analyze and compare suppliers, managing relationships with these partners more effectively (Oltean, F.D., et al., 2014). In addition, it is necessary to spend money to develop and train employees so that they have enough skills in implementing GSCM as well as understanding the hotel's green policy process. Jasneet Kaur, et al (2017) mentioned that the lack of awareness and skills training for employees has impacted the implementation of green logistics management. From the above observations, the hypothesis is given as follows:

Hypothesis 3: Economic Pressure has a positive effect on green logistics management practices.

Customer Pressure - CUSP

Customer tastes or consumer tastes for the application of GSCM are the feeling of wanting to access and own a type of environmentally friendly and sustainable hotel service (Nguyen Hong et al.). Customers play a very important role in green logistics management and there are many interesting issues related to customers as drivers of GSCM activities. Customer pressure to produce environment-friendly products and customer environmental awareness force industries to adapt GSCM practices (Mangla et al., 2014). Besides, today's customers crave and are persuaded to seek environmentally friendly services, not only because the level of customer awareness towards green practices adopted by organizations has increased. globally, but also because of human sensitivity to polluting activities (Thareja, P., 2012). From the above factors, the following hypothesis is made.

Hypothesis 4: Customer Pressure has a positive effect on green logistics management practices.

Government Environmental Regulations – GORE

The most important drivers are corporate social responsibility, the organization's internal policies, and the support of the board of directors and state management apparatus. Environmental taxes, natural resource and energy consumption taxes and the amount of waste allowed to be discharged are some of the most important tools that create pressure on GSCM in the hotel industry, forcing the industry to apply new methods environmental management for the supply chain to reduce the incidence of such taxes (Lai and Wong, 2012). Regulations and laws imposed by governments aim to guide and support the adoption of green practices. Massoud et al (2010) confirmed that "lack of government support and encouragement" is a significant barrier to achieving environmental certification. The most common reports indicate the top barriers are lack of

government policies and support systems, lack of awareness, lack of adequate training, lack of support and guidance from regulators and government to which the hotel belongs. In addition, there is pressure from NGOs, lack of top management support and information gaps. From the above factors, the hypothesis is as follows:

Hypothesis 5: Government environmental Regulations has a positive effect on green logistics management practices.

Hypothesis 6: Government environmental Regulations has a positive effect on green logistics management practices through Internal green logistics awareness.

Hypothesis 7: Government environmental Regulations has a positive effect on green logistics management practices through Supply chain collaboration.

Hypothesis 8: Government environmental Regulations has a positive effect on green logistics management practices through Customer Pressure.

From all of the above hypotheses, along with arguments and viewpoints that have been proven in many different research articles, the research team has proposed a research model for the topic as follows:
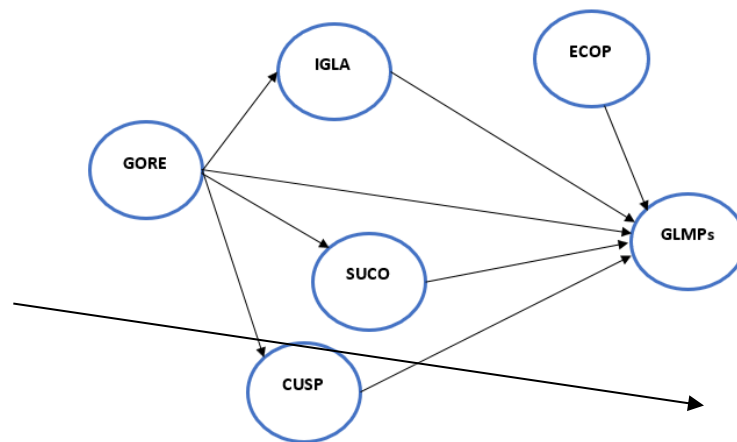

Figure 1. Proposal Research Model.

Note: GORE: Government environmental Regulations; SUCO: Supply chain collaboration; ECOP: Economic pressure; CUSP: Customer pressure; IGLA: Internal green logistics awareness; GLMP: Green logistics management practices.

METHOD

We have sent a survey form to the hotel managers via Facebook messenger, Zalo and Twitter in order to increase awareness of this research. In May 2023 the team began to gather data and have collected a total of 263 randomly selected survey samples. We have eliminated 115 samples not belonging to the research subject and the reliability of the answers has been verified through the screening process. Consequently, the remaining 148 samples were compatible with this standard.

To collect this data source, we conducted a survey using a questionnaire via Google form and used a 5-point scale, with increasing levels from strongly disagree to strongly agree. We have sent a survey form to the hotel managers via Facebook messenger, Zalo and Twitter in order to increase awareness of this research. In addition, we will also ask them to spread the word to their acquaintances to increase the number of participants. After collection period from March 2023 to July 2023, the amount of data we collected reached 263 samples. And then, the data is filtered through many ways. For example, using the question: "Are you a hotel manager and work in Da Nang?" then those who answer "No" to this question will immediately stop the survey and be removed from the survey. We have eliminated 115 samples not belonging to the research subject and the reliability of the answers has been verified through the screening process. Consequently, the remaining 148 samples were compatible with this study standard.

The research model will be evaluated through two steps, including evaluating the measurement model and the structural model. In this study, Smart - PLS 4.0 software is used to analyze information and verify research steps. First, the collected data will be processed using Smart - PLS 4.0 software, including both measurement models and structural models. For the measurement model, we will test the level of accuracy, reliability, internal consistency, as well as discriminant value and factor loadings in the study Hair et al (2017). This testing method will evaluate whether the measurement model results are appropriate and correspond to the research context. For the structural model, we will use the Bootstrapping method to evaluate the importance of path coefficients in the study.

RESULT

Demographic Profile of Respondents

The data results were studied on 148 samples, the research subjects selected were managers who have worked or are currently working at hotels in Da Nang. The sample descriptive statistics are presented in Table 1.

Table 1. Descriptive statistics.

Characteristics		Frequency (N=148)	Percentage (%)
Gender	Male	63	42.56%
	Female	85	57.43%
Number of employees	1-50	0	0%
	51-100	26	17.56%
	101-150	57	38.51%
	151-200	51	34.45%
	Above 200	14	9.45%
Education	College	10	6.75%
	Bachelor	99	66.89%
	Master	39	26.35%

Among the research sample, 63 people were male, accounting for 42.56%, 85 people were female, accounting for 57.43% of the total research sample. Most of the samples fall in the number of employees range from 51-100 and 101-150, accounting for 38.51% and 34.45% respectively. Next, the number of employees from 151-200 with 17.56% and over 200 employees with a rate of 9.45%. Regarding education level, bachelor accounts for the highest percentage with 66.89% of survey participants and post-graduate level accounts for the second highest rate with 26.35%. College accounts for only 6.75% of the total 148 participants.

Validity and Reliability Evaluation

In this part, we provide the result of assessing the statistical criterions including the validity and reliability of the proposal measurements. The results are provided in Table 2.

Table 2. Measurement property of reflective constructs.

Constructs	Items	Loadings	Cronbach's alpha	CR	AVE	Scourse
Economic pressure	ECOP1	0.812	0.907	0.931	0.728	Lai and Wong (2012)
	ECOP2	0.846				
	ECOP3	0.882				
	ECOP4	0.872				
	ECOP5	0.854				
Government environmental Regulations	GORE1	0.754	0.807	0.874	0.634	Lai and Wong (2012)
	GORE2	0.815				
	GORE3	0.794				
	GORE4	0.818				
Supply chain collaboration	SUCO1	0.868	0.816	0.890	0.730	Mandal et al. (2016)
	SUCO2	0.835				
	SUCO3	0.861				
Internal green logistics awareness	IGLA1	0.745	0.756	0.845	0.677	Choi and Zhang (2011)
	IGLA2	0.799				
	IGLA3	0.794				
	IGLA4	0.694				
Customer pressure	CUSP1	0.811	0.833	0.889	0.666	Lai and Wong (2012)
	CUSP2	0.802				
	CUSP3	0.844				
	CUSP4	0.808				
	GLMP1	0.719	0.789	0.845	0.678	

Green logistics management practices	GLMP2	0.723			Hieu and Nguyen (2023)
	GLMP3	0.731			
	GLMP4	0.746			
	GLMP5	0.731			
	GLMP6	0.780			

The measuring instrument's reliability is determined by the degree of stable and constant, it is assessed by the external loading factors for the observed variables, Cronbach's Alpha and Composite Reliability (CR). Evaluate the quality of the observed variable through the outer loading index - an index showing the degree of association between the observed variable and the parent latent variable (Hair et al., 2017). According to Hair et al., (2017), to ensure reliability, the observed variables must have an external load factor of at least 0.7. Observable variables with index outer loading < 0.7 are not valid. Besides, Cronbach's Alpha and Composite Reliability (CR) must be greater than or equal to 0.7 (Hulland et al., 1996) for the reliability to be significant. The Cronbach Alpha coefficient of the survey is considered to range from 0.732 to 0.825, which proves that the scale has appropriate reliability to conduct exploratory factor analysis. In addition, from the results of Table 2, the value of the Composite Reliability threshold is bigger than 0.70 and the AVE threshold is above 0.50. This also means that the internal consistency reliability and convergent validity were established for the model.

The next approach to measure discriminant validity is the use of the Fornell-Larcker criterion in Table 3

Table 3. Results off the Fornell-Laker criterion.

	CUSP	ECOP	GORE	GLMP	IGLA	SUCO
CUSP	0.816					
ECOP	0.733	0.854				
GORE	0.530	0.581	0.796			
GLMP	0.647	0.696	0.605	0.691		
IGLA	0.516	0.472	0.597	0.551	0.759	
SUCO	0.672	0.703	0.510	0.549	0.483	0.855

Furthermore, Fornell-Larcker Criterion is used to verify the discriminate validity of the constructs (Fornell and Larcker, 1981). The results of Fornell-Larcker criterion in Table 3 revealed that square root of AVE of the constructs exceeded the value of estimated correlations of a construct with other latent variables of the study (Hair et al., 2017), thus confirming the discriminate validity of the constructs. Therefore, with all the statistical criteria met, the validity and the reliability of the reflective measurement model were established for the results.

Assessment of the Structural Model

When considering structural models, special attention should be paid to the problem of multicollinearity. If the variance inflation factor (VIF) value exceeds 5, multicollinearity can result (Hair et al., 2017). However, in this study, the VIF value of the model ranges from 1,550 to 2,927, less than 5, showing that there is no homogeneity between the scales in the study. Thus, there is no multicollinearity phenomenon occurs in the model.

The significance and relevance of the structural model relationships were then analysed using path coefficients and t-statistics. The PLS-SEM algorithms are used to evaluate the path coefficients. The Bootstrapping method was then used to determine whether all of the interactions between constructs were statistically meaningful (Hair et al., 2017). Following Hair et al. (2017), we conduct this test with subsamples = 5000, two tailed testing and significance level of 0.05. The results of the path coefficient, t-value and p values are shown in Table 4 for direct effect, and Table 5 for indirect effect.

Table 4. The direct effect results.

Path	Hypotheses	BETA	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Results
IGLA -> GLMP	H1	0.094	0.026	3.576	0.000	Supported
SUCO -> GLMP	H2	0.121	0.044	2.766	0.006	Supported
ECOP -> GLMP	H3	0.093	0.045	2.058	0.040	Supported
CUSP-> GLMP	H4	0.085	0.035	2.420	0.016	Supported
GORE -> GLMP	H5	0.688	0.037	18.445	0.000	Supported
GORE -> IGLA	H6	0.597	0.045	13.244	0.000	Supported
GORE -> SUCO	H7	0.510	0.048	10.528	0.000	Supported
GORE-> CUSP	H8	0.530	0.052	10.177	0.000	Supported

Table 5. The indirect effect results.

Path	Hypotheses	BETA	Standard Deviation (STDEV)	T Statistics (|O/STDE|)	P Values	Results
GORE -> CUSP -> GLMP	H9	0.085	0.035	2.420	0.016	Supported
GORE -> IGLA -> GLMP	H10	0.093	0.045	2.058	0.040	Supported
GORE -> SUCO -> GLMP	H11	0.530	0.052	10.177	0.000	Supported
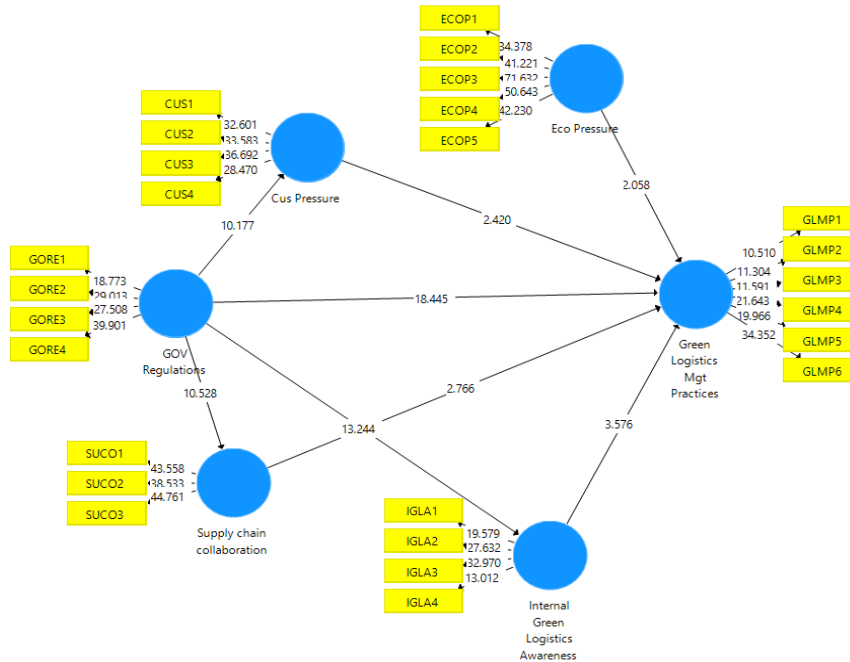
Figure 2. Measurement model.

Based on the standardized impact coefficient shown in Table 4 above, we can arrange the impact of these 6 variables on GLMP in ascending order as follows: GORE, SUCO, IGLA, ECOP, CUSP. Because the P value is less than 0.001, all hypotheses H1, H2, H3, H4, H5 are accepted. In particular, GORE has the strongest impact on GLMP with beta = 0.688 and t-statistic value of p = 0.000. This result is consistent with the findings of Lai and Wong (2012).

From table 5, we first evaluate the effect of government environmental regulations on green logistics management practices through internal green logistics awareness (H9). We can see that H9 result obtained a t-statistic value of 0.085 and a p-value of 0.016. We also find that H10 result obtained a t-statistic value of 0.093 and a p-value of 0.040, and H11 result obtained a t-statistic value of 0.530 and a p-value of 0.000. This result suggests that the CUSP, SUCO, IGLA can be consider as a mediator of GORE on GLMP. This means that GORE of hotels in Danang can affect increasing the GLMP through CUSP, SUCO, IGLA. This finding align with the previous studies such as Lai and Wong (2012), Choi and Zhang (2011).

CONCLUSION

The objective of the study is to evaluate the impacts on applying the green logistics management model at hotels in Da Nang city. Through a survey of documents on green logistics management, the study has proposed a model including five factors affecting the application of green logistics management, including: awareness within the hotel, supplier cooperation, costs related to green logistics operations, customer preferences, and government policies and regulations. At the same time, we also evaluate the direct and indirect impact of government policies on other factors in relation to green logistics practices in hotels in Danang city. Through survey results of more than 200 managers at hotels in Da Nang city, analysis techniques follow the PLS-SEM model, the results show that GLMP practice in hotels is influenced by the following five factors: government

environmental regulations, economic pressure, supply chain collaboration, internal green logistics awareness, and customer pressure.

Besides, the descriptive statistical results also show a high level of agreement of factors affecting GSCM among managers at hotels in Da Nang city. Highlights the complexity and importance of GSCM relationships and influences within the hospitality industry. GSCM plays a key role in establishing a hotel's image, including an environmentally friendly image, organizing relationships with external stakeholders from suppliers to customers, government and many other subjects. The analysis results demonstrate uniform awareness and interest in implementing activities related to GSCM application in the hotel sector in Vietnam.

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