

A STUDY ON THE IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT FACTORS ON THE BUSINESS PERFORMANCE OF GARMENT ENTERPRISES IN VIETNAM

● HAN THI MY HANH

ABSTRACT:

This study explores the impact of green supply chain management factors on the business performance of garment enterprises in Vietnam. Based on previous theories and research, this study developed a model to analyze the impact of green supply chain management on the business performance of Vietnamese garment enterprises when the entire industry is facing challenges and a greening trend. In this study, quantitative research methods were used, and data was collected from 168 different garment manufacturing enterprises across Vietnam. The study finds that green supply chain management affects the business performance of companies in terms of green purchasing, cooperation with customers, and investment recovery, with different impact levels and directions. Based on these results, the study made some recommendations and notes to Vietnamese garment enterprises about practicing green supply chain management in the trend of greening.

Keywords: green supply chain management, economic efficiency, garment, greening trend.

1. Introduction

The context of rapid global development and the strong impact of the 4th industrial revolution over the past decade has led to a series of negative impacts on the environment, such as climate change, Greenhouse gas emissions and depleted resources, therefore, sustainable development, the driving force for green economic development in general and green industry in particular, has become an inevitable trend. Increasing pressure on sustainability and environmental factors from various stakeholders forces manufacturers to adopt environmentally friendly methods and strategies to

reduce the environmental impact of their products, their products and services (Zhu et al., 2005).

Industries are now gradually embracing the green concept and placing business concerns with environmental impact. Chen et al (2015) emphasize that in addition to implementing environmental protection activities, businesses must also improve overall efficiency. Research on green supply chain management (GSCM) has been recognized as a correct direction in enhancing ecological benefits and supporting business sustainability (Zhu et al., 2011; Unasekaran and Gallear, 2012; Mangla et al., 2014; Khan, Ahmed,

Najmi and Younus, 2019). Manufacturing businesses have been adopting this green approach to improve the efficiency of their operations while reducing the negative impact these activities have on the environment (Zhu et al., 2015). However, many other studies have been performed and show other conflicting results. Research by Richey et al. (2016) shows that innovation in human logistics has negative impacts on organizational efficiency due to being too expensive, while research by Montabon et al (2007) shows the impact negative effects of environmental management practices on investment returns. In addition, some studies have also shown that they cannot find a relationship between green supply chain management practices and business performance in general and economic performance in particular (Lee et al., 2012; Benito 2005; Watson et al. 1998; 2004; Younis 2016).

Although greening is an inevitable trend for industry, especially Vietnam's key textile industry. However, Vietnamese garment enterprises are still very timid in approaching green production and green supply chains due to concerns about overall efficiency in general and economic efficiency in particular. Therefore, the author conducted the study "The impact of green supply chain management on economic efficiency at garment enterprises in Vietnam"

Based on resource-based theory and an overview of domestic and foreign research, the author has found elements of green supply chain management that impact the economic performance of businesses.

The article is structured into four parts: (1) Introduction, (2) Methods, (3) Results and (4) Conclusions.

2. Method

2.1. Research models

Globally, the demand for green practices is increasing due to market and regulatory pressures (Srivastava, 2007). There is literature on the impact of GSCM on business performance. Organizations in developing economies prioritize economic

efficiency above all else (Zhu, Sarkis, and Lai, 2007). Various scholars have researched demonstrating the beneficial link between GSCM practices and organizational performance (Vachon and Klassen, 2006; Green, Whitten, and Inman, 2008). According to some literature, there is no significant association (De Giovanni & Esposito Vinzi, 2012), however some studies have found a combination of positive and negative relationships (Azevedo et al. al., 2011). According to the literature, when GSCM procedures are applied, they can have various effects on performance (Azevedo et al., 2011).

Based on previous research papers, it can be argued that there is still no consensus on whether green supply chain management leads to improved or weakened business performance or economic performance. Zhu et al (2012) argue that such conflicting conclusions may create barriers for businesses planning to implement green supply chain management. Therefore, the author's research aims to find out what impact green supply chain management has on the economic performance of garment enterprises.

Eco-design related to packaging measures whether the packaging is reusable and recyclable (Foschi et al., 2020). Manufacturers must design products that use the least amount number of resources, enable the reuse, recycling and regeneration of materials and components, and prevent or limit the use of unsafe substances throughout the production phase (Zhu et al., 2008). As designers focus on reducing the environmental impact of design, an environmentally friendly approach that emphasizes return on investment will have a clear and beneficial impact on environmental outcomes. (Kenneth W. Green et al., 2012).

Eco-design aims to reduce the environmental impact of a product while maintaining other design requirements such as cost and functionality (Sanĳ-Mengual et al., 2014). As designers focus on reducing the environmental impact of design, an environmentally friendly approach that emphasizes

return on investment will have a clear and beneficial impact on environmental outcomes. (Kenneth W. Green et al., 2012). It has been found that eco-design has a positive impact on green supply chain performance (Diabat & Govindan, 2011). The green shopping measurement scale of this study is mainly adopted from Zhu et al. (2008). According to Green et al (2012), ecological design negatively impacts the economic performance of organizations.

In summary, the researcher can hypothesize the impact of ecological design on performance as follows.

H1: Eco-design has an impact on the economic performance of businesses.

Green procurement mainly focuses on supplier cooperation to produce environmentally sustainable products (Zhu et al., 2008). Lee (2008) defines green procurement as the organization of a green supply chain for purchasing purposes, paying attention to suppliers' green activities, especially in small and medium enterprises. Purchasing organizations can conduct training, environmental information sharing, and general research to determine whether a supplier uses green practices. Many organizations will require their suppliers to adopt eco-systems such as ISO 14001 (Laosirihongthong, Adebajo and Choon Tan, 2013). Other aspects of green procurement discussed in the literature are recycling, reusing resources and facilitating resource reduction, according to Zhu et al. (2008).

Green et al (2012) found that green purchasing (GP) does not significantly impact environmental performance but economic performance. Zhu et al (2007) argue that GP does not significantly affect environmental performance. Supplier selection plays an important role in green purchasing. It has been found that the environmental impact of GP may belong to the supplier rather than the manufacturer while also positively impacting the economic performance of the manufacturer (Green et al., 2019).

Therefore, the researcher can hypothesize about the impact of green procurement on organizational performance as follows:

H2: Green purchasing has an impact on the economic performance of businesses.

Perotti et al (2012) investigated logistics service providers in Italy, some of whom pointed to the failure to apply internal environmental management practices as a disadvantage. Extending Hart's (1995) resource-based view, Shi et al. (2012) argue that green practices within firms develop over time and create tacit knowledge and effective management processes. that competitors do not know and thereby improve business efficiency.

Menguc and Ozanne (2005) surveyed 140 CEOs in Australian manufacturing businesses and concluded that natural environment orientation is significantly related to business profits and market share. Koh et al (2012) found that eco-design as part of internal green practices leads to cost savings, which positively affects a business's financial goals. Similarly, Sroufe (2006) notes a strong link between ecodesigneco-design and cost reduction through selling products in international markets, and the benefits obtained outweigh the costs of implementing it. Another study by Diabat et al. (2013) also showed that ecological design positively impacts economic outcomes.

Therefore, the researcher can hypothesize about the impact of internal environmental management on organizational performance as follows:

H3: Internal environmental management has an impact on the economic performance of the enterprise.

According to Zhu, Sarkis, and Lai (2008), cooperation with customers is needed to produce environmentally friendly products using cleaner processes. In terms of ecological design, production, packagingpackaging, and transportation, GSCM offers cooperation with customers. (Green, Whitten and Inman, 2008).

Hamprecht et al. (2005) found that environmental controls along with other quality controls in information systems extended throughout the supply chain. Recent research also shows that customer pressure is a key factor influencing organizations to implement and improve their environmental image and practices.

According to Green, Whitten, and Inman (2008), customer collaboration has a positive association with economic and environmental performance, which ultimately leads to a positive association with organizational performance; however, it does not directly affect financial performance. Instead, customer collaboration indirectly affects economic performance through environmental performance. Many researchers do not find customer cooperation to be significantly linked to economic and environmental performance (Kenneth W. Green et al., 2008; Zhu et al., 2007). In summary, the study hypothesizes the following impact.

H4: Cooperation with customers has a positive impact on the economic performance of the business

Investment recovery is defined as "profits from the sale of excess inventory, scrap and used materials, and surplus capital equipment". The main goal of investment recovery is to maximize the value of expired or surplus products (Susanty et al., 2018). In current operations, managers are more concerned with the recovery of junk, redundant and obsolete resources, and assets. This method has recently become popular as businesses face strict environmental regulations and high disposal costs. Therefore, every manager at every level of the supply chain should find ways to recoup their costs through recycling, remanufacturing, repair, and reconfiguration. (Shah & Siddiqui, 2019) Investment recovery (IR), according to Green et al. (2012), has a direct impact

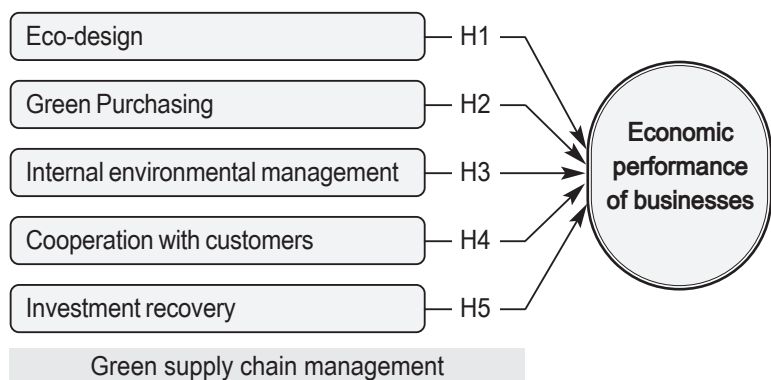
on environmental performance but has no direct impact on economic performance. Using a Chinese sample, Zhu, Sarkis, and Lai (2007) find that IR has a positive effect on financing deals under significant pressure from competitors and authorities.

On the other hand, Green et al. (2012) found the opposite using a US sample. Zhu et al (2007) found that IR has a beneficial impact on economic performance but found no significant association with environmental performance. "The investment recovery in China has received much less attention than in other countries such as the United States and Germany." (Zhu et al., 2008). Therefore, the researcher can make the following assumptions about the impact:

H5: Investment recovery has an impact on the economic performance of businesses.

From the hypotheses argued above, the study proposes a model to show the impact of green supply chain management on the performance of Vietnamese garment enterprises as follows:

Figure 1. Proposed research model



Source: Author compilation

2.2. Methods of collecting and analyzing data

In qualitative research, the author conducted in-depth interviews with experts and senior leaders such as directors, deputy directors, department heads, deputy managers, and officers in charge of green supply chain management. The interviewees came from businesses and organizations related to textiles and garments in Vietnam such as Vietnam

Textile and Garment Group (Vinatex) and Vietnam Textile and Apparel Association (Vitas). Interviewed subjects with different characteristics will provide multi-dimensional and complete information for the research content, ensuring the achievement of goals. Open-ended questions were included in the interview for participants to present their opinions under the guidance of the author.

Qualitative research results show that all 5 elements of green supply chain management of Vietnamese garment enterprises are accepted, and no new elements are proposed. The factors included in the quantitative research are (1) Ecological design (5 variables); (2) Green purchasing (5 variables); (3) Internal environmental management (5 variables); (4) Cooperation with customers (5 variables); (5) Investment recovery (3 variables). A total of 23 observed variables of 5 factors influencing green supply chain management of Vietnamese garment enterprises were included in the quantitative research.

Regarding preliminary quantitative research using a direct survey with a small research sample (20 businesses). The majority of subjects accepted the survey, but some words need to be adjusted accordingly and the questions designed more appropriately. The authors have built an initial sample of 200 survey questionnaires. This number of observations all meets the sample size requirements of Hair et al. (2014) with 115 observations and Green's study with 90 observations. The actual number of observation

questionnaires collected from the study was 168, which is larger than the minimum sample size, making the study more valuable.

Data were processed using SPSS 22 software. Data from independent variables were analyzed through the following steps: Cronbach Alpha scale reliability test, EFA exploratory factor analysis, correlation analysis and analysis linear regression.

3. Results

Coefficient analysis shows that 6 scales used in the study have Cronbach's Alpha coefficients greater than 0.6, satisfying reliability, and 18 observed variables have total correlation coefficients greater than 0.4. Therefore, it is possible to identify scales that ensure reliability and are suitable for use in subsequent analysis.

The scale of 5 independent variables includes 18 observed variables. After testing the reliability of the scale using Cronbach's Alpha coefficient, they were included in EFA factor analysis. EFA factor analysis shows that there are 5 factors extracted with an Eigenvalue greater than 1 and a total variance of 68.137%, showing that the model is appropriate. KMO coefficient = 0.708 > 0.5 so EFA coefficient is suitable for the study. In addition, the factor loading coefficient is > 0.5, so the observed variables all have good statistical significance and are important in the factors, with practical significance. That's right. (Bartlett's Test) = 0.000 < 0.05 shows that the observed variables are generally correlated with each other.

The study examines the linear relationship of the impact of green supply chain management on

Table 1. Cronbach's Alpha reliability test results table

Scale	Variable number	Cronbach's Alpha	Smallest Corrected Item-Total Correlation
Eco-design	3	0.699	0.500
Green Purchasing	3	0.757	0.486
Internal environmental management	4	0.845	0.600
Cooperation with customers	5	0.892	0.642
Investment recovery	3	0.928	0.826

Source: Author compilation from primary data

Table 2. Rotated Component Matrix^a

	Component				
	1	2	3	4	5
CC5	,914				
CC3	,910				
CC4	,818				
CC2	,764				
CC1	,731				
IEM1		,874			
IEM4		,837			
IEM5		,797			
IEM2		,775			
IR3			,939		
IR1			,920		
IR2			,852		
GP2				,856	
GP3				,850	
GP5				,744	
ED2					,773
ED1					,772
ED3					,763

Source: Results from SPSS 22

the economic performance of businesses. The relationship was determined through multiple linear regression analysis using SPSS software

The results of ANOVA analysis give us the F-test results to evaluate the appropriateness of the regression model. The F-test sig value is $0.000 < 0.05$, so the regression model is appropriate.

The Model Summary results table gives us R Square and Adjusted R Square results to evaluate the fit of the model. The adjusted R-squared value of 0.427 shows that the independent variables included in the regression analysis affect 42.7% of the variation in the dependent variable, the remaining 57.3% is due to variables outside the model and errors. random number.

The results of this table also provide the Durbin–Watson value to evaluate the phenomenon of first-order serial autocorrelation. DW value = 1.993, within the range of 1.5 to 2.5, so the result does not violate the assumption of first-order serial autocorrelation (Yahua Qiao, 2011).

4. Conclusions

After being analyzed, the study has drawn conclusions from the research hypothesis as follows:

Table 3. Results of ANOVA analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20,028	5	4,006	25,873	,000 ^b
	Residual	25,081	162	,155		
	Total	45,108	167			
a. Dependent Variable: FP						
b. Predictors: (Constant), IR, IEM, GP, CC, ED						

Source: Results from SPSS 22

Table 4. Result Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,666 ^a	,444	,427	,39347	1,993
a. Predictors: (Constant), IR, IEM, GP, CC, ED					
b. Dependent Variable: FP					

Source: Results from SPSS 22

Table 5. Conclusion of hypothesis

Hypothesis	Conclusion	Impact
H1: Eco-design has an impact on the economic performance of businesses.	Not accepted	
H2: Green purchasing has an impact on the economic performance of businesses.	Accept	Negative
H3: Internal environmental management has an impact on the economic performance of businesses	Not accepted	
H4: Cooperation with customers has an impact on the economic performance of the business	Accept	Positive
H5: Investment recovery has an impact on the economic performance of businesses	Accept	Positive

In summary, the test results show that the model is consistent with market research data of Vietnamese garment enterprises with 3 accepted hypotheses. However, the level of impact of each factor of green supply chain management on the economic performance of businesses is different.

This research has answered the question of how green supply chain management impacts the economic results of businesses. The fact that the elements of green supply chain management are not uniform in their impact on the economic

performance of businesses partly explains the contradictions of previous studies.

The results of this research are a document for educational units and garment manufacturing enterprises in Vietnam to apply to build a green supply chain management model for businesses and balance the practice of elements of green supply chain management. Green supply chain management to achieve the economic goals of the business in particular and the performance of the business in general ■

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**ẢNH HƯỞNG CỦA
QUẢN TRỊ CHUỖI CUNG ỨNG XANH
ĐẾN HIỆU QUẢ KINH TẾ:
NGHIÊN CỨU ĐỐI VỚI DOANH NGHIỆP MAY
TẠI VIỆT NAM**

● HÀN THỊ MỸ HẠNH

Trường Đại học Công nghiệp Dệt May Hà Nội

TÓM TẮT:

Bài viết nhằm tìm hiểu mức độ ảnh hưởng của các yếu tố quản trị chuỗi cung ứng xanh đến hiệu quả kinh tế của các doanh nghiệp may tại Việt Nam. Dựa trên các lý thuyết và nghiên cứu trước đây, nghiên cứu này kế thừa và phát triển mô hình nghiên cứu tác động của quản trị chuỗi cung ứng xanh đến hiệu quả kinh tế của doanh nghiệp may Việt Nam trong bối cảnh toàn ngành đứng trước xu hướng xanh hóa. Nghiên cứu sử dụng phương pháp nghiên cứu định tính và phương pháp nghiên cứu định lượng dựa trên dữ liệu thu thập từ 168 doanh nghiệp sản xuất may công nghiệp khác nhau trên cả nước. Nghiên cứu chỉ ra rằng sự quản trị chuỗi cung ứng xanh tác động đến hiệu quả kinh tế qua 3 yếu tố, gồm: mua sắm xanh, hợp tác với khách hàng, và phục hồi đầu tư với mức độ và hướng tác động khác nhau. Từ đó, nghiên cứu đưa ra kiến nghị và một số lưu ý với doanh nghiệp may Việt Nam trong thực hành quản trị chuỗi cung ứng xanh tại doanh nghiệp trong xu thế chuyển dịch xanh của toàn ngành.

Từ khóa: quản trị chuỗi cung ứng xanh, hiệu quả kinh tế, dệt may, xanh hóa.