

Green Supply Chain Management Practice of FDI Companies in Vietnam

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Abstract

This paper aims to develop a conceptual framework for Green Supply Chain Management (GSCM) that takes into account the effect of GSCM drivers on implementing GSCM practices in Vietnam FDI companies. This study has considered organizational commitment, social network, and government support as GSCM driver factors and proposed a structural model of the relationships between GSCM drivers and GSCM practices in Vietnam FDI companies. The empirical analysis used data from 192 questionnaires which used a comprehensive, valid, and reliable tool (SPSS 26 and SmartPLS 3.0 software) to evaluate rigorous statistical tests including convergence validity, discriminatory validity, reliability, and Average Variance Extracted (AVE) to analyze and verify the gathered data and develop the hypothesis. The result of path analysis shows that GSCM driver factors constitute a structured system with different degrees of influence on GSCM drivers and GSCM practices. Organizational commitment and government support has a positive relationship with both GSCM drivers and GSCM practices, while social network only has a positive relationship on GSCM drivers. As a result, the testing of the relationship between GSCM drivers and GSCM practices has been verified and supported. The findings of this study can help managers and decision-makers to push the implementation of GSCM practices in FDI companies.

Keywords: GSCM, GSCM Drivers, GSCM Practices, FDI Companies, Vietnam

JEL Classification Code: M11, M14, M16, L1

1. Introduction

In recent decades, the global economy has developed rapidly; however, people only pay attention to the importance of economic development, while ignoring the protection of the

ecological environment. In developing countries, this situation is becoming increasingly serious because natural resources are slowly depleting and environmental problems are increasing. Hence, Green Supply Chain Management (GSCM) as a feasible way to reduce the environmental problems and spur economic growth, create competitive advantage in terms of greater customer satisfaction, positive image and reputation, has been gaining much traction among practitioners and researchers (Srivastava, 2007; Seuring & Muller, 2008; Sarkis, 2012; Tate et al., 2012; Fahimnia et al., 2015). Previous research on GSCM extensively discusses GSCM drivers that drive companies to implement GSCM practices (Handfield et al., 2005; Zhu & Sarkis, 2004; Zhu et al., 2013; Hoejmose et al., 2014). Existing studies also point out that the success of a company in implementing GSCM practices and achieving the targeted performance objectives could be hindered or encouraged by the effect of influential factors. Do et al. (2020) stated that GSCM creates a rebuilding system for a bright way. However, implementing and achieving GSCM is not an easy task. There is still a need for a better understanding of how GSCM drivers and its factors in isolation as well as jointly impact the success of the company in implementing GSCM practices. Specifically, GSCM practices in Vietnam FDI companies were relatively unexplored.

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Vietnam has been quite successful in attracting FDI inflows since the inception of economic reform (known as “doi moi”) in 1986. Up to now, the FDI sector has affirmed the major role it plays in the Vietnamese economy. Vietnam has become an attractive destination (Ta et al., 2020) and continues to attract record FDI. According to official statistics released from the Ministry of Planning and Investment, FDI in Vietnam in 2019 reached USD 38.2 billion (increase by 7.2% as compared to the same period in 2018). Vietnam has 30.827 valid projects with a total registered capital of USD 362.58 billion, in which the accumulated realized capital of FDI projects is estimated at USD 211.78 billion, equaling 58.4% of total valid registered capital. However, the focus has been only on FDI attraction for growth targets without paying attention to environmental protection which that Vietnam is facing serious consequences. In Vietnam’s sustainable development strategy for 2011-2020, the Vietnamese government has pointed out that the environment in many places is heavily polluted, and resources and land are not well managed due to ineffective exploitation and use of natural resources and land. This situation necessitates Vietnam to restructure its economy, implement in-depth growth model of transformation and implement greening the economy including green production, green consumption, and green lifestyles to ensure sustainable development. These tasks are expected such that Vietnam FDI companies will need to implement strategies to reduce the environmental impacts of their products and services. Approaches to the effectiveness of green activities’ implementation comprise green purchasing, green production, environmental management systems and eco-efficiency, etc. Vietnam FDI companies have implemented GSCM practices. Furthermore, through the advantage of GSCM practices, FDI companies can select from a wide variety of suppliers and eliminate the environmental impacts of supply chain activities. Unfortunately, there are few papers to investigate the effects of institutional pressures on GSCM drivers and on GSCM practices simultaneously (Sarkis et al., 2011), and research on GSCM practices in Vietnam FDI companies is relatively immature. Moreover, GSCM in Vietnam has not received strong attention from policy-makers, businesses, and researchers (Le, 2020).

This study is intended to address this gap. Consequently, an extensive literature review of GSCM drivers and GSCM practices was carried out and the relationship between GSCM drivers and GSCM practices were identified as the way to improve the GSCM capabilities of Vietnam FDI companies. This study develops a conceptual framework for GSCM that takes into account the effect of GSCM drivers on implementing GSCM practices in Vietnam FDI companies. Through an empirical investigation using the PLS-SEM methods, this study contributes to understanding how the influential factors of GSCM drivers interact with each other

and affect the GSCM practices in Vietnam FDI companies. The rest of this paper is organized as follows: section 2, introduces the literature review and propose a structural model for the GSCM in Vietnam FDI companies; section 3, introduces the methodology, explains how we used it in this study; section 4, presents the results of our study; and section 5, certain conclusions are drawn, and potential issues and opportunities in the realm of GSCM practices are identified.

2. Literature Reviews

2.1. Overviews of Green Supply Chain Management (GSCM)

The term, “supply chain management” is a relatively new business phrase that has evolved over the past three decades. Supply chain management gained popularity because it evolved in both the academic and practitioner contexts. The evolution of supply chain management can be traced to the early industrial age with the culmination of scientific industrial practices and vertical integration. The boundary and definitions of supply chain management have always been a crux of the field. Lambert and Enz (2015) stated that the term, “supply chain management” continues to evolve, with some calls for linkage and relationships to logistics and marketing requiring further clarification.

In 1994, Webb (1994) proposed the concept of green procurement when he studied the impact that some products cause to the environment, and he recommended companies should select the appropriate raw materials by the environmental criteria, and focus on recycling. Following, Handfield et al. (1996) put forward the concept of a green supply chain and put the green supply chain as an important research content. Meanwhile, the International Organization for Standardization (ISO) launched a series of ISO14000 standard in 1996, led too much more active studies about the green supply chain. Min and Galle (1997) discussed how to consider environmental factors in selecting the suppliers and the green procurement’s role in reducing waste. In 1998, Professor Sarkis from the United States Clark University proposed the concept of GSCM and pointed out that green supply chain includes the following major components: internal logistics and procurement, materials management, external logistics, packaging, and return logistics (Sarkis, 1998). Beamon (1999) considered the environmental factors in the supply chain model, and put forward the more extensive supply chain design mode.

Recently, driven by the accelerated deterioration of the environment and multiple markets and non-market pressures (Zhu et al., 2013), GSCM has been gaining much traction among practitioners and researchers alike and received multiple definitions (Ahi & Searcy, 2013) and literature on this topic has often been reviewed (Srivastava, 2007;

Seuring & Muller, 2008; Sarkis et al., 2011; Tate et al., 2012; Fahimnia et al., 2015). The common understanding of GSCM is the integration of environmental issues and concerns into supply chain management (Stock & Boyer, 2009; Mentzer et al., 2001) to improve the environmental impact of the activities of the supply chain while maintaining competitiveness and achieving economic and operational performance criteria (Beamon, 1999; Sarkis, 2003; Zhu & Sarkis, 2004; Rao & Holt, 2000; Srivastava, 2007; Large & Thomsen, 2011; Wang & Sarkis, 2013; Lee, 2015).

2.2. GSCM Practices

Due to the rising global awareness of environmental protection, companies have implemented their GSCM practices enhancing their core competitive advantage and environmental protection. Zhu and Sarkis (2004) developed a conceptual framework for GSCM including two categories of performance outcomes: environmental and economic performance. Similarly, Rao and Holt (2005) suggested and tested a conceptual model of GSCM that included practices related to green the inbound phase of the supply chain and greening the production phase or the internal supply chain; and greening the outbound phase of the supply chain. Zhu et al. (2005) proposed four ways to implement GSCM practices: internal environmental management; external GSCM; eco-design; and investment recovery. Zhu and Sarkis (2006) have defined GSCM practices as containing source management, supply chain integration and reverse logistics. Regarding the difference between cross-countries GSCM practices, Zhu and Sarkis (2006) and Zhu et al. (2007), both investigated the GSCM practices of China's manufacturing industries and discovered that investment recovery and eco-design were significant for all surveyed industries, but the significance of other GSCM practices depended on the industries themselves. Therefore, GSCM practices are best viewed as a cross-organizational and closed-loop which allows supply chain members to protect the environment and collaborate along the supply chain (Zhu et al., 2008).

Summarizing the previous studies, we assume that GSCM practices are developed with the items be classified into: (i) environmental management systems exist, (ii) cooperation with suppliers for environmental objectives (friendly goods and packages), and (iii) cooperation with customer for green design, produce, and packages. (Zhu et al., 2008; Chen et al., 2019, Laari, 2016; Mahmoud Hamdy et al., 2018).

2.3. GSCM Drivers

These are a number of other forces are causing companies to pay greater attention to GSCM practices. GSCM drivers can be classified into main factors as follows:

Organizational commitment: The GSCM has become a mainstay of green business models and it is involved in organizational re-engineering of business strategies and in manufacturing processes. Therefore, companies cannot engage in GSCM practices without organizational commitment. Zhu et al. (2008) showed that the management commitment is a critical factor in the successful implementation of GSCM practices. Furthermore, senior managers' commitments to GSCM can make organizations adopt appropriate environmental management systems (Ramus & Steger, 2000). Moreover, the environmental management system is a kind of organizational learning mechanism which not only can construct environmental standards to prevent pollution but also can strengthen companies' capacities for continuous improvement to implement GSCM practices (Sharma et al., 1999; Zhu et al., 2008). Organizational internal resources are essential for organizations to adopt proactive environmental strategies. Consequently, these organizational commitments are indivisible and correlated with GSCM practices. According to Lee (2008), the greater the GSCM readiness, the more willing companies are to implement GSCM practices. Gonzalez-Torre et al. (2010) indicated that if companies wanted to implement GSCM practices, they had to overcome organizational internal obstacles such as lack of top management commitment, lack of environmental professional knowledge, lack of information and technological systems and costly financial and human resources. Therefore, organizational commitment is considered as the main factor of GSCM driver.

Social network: In the context of globalization and integration, supply chain management is a cross-organizational activity, FDI companies need to cooperate with their supply chains partners to engage in GSCM practices. The social network suggests that companies should establish social relationships with their supply chains partners through communication, trust, and values. Meanwhile, Luk et al. (2008) mentioned a social network-based benefit embedded in relationships with managers at other companies and relationships with government officials which can help organizations achieve knowledge sharing and mutual collaboration. GSCM practices involve many environmental management practices. Companies must build a social network with their supply chains partners to decrease information asymmetry, have more confidence in partners, establish long-term relationships with partners and improve collaboration (Claro et al., 2006). While having good social relationships with supply chain partners, companies will be more inclined to share their knowledge and collaborate (Tsai & Ghoshal, 1998; Lawson et al., 2008). Among the social relationships, Krause et al. (2007) showed that companies and their partners will have the same goals and visions which help companies exchange their resources and integrate their

potential benefits. Further, when supply chain members perform these behaviors, the benefits of the social network will improve the supply chain collaboration (Krause et al., 2007; Lawson et al., 2008). Therefore, the social network is considered as the main factor of GSCM driver.

Government support: Government indeed plays an important role in the implementing GSCM practices. Porter (1990) noted that the government can also help companies transform their business models through technical and financial support. Holt et al. (2001) stated that government support has improved companies' environmental performance. Government support, such as increasing awareness of environmental management knowledge, collaborating with GSCM initiatives and offering financial resources, can persuade companies to implement GSCM practices (Lee, 2008). Government grants and technical support could not only reduce a company's expenses and technical uncertainties but also help that company implement GSCM practices (Darnall, 2003; Darnall & Edwards, 2006). Vietnam's government indeed plays an important role in the development of Vietnam FDI companies and engage GSCM practices meeting environmental standards in response to the green environmental protection trend of the international market. Government supports FDI companies to improve companies technology and R&D capabilities to produce higher quality and value-added products which give companies a larger share in the global R&D and capabilities. Moreover, the government can provide incentives for FDI companies improved their R&D of green products to reduce pollution and conserve natural resources or invest in the infrastructure to improve the industrial environment. Therefore, the government support is considered as the main factor of GSCM driver.

According to the above statement, our research assumes that organizational commitment, social network, and government support can form a consensus between Vietnam FDI companies and their supply chains partners and implement GSCM practices. Among the GSCM drivers of this research, organizational commitment is internal complementary resources which can help department members arrive at a consensus on the environmental issues (Zhu et al., 2008, 2005). The social network is a relationship-specific asset. With mutual trust, the social network can help companies build up collaboration among supply chain partners (Krause et al., 2007; Lawson et al., 2008). The government support is an auxiliary resource, which can provide the professional knowledge and financial resources for companies and coordinate actions taken by GSCM partners (Lee, 2008).

2.4. Conceptual Framework

Hart (1995) stated that companies must assert product stewardship and the strategic capability of pollution prevention to achieve sustainable development. Product stewardship requires not only coordinating functional groups within a firm, but also cooperating with suppliers and customers to design to the environment. Pollution prevention is usually entangled with manufacturing and requires the sharing of tacit knowledge and continuous process re-engineering through an environmental management system. Tate et al. (2012) emphasized that a growing part of the theoretical and empirical research in GSCM is dedicated to exploring the drivers (motivations or pressures) for adopting and applying GSCM practices.

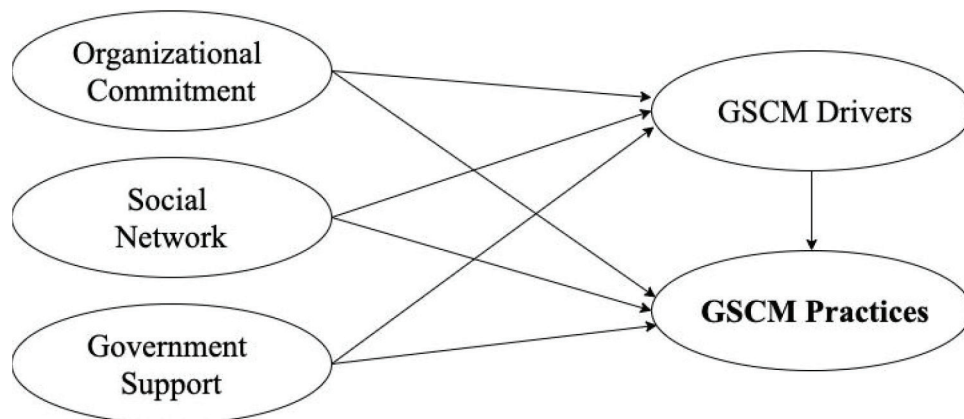


Figure 1: The proposed structural model

Grounding our arguments in the extensive literature review, and invoking the contingency theory perspective, we suggested that the GSCM drivers include the three main factors as identified above. Therefore, understanding these factors is crucial to comprehend the underlying reasons for different levels of success in implementing GSCM practices in Vietnam FDI companies, even when they face similar pressures and pursue similar objectives. We suggest a conceptual framework for GSCM in Vietnam FDI companies (see Figure 1). This framework recognizes and takes into account the causal relationship between the above mentioned GSCM drivers with the three factors and GSCM practices. Nevertheless, the empirical investigation of such factors is relatively scant, and the rare existing studies (Diabat & Govindan, 2011; Luthra et al., 2015) often confound different elements of GSCM such as practices and drivers. Consequently, there is a need for an in-depth and systematic investigation of these factors taken together to study how they interact with each other, and how they affect the GSCM drivers and the related GSCM practices. Further, based on the above statements of GSCM drivers and GSCM practices, this research presents the following hypotheses:

H1: *Organizational commitment has a positive relationship with GSCM drivers and GSCM practices.*

H2: *Social network has a positive relationship with GSCM drivers and GSCM practices.*

H3: *Government support has a positive relationship with GSCM drivers and GSCM practices.*

H4: *GSCM drivers have a positive relationship with GSCM practices.*

3. Methodology

3.1. Research Sample

Our objective was to develop a conceptual GSCM practices framework in Vietnam FDI companies based on the extant literature. We conducted a literature review to search for ideas and gaps in the GSCM practices framework. We identified key categories of the GSCM practices framework and derived research questions to expand the understanding of the GSCM practices in Vietnam FDI companies. The questionnaires were distributed first to 20 experts to check how they understand the questions. Afterwards, we revised the final questionnaires form based on the suggestions from respondents in two workshops and use it for collecting data.

According to Hair et al. (2014), the research sample is a very important factor to ensure the quality of the research. The minimum sample size should be 10 times the maximum number of arrowheads pointing at a latent variable anywhere in the PLS path model (Hair et al., 2014). We collected 200 samples of survey questions from different managers of FDI companies in the northern Vietnam. In that, 198 survey forms were sent back to us, in which 192 ones were valid for analysis which represents 96%. Table 1, shows the respondent information.

A sector of the companies fell into the industry, representing 28.1%; services account sector for the most (70.3%); and 1.6% belong to agriculture. Regard to the size of company (represented by the number of employees), 4.2% were companies that have more than 1000 employees, companies that have 100 to 1000 employees account for 87.5% and companies that have less than 100 employees companies account for 8.3% in this study.

Table 1: Respondent information

		Frequency	Percent (%)
Gender	Male	116	60.4
	Female	76	39.6
Experience	< 5 years	11	5.8
	5 - 10 years	142	73.9
	> 10 years	39	20.3
Business type	Industry	54	28.1
	Agriculture	3	1.6
	Services	135	70.3
Size of company (Number of employees)	< 100 employees	16	8.3
	100 - 1000 employees	168	87.5
	> 1000 employees	8	4.2
Total		192	100

3.2. Data Analysis Techniques

Our research has provided some empirical evidence for a framework that identifies key aspects of GSCM and describes the relationship between GSCM drivers and GSCM practices. After collecting the result of survey questionnaires, the data was encrypted, cleaned, and then imported into SPSS for reliability analysis and EFA discovery factor analysis. Then, we used a comprehensive, valid, and reliable tool (SPSS 26 and SmartPLS 3.0 software) to evaluate rigorous statistical tests including convergence validity, discriminatory validity, reliability, and AVE to analyze and verify the gathered data, and the hypothesis developed.

4. Data Analysis

4.1. Reliability and Validity of Model

Construct validity, determined through the presence of convergent and discriminant validity, demonstrates how well the measurement items related to the constructs. To demonstrate convergent validity, we used three tests: item reliability, composite reliability, and AVE. Cronbach's alphas also provide evidence of composite reliability and values above 0.6 demonstrate that it is adequate. The results in Table 2, showed that all the composite reliabilities for our constructs were above 0.7 and all the Cronbach's alphas were above 0.6. The AVE represents the number of variance a construct captures via its items relative to the number of variation dues to measurement error. We found that each construct's variance extracted was above the recommended

value of 0.5 (Hair et al., 2016). Thus, we have concluded that all our constructs had satisfactory convergent validity.

For testing the discriminant validity, we used two tests for discriminant validity: comparison of item loadings with item cross-loadings and comparison of the variance extracted from the construct with shared variance. Each item should load more highly on its intended construct than on other constructs. The top coefficients that are larger than the correlation coefficients in the same column (Fornell-Larcker matrix coefficient) have satisfied the condition as suggested by Henseler et al. (2015). The result from Table 3 showed that all items satisfied the condition of discriminant validity.

4.2. PLS Structural Model Results

We next examined the overall explanatory power of the structural model and explained the variance by the independent variables, and the magnitude and strength of its paths, where each of our hypotheses corresponds to a specific structural model path. We used R Square Adjusted to measure the model's explanatory power, interpreted in the same way as for regression analysis. The analysis revealed that the structural model explained about 64% of the variation of GSCM drivers, 85.3 % of the variation in GSCM practices, suggesting that the structural model provided adequate explanatory (see Table 4).

To evaluate the structure model, we conducted the test with sample size Bootstrapping N = 5000 (Henseler et al., 2015). With p-value <1%, 5%, and 10%, the proposed hypotheses are considered as statistically significant at the 99%, 95% and 90% reliability levels. The result is as follows:

Table 2: Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Organizational Commitment	0.817	0.824	0.879	0.647
Social Network	0.791	0.805	0.878	0.706
Government Support	0.812	0.832	0.888	0.727
GSCM Drivers	0.814	0.815	0.890	0.729
GSCM Practices	0.782	0.787	0.874	0.699

Table 3: Discriminant validity (Fornell-Larcker Criterion)

	Organizational Commitment	Social Network	Government Support	GSCM Drivers	GSCM Practices
Organizational Commitment	0.804				
Social Network	0.193	0.840			
Government Support	0.057	0.312	0.852		
GSCM Drivers	0.484	0.659	0.471	0.854	
GSCM Practices	0.524	0.628	0.491	0.914	0.836

Table 4: R square

	R Square	R Square Adjusted
GSCM Drivers	0.645	0.640
GSCM Practices	0.856	0.853

Table 5: Hypothesis result.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Hypothesis result
Organizational Commitment -> GSCM Drivers	0.372	0.372	0.045	8.219	0.000	Supported
Organizational Commitment -> GSCM Practices	0.144	0.145	0.031	4.600	0.000	
Social Network -> GSCM Drivers	0.495	0.491	0.048	10.358	0.000	Partly Supported
Social Network -> GSCM Practices	0.078	0.081	0.040	1.936	0.053	
Government Support -> GSCM Drivers	0.296	0.299	0.044	6.741	0.000	Supported
Government Support -> GSCM Practices	0.109	0.111	0.036	3.028	0.002	
GSCM Drivers -> GSCM Practices	0.741	0.737	0.043	17.434	0.000	Supported

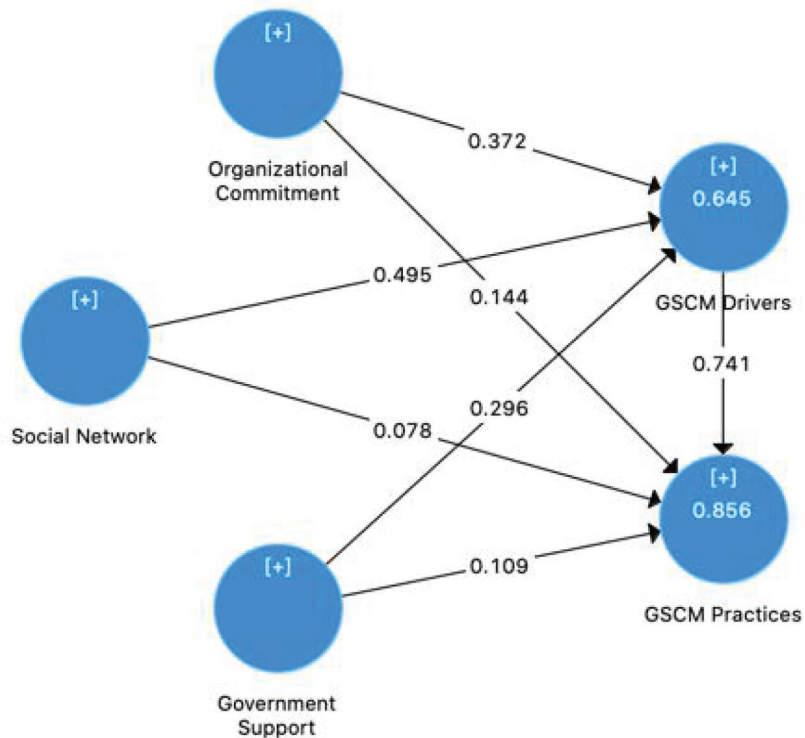


Figure 2: Research model result

The result from Table 5 and Figure 2 indicates that three in four hypotheses in our conceptual model is fully supported, one hypothesis is partly supported. H_1 shows that organizational commitment has a positive relationship with GSCM drivers ($\beta = 0.372$, $t = 8.219$, $P < 0.01$) and GSCM practices ($\beta = 0.144$, $t = 4.6$, $P < 0.01$). This result shows that if organizational commitment is improved, the GSCM drivers and practices are also improved. H_2 estimations for the relationships of the among social network with GSCM drivers and GSCM practices are partly supported while the prediction of the relationship between the social network and GSCM drivers have supported ($\beta = 0.495$, $t = 10.358$, $P < 0.01$). However, the prediction of relationship between the social network and GSCM practices are not supported ($P > 0.05$). This result notes that the social network may make the GSCM drivers but may not have the result of GSCM practices. The results of H_3 shows the positive relationship between the government support and GSCM drivers ($\beta = 0.296$, $t = 6.741$, $P < 0.01$) and the relationship between government support and GSCM practices ($\beta = 0.109$, $t = 3.028$, $P < 0.01$) This result indicates government support has impacted on both GSCM drivers and GSCM practices of FDI companies. Finally, the testing of the relationship between GSCM drivers and GSCM practices has been verified and is supported (H_4 : $\beta = 0.741$, $t = 17.434$, $P < 0.01$).

5. Conclusions

GSCM practices are a green revolution at the supply chain level and the implementing GSCM practices are increasingly becoming a major objective for manufacturers to respond to institutional pressures (Zhu et al., 2013). Alternatively, Handfield et al. (2005) emphasized that some companies are proactively implementing GSCM practices to gain a competitive advantage. Hence, this research proposed an empirical investigation to study the effects of GSCM drivers and its factors on GSCM practices simultaneously, push Vietnam FDI companies to implement GSCM practices. Understanding how these factors affect the implementation of GSCM practices should help managers to concentrate their efforts and efficiently allocate resources to attain the objective. This research has also improved the previous research model in GSCM drivers and GSCM practices in the context of the research concerning GSCM in developing countries has been insufficient (Mitra & Datta, 2014).

Based on the literature review, this study has considered organizational commitment, social network and government support as GSCM drivers factors, and proposed a structural model of the relationships among GSCM drivers and these factors with GSCM practices in Vietnam FDI companies. Applying SPSS 26 and Smart PLS 3.0, this study has used a comprehensive, valid and reliable tool to evaluate rigorous statistical tests including convergence validity, discriminatory validity, reliability and AVE. The result of the

path analysis indicates that three in four hypotheses in our conceptual model is fully supported, one hypothesis is partly supported. Among the findings of our work, we note in particular, the influence of the relationships between GSCM drivers and its factors on the implementation of GSCM practices. Taken together, GSCM driver factors constitute a structured system with different degrees of influence on GSCM drivers and GSCM practices. We especially found that organizational commitment and government support have a positive relationship with both GSCM drivers and GSCM practices. However, social network only has a positive relationship with GSCM drivers. As a result, the testing of the relationship between GSCM drivers and GSCM practices has been verified and supported. This finding corroborates the findings in Handfield et al. (2005); Zhu & Sarkis (2004); Zhu et al. (2013a); and Hoejmose et al. (2014) study in that GSCM drivers push companies to try to implement GSCM practices. Moreover, the findings of this study broadly support the related literature regarding the influence of each one of the factors on the implementation of GSCM practices. The results of this study are important since Vietnam has been quite successful in attracting FDI inflows but GSCM practices in Vietnam FDI companies has not received strong attention by researchers. On one hand, these results offer several insights for managers and decision-makers to push the implementation of GSCM practices in FDI companies. On the other hand, by focusing on the factors identified in this research, GSCM practices can be implemented more effectively.

Despite several contributions emanating from this study, the structural model should be more developed regarding other impacting factors in the future. Further researches could explore different conceptual models of GSCM performance, after implementation of the critical factors is carried out. Furthermore, due to the novelty of GSCM adoption in Vietnam FDI companies, future studies with larger samples could be conducted to allow for comparisons of GSCM practices among companies in other sectors in Vietnam.

References

- Ahi, P., & Searcy, C. (2013). A comparative literature analysis of definitions for green and sustainable supply chain management. *Journal of Cleaner Production*, 52, 329-341.
- Beamon, B. M. (1999). Designing the green supply chain. *Logistics information management*, 12(4), 332-342
- Bilici, H., Ta, L., & Carcamo, B. (2017). Impact of Foreign Direct Investment and Barriers to MNC Supply Chain Integration in Vietnam. *Zagreb International Review of Economics & Business*, 20(SC1), 1-11.
- Chen, D., Ignatius, J., Sun, D., Zhan, S., Zhou, C., Marra, M., & Demirbag, M. (2019). Reverse logistics pricing strategy for a green supply chain: A view of customers' environmental

- awareness. *International Journal of Production Economics*, 217, 197-210. <https://doi.org/10.1016/j.ijpe.2018.08.031>
- Claro, D. P., Claro, P. B. D., & Hagelaar, G. (2006). Coordinating collaborative joint efforts with suppliers: the effects of trust, transaction specific investment and information network in the Dutch flower industry. *Supply Chain Manage*, 11(3), 216–224. <https://doi.org/10.1108/13598540610662112>
- Darnall, N. (2003). Motivations for participating in a voluntary environmental initiative: The multi-state working group and EPA's EMS pilot program. In: S. Sharma, & M. Starik (Eds.), *Research in corporate sustainability* (pp. 123–154). Boston, MA: Edward Elgar Publishing.
- Darnall, N., & Edwards, D. (2006). Predicting the cost of environmental management system adoption: the role of capabilities, resources and ownership structure. *Strategic Management Journal*, 27(4), 301–320. <https://doi.org/10.1002/smj.518>
- Diabat, A. & Govindan, K. (2011). An analysis of the drivers affecting the implementation of green supply chain management. *Resources, Conservation and Recycling*, 55(6), 659-667.
- Do, A. D., & Luu, H. V. (2019). Developing a quality function deployment method for selecting and evaluating suppliers. *Journal of Economics and Development*, 262(4), 80-88. <http://10.5267/j.uscm.2020.6.005>
- Do, A. D., Nguyen, Q. V., Le, Q. H., & Ta, V. L. (2020). Green supply chain management in Vietnam Industrial Zone: Province-Level Evidence. *Journal of Asian Finance, Economics and Business*, 7(7), 403–412. <https://doi.org/10.13106/jafeb.2020.vol7.no7.403>
- Do, A. D., Nguyen, Q. V., Nguyen, D. U., Le, Q. H., & Trinh, D. U. (2020). Green supply chain management practices and destination image: Evidence from Vietnam tourism industry. *Uncertain Supply Chain Management*, 8(7), 371–378.
- Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. *International Journal of Production Economics*, 162(C), 101-114. <http://10.1016/j.ijpe.2015.01.003>
- Gonzalez-Torre, P., Alvarez, M., Sarkis, J., & Adenso-Diaz, B. (2010). Barriers to the implementation of environmentally oriented reverse logistics: Evidence from the automotive industry sector. *British Journal of Management*, 21(4), 889–904. <https://doi.org/10.1111/j.1467-8551.2009.00655.x>
- Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM). *European Business Review*, 26(2), 106-121.
- Hair Jr, J. F., Sarstedt, M., Matthews, L. M., & Ringle, C. M. (2016). *Identifying and treating unobserved heterogeneity with FIMIX-PLS: Part I-method*. *European Business Review*. <https://doi.org/10.1155/2018/6561417>
- Handfield, R. B., Walton, S. V., & Melnyk, S. A. (1996). *Green supply chain: best practices from the furniture industry*. In: *Proceedings of the Annual Meeting of the Decision Science Institute* (pp. 1295-1297).
- Handfield, R., Sroufe, R., & Walton, S. (2005). Integrating environmental management and supply chain strategies. *Business Strategy and the environment*, 14(1), 1-19. <https://doi.org/10.1002/bse.422>
- Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of Management Review*, 20(4), 986–1014. <https://www.jstor.org/stable/258963>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135.
- Hojmoose, S. U., Grosvold, J., & Millington, A. (2014). The effect of institutional pressure on cooperative and coercive “green” supply chain practices. *Journal of Purchasing and Supply Management*, 20(4), 215-224. <http://dx.doi.org/10.1016/j.pursup.2014.07.002>
- Holt, D., Anthony, S., & Viney, H. (2001). Supporting environmental improvements in SMEs in the UK. *Greener Management International*, 33(6), 29–49. <https://doi.org/10.1016/j.sbspro.2014.10.028>
- Krause, D. R., Handfield, R. B., & Tyler, B. B. (2007). The relationships between supplier development, commitment, social capital accumulation and performance improvement. *Journal of Operations Management*, 25(2), 528–545. <https://doi.org/10.1016/j.jom.2006.05.007>
- Laari, S., Toyli, J., Solakivi, T., & Ojala, L. (2016). Firm performance and customer-driven green supply chain management. *Journal of Cleaner Production*, 112(3), 1960-1970. <http://dx.doi.org/10.1016/j.jclepro.2015.06.150>
- Lambert, D. M., & Enz, M. G. (2015). We must find the courage to change. *Journal of Business Logistics*, 36(1), 9–17. <https://doi.org/10.1111/jbl.12078>
- Large, R. O., & Thomsen, C. G. (2011). Drivers of green supply management performance: Evidence from Germany. *Journal of Purchasing & Supply Management*, 17(3), 176-184. <http://www.ijmp.jor.br/index.php/ijmp/article/view/789>
- Lawson, B., Tyler, B. B., & Cousins, P. D. (2008). Antecedents and consequences of social capital on buyer performance improvement. *Journal of Operations Management*, 26(3), 446–460. <https://isiarticles.com/bundles/Article/pre/pdf/4097.pdf>
- Le, T. T. (2020). The effect of green supply chain management practices on sustainability performance in Vietnamese construction materials manufacturing enterprises. *Uncertain Supply Chain Management*, 8(1), 43-54.
- Lee, A. Y. (2015). The effects of green supply chain management on the supplier's performance through social capital accumulation. *Supply Chain Management*, 20(1), 42-55.
- Lee, S. Y. (2008). Drivers for the participation of small and medium-sized suppliers in green supply chain initiatives. *Supply Chain Management*, 13(3), 185-198.
- Luk, C. L., Yau, O. H. M., Sin, L. Y. M., Tse, A. C. B., Chow, R. P. M., & Lee, J. S. Y. (2008). The effects of social capital and organizational innovativeness in different institutional contexts. *Journal of International Business Studies*, 39(4), 589–612.

- Luthra, S., Garg, D., & Haleem, A. (2015). An analysis of interactions among critical success factors to implement green supply chain management towards sustainability: An Indian perspective. *Resources Policy*, 46(P1), 37-50. Doi: 10.1016/j.resourpol.2014.12.006
- Mamdouh M. H., O., Kadry E., K., & Elahmady, B. (2018). Impact of sustainable supply chain management practices on Egyptian companies' performance. *European Journal of Sustainable Development*, 7(4), 119-130. <https://doi.org/10.14207/ejsd.2018.v7n4p119>
- Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z.G. (2001). Defining supply chain management. *Journal of Business Logistics*, 22(2), 1-25. <https://doi.org/10.1002/j.2158-1592.2001.tb00001.x>
- Min, H., & Galle, W. P. (1997). Green purchasing strategies: trends and implications. *International Journal of Purchasing and Materials Management*, 33(2), 10-17. <https://doi.org/10.1111/j.1745-493X.1997.tb00026.x>
- Mitra, S., & Datta, P. P. (2014). Adoption of green supply chain management practices and their impact on performance: An exploratory study of Indian manufacturing firms. *International Journal of Production Research*, 52(7), 2085 – 2107. <https://doi.org/10.1080/00207543.2013.849014>
- Porter, M.E. (1990). *The Competitive Advantage of Nations*. New York, NY: The Free Press.
- Ramus, C. A., & Steger, U. (2000). The roles of supervisory support behaviors and environmental policy in employee “ecoinitiatives” at leading-edge European companies. *Academy of Management Journal*, 43(4), 605–626. <https://www.jstor.org/stable/1556357>
- Rao, P., & Holt, D. (2005). Do green supply chains lead to competitiveness and economic performance? *International Journal of Operations & Production Management*, 25(9), 898-916. <http://doi/10.1108/01443570510613956/full/html>
- Sarkis, J. (1998). Evaluating environmentally conscious business practices. *European Journal of Operational Research*, 107(1), 159-174. [https://doi.org/10.1016/S0377-2217\(97\)00160-4](https://doi.org/10.1016/S0377-2217(97)00160-4)
- Sarkis, J. (2003). A strategic decision framework for green supply chain management. *Journal of Cleaner Production*, 11(4), 397-409. [https://doi.org/10.1016/S0959-6526\(02\)00062-8](https://doi.org/10.1016/S0959-6526(02)00062-8)
- Sarkis, J. (2012). A boundaries and flows perspective of green supply chain management. *Supply Chain Management*, 17(2), 202-216. <http://doi/10.1108/13598541211212924/full/html>
- Sarkis, J., Zhu, Q., & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics*, 130(1), 1-15.
- Seuring, S., & Muller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699-1710. <https://doi.org/10.1016/j.jclepro.2008.04.020>
- Sharma, S., Pablo, A. L., & Vrendenburg, H. (1999). Corporate environmental responsiveness strategies: The importance of issue interpretation and organizational context. *Journal of Applied Behavioral Science*, 35, 87–108.
- Srivastava, S. K. (2007). Green supply-chain management: A state-of-the-art literature review. *International Journal of Management Reviews*, 9(1), 53-80.
- Stock, J. R., & Boyer, S. L. (2009). Developing a consensus definition of supply chain management: A qualitative study. *International Journal of Physical Distribution & Logistics Management*, 39(8), 690-711. <http://dx.doi.org/10.1108/09600030910996323>
- Ta V. L., Le Q. H., Nguyen T. L. H., Phan T. T. & Do A. D. (2020). Investigating foreign direct investment attractive factors of Korean direct investment into Vietnam. *Journal of Asian Finance, Economics and Business*, 7(6), 117-125. <https://doi.org/10.13106/jafeb.2020.vol7.no6.117>
- Tate, W. L., Ellram, L. M., & Dooley, K. J. (2012). Environmental purchasing and supplier management (EPSM): Theory and practice. *Journal of Purchasing & Supply Management*, 18(3), 173-188.
- Tsai, W. P., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41(4), 464–476. <https://doi.org/10.5465/257085>
- Wang, Z., & Sarkis, J. (2013). Investigating the relationship of sustainable supply chain management with corporate financial performance. *International Journal of Productivity and Performance Management*, 62(8), 871-888. <https://doi.org/10.1108/IJPPM-03-2013-0033>
- Webb, L. (1994). Green purchasing: Forging a new link in the supply chain. *RESOUR*, 1(6), 14-18.
- Zhu, Q. H., Sarkis, J., & Geng, Y. (2005). Green supply chain management in China: Pressures, practices and performance. *International Journal of Operations & Production Management*, 25(5), 449–468. <https://doi.org/10.1108/01443570510593148>
- Zhu, Q. H., Sarkis, J., & Lai, K.H. (2007). Initiatives and outcomes of green supply chain management implementation by Chinese manufacturers. *Journal of Environmental Management*, 85(1), 179–189. doi: 10.1016/j.jenvman.2006.09.003.
- Zhu, Q. H., Sarkis, J., Cordeiro, J. J., & Lai, K. H. (2008). Firm-level correlates of emergent green supply chain management practices in the Chinese context. *Omega*, 36(4), 577-591.
- Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *Journal of Operations Management*, 22(3), 265-289. <https://doi.org/10.1016/j.jom.2004.01.005>
- Zhu, Q., & Sarkis, J. (2006). An inter-sectoral comparison of green supply chain management in China: Drivers and practices. *Journal of Cleaner Production*, 14(6), 472–486. <https://doi.org/10.1016/j.jclepro.2005.01.003>
- Zhu, Q., Sarkis, J., & Lai, K. H. (2013). Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices. *Journal of Purchasing & Supply Management*, 19(2), 106-117. <http://doi:10.1016/j.pursup.2012.12.001>