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The impact of green supply chain management on the economic performance of SMEs, considering environmental conditions

Abstract

Green supply chain management in small and medium-sized companies tries to benefit from this category in the entire supply chain as a strategic tool in sustainable competitive advantage through creating a favorable and indicative relationship from an environmental point of view throughout the supply chain. The aim of the research is to investigate the impact of green supply chain management (GSCM) on economic performance through the moderating role of customer governance in small and medium-sized companies. The research method is descriptive-survey. The statistical population consists of 345 small and medium-sized companies throughout Indonesia. The sample size was determined using Cochran's formula and random sampling method of 300 cases. The instrument used is a questionnaire. Their reliability was confirmed by the method of Cronbach's alpha coefficient of 0.70, and the validity of the instrument was confirmed by the content and structure method. Research data was analyzed using SPSS software. The results showed that the measuring tool of research variables has the necessary validity and reliability. The findings of the research show that the implementation of GSCM has a positive and significant effect on the environmental and operational performance of the company, and the implementation of GSCM does not have a significant effect on the

economic performance of the company. Managers can consider improving the capacity of knowledge, skills and experience through employee training and benefiting from experienced people to develop relationships with customers.

Keywords: SMEs; Green Supply Chain; Green Supply Chain Management; GSCM; Environmental and Operational Performance; Economic Performance

JEL Classifications: E24; E41; E64; I18; J28; J31

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1. Introduction

During the last years, one of the main issues in the world is rapid development of technology, digital systems, and systems based on data and digitalization which make them more user-friendly, smooth platform which increases production output as well as affects the economy and finance of the world (Fu et al., 2023; Shariati et al., 2013). Economic activities, including industrial, agricultural and service activities, on the one hand, use and depend on natural resources, and on the other hand, the nature of their process is such that they potentially cause environmental pollution; Therefore, if the consequences and environmental issues of such activities are not paid attention to, huge costs must be spent to eliminate the damages and wastes caused by not paying attention to this issue (Dzikriansyah et al., 2023; Tightiz & Yoo, 2022).

In addition, the increase in costs caused by environmental damage, the increase in knowledge and awareness, and the concern of companies about the adverse effects of economic activities on natural resources and, as a result, the deterioration of the quality of life, have led companies and global organizations to develop solutions Economic growth and development should be reviewed (Sudarmilah & Maelani 2021; Islas-Moreno et al., 2023). The research conducted in the field of organizational sustainability and sustainable use of resources has generally been carried out within the scope of large companies, while a major share of industrial and commercial activities is at the disposal of small and medium-sized businesses and they actually have a significant contribution to environmental performance. It has received less attention (Forte et al 2023). Therefore, methods such as GSCM are considered useful for small and medium-sized organizations so that they can expand green activities to improve environmental performance (Nahas et al., 2022; Jamalpour and Yaghoobi-Derab, 2022). In addition to this, the acceleration of government regulations to obtain environmental standards and the growing demand of consumers to supply green products to the supply chain has led to the emergence of the new concept of GSCM in recent years, which includes the stages of the product life cycle. From design to recycling.

The impact of GSCM on environmental and competitive performance has been analyzed in several studies. Moroa et al. (2023) showed in a research that GSCM can provide economic and environmental performance for companies. However, GSCM can positively improve economic performance by reducing material waste, but at the same time, it can have a negative impact on performance due to the high costs of bio-based technologies and environmental materials. Yang & Wang (2023) stated that communication with suppliers helps in developing more environmentally-friendly technologies. Moreover, alliances among supplier, employee and customer, development of cooperation and joint researches result in improving environmental situation. However, these studies have been case-based. In the theoretical literature, few empirical studies have focused on the relationship between environmental performance and competitiveness, often exclusively emphasizing business performance at the firm level. Few studies have examined the relationship between GSCM and operational performance. This lack of clarity in the relationship between the adoption of GSCM and improved performance - environmental, operational and economic - for small firms and medium who are looking for the implementation of GSCM is considered an obstacle (Fu et al., 2023). Therefore, in this article, an attempt has been made to determine the impact of GSCM on the economic and environmental performance of small and medium enterprises in Indonesia during the years 2022- 2023 to be evaluated.

2. Method

The main variable under investigation is the performance of the company (dependent variable) which consists of three dimensions including environmental performance, operational performance and economic performance. The main variable influencing the performance of the

company, the driving factors of the implementation of GSCM includes four components, which are the dimensions of supply chain drivers, cost drivers, marketing drivers and the pressures of laws and regulations.

The current research is part of applied research in terms of its purpose, and in terms of the type of research, it is classified as correlational and survey research. The society studied in this research is the production companies of Khuzestan province. The sampling method of the present study is the purposive sampling method. The number of samples was selected using Cochran's formula 345, due to the possibility of incomplete or unusable questionnaires, among the distributed questionnaires, 300 usable questionnaires were entered into SPSS software and then analyzed. Correlation analysis, regression analysis and structural equation model are used to test the hypotheses.

In this research, the independent variable is the implementation of GSCM. Thirteen questions were used to measure it, which includes four dimensions of supply chain drivers, cost drivers, green marketing drivers and rules and regulations drivers, and from a five-point scale (1: not important at all, 2: not important, 3: indifferent, 4: important, 5: very important). The drivers of the supply chain include supplier developments in the development of environmentally friendly products, supplier developments in the development of environmentally friendly packaging, environmental partnerships with suppliers, competitors' green strategies, industrial professional group activities, and the company's environmental mission. Cost drivers include the cost of destroying hazardous materials, the cost of producing environmentally friendly goods, the cost of environmentally friendly packages, and the green marketing drivers include the amount of exports and the amount of sales to foreign customers. Drivers of laws and regulations include government environmental laws and regulations and local environmental laws and regulations. To check the validity of the research, Cronbach's alpha above 0.7 was used as an acceptable test of scale reliability, and the results are presented in Table 1.

The reliability coefficient (Cronbach's alpha) for the implementation of GSCM is 0.78 and the company's performance is 0.85, which shows high reliability. Correlation of each item to all items showed that deleting any item does not increase Cronbach's alpha, so all items were kept and no items were deleted. Cronbach's alpha of the whole questionnaire is equal to 0.72.

Table 1:
Cronbach's alpha of research variables

Variable	GSCM	Cost	Marketing	Rules	Performance	Environment	Operation	Economic
Cronbach's alpha	0.78	0.61	0.45	0.62	0.85	0.73	0.64	0.79

Source: Made by the authors

3. Results

The first hypothesis of the research states that the implementation of GSCM has a positive and significant effect on the environmental performance of manufacturing companies. The second hypothesis of the research states that the implementation of GSCM has a positive and significant effect on the operational performance of manufacturing companies. The third hypothesis of the research states that GSCM procedures have a positive and significant effect on the positive economic performance of manufacturing companies. The results of the hypothesis test with the regression model are shown in Table 2.

Environmental performance of the company shows the values of the coefficient of determination and the adjusted coefficient of determination to evaluate the overall fit of the model. The value of the adjusted coefficient is equal to 0.141, which states that the independent variable (implementation of GSCM) explains approximately 15% of the variability in the dependent variable (the company's environmental performance). The value of F is equal to (9.20) and the significance level is equal to (0.000), which shows that the implementation of GSCM significantly affects the company's environmental performance. In addition, the fit of the model is good because the implementation of GSCM explains 15% of the variation in the firm's environmental performance.

For Economic performance of the company the values of the coefficient of determination and the adjusted coefficient of determination to evaluate the overall fit of the model. The value of the adjusted coefficient is equal to 0.002, which states that the independent variable (GSCM) explains a small percentage of the variability in the dependent variable (positive economic performance

Table 2:
Results of the hypothesis test with the regression model

Variables	Regression	Not standardized coefficients		Standardized coefficients	T-statistics	Significance level
		B	SD	Beta		
Environmental performance	Fixed Coefficient	13.01	2.92	-	4.02	0.001
	GSCM	0.25	0.065	0.401	2.99	0.005
Operational performance	Fixed Coefficient	8.98	2.55	-	3.62	0.002
	GSCM	0.311	0.059	0.610	5.12	0.001
Economic performance	Fixed Coefficient	24.67	3.89	-	7.11	0.000
	GSCM	0.02	0.06	0.05	0.12	0.703

Notes:

Dependent variable: environmental performance of the company; significance level = 0.001, F = 9.20, adjusted coefficient of determination = 0.141, coefficient of determination = 0.160.

Dependent variable: operational performance of the company; significance level = 0.001, F = 25.060, adjusted coefficient of determination = 0.120, coefficient of determination = 0.332.

Dependent variable: economic performance of the company; significance level = 0.703, F = 0.110, adjusted coefficient of determination = 0.002, coefficient of determination = 0.002.

Source: Made by the authors

of the company). The value of F is equal to 0.110, the significance level is equal to 0.703, which shows that the implementation of GSCM does not have a significant effect on the economic performance of the company. The beta value of the company's environmental, operational and economic performance is equal to 40.1, 61, and 5%, respectively, which confirms that the implementation of GSCM plays a significant role in the company's environmental and operational performance. However there was not significant relation between GSCM and economic performance of SEMs, this shows that the implementation of GSCM does not have the power to predict the company's economic performance.

As seen in Figure 1, the correlation between the implementation of GSCM and environmental performance is 0.43, the correlation between the implementation of GSCM and operational performance is 0.55, which is statistically significant, but the correlation between the implementation of GSCM and economic performance, it was 0.05, which is not statistically significant.

Compliance with environmental considerations in combination with GSCM creates a win-win situation for companies and stores and helps them create a strong advantage in the global market (through cost reduction and improved competitiveness). Studies today, the consumer wants to protect himself and the environment, and this has formed a kind of social responsibility and has caused the formation of targeted consumer choices, and as a result, companies have faced increasing pressure to be responsible and greener (Fu et al., 2023). The distribution sector is considered one of the most important sectors of the economy. This sector, as a link between consumers and producers, is necessary for creating a market economy and plays an essential role in price formation. Also, small and medium-sized companies and competitiveness can increase the level of consumer welfare. SMEs play the most important role in changing people's consumption patterns and are also the most important part affecting the supply chain of any company. In general, the effects of the SMEs on the economy can be classified into two groups of direct and indirect effects. Direct effects are manifested in cases such as increasing GDP, increasing employment and increasing labor income. Its indirect effects are related

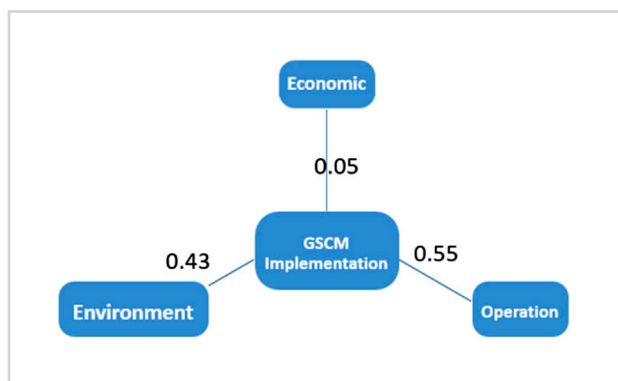


Figure 1:
Standard model of structural equations

Source: Made by the authors

to developments that ultimately lead to direct effects. Among these things, we can mention increasing productivity, improving technology, reducing distribution costs, and consequently reducing the cost of the product, and even maintaining and increasing the quality of the environment (Nahas et al., 2022). Considering that the supply chain emphasizes the elimination of all wastes and the creation of value throughout the chain, it can be considered in small and medium-sized companies and have positive environmental, economic and social effects; Also, the green supply chain has a special focus on the elimination of waste and the compatibility of materials, products and processes with the environment.

4. Conclusion

The impact of GSCM on environmental, practical and economic performance in small and medium enterprises has been investigated. To do this, structural equation modeling approach was used. Based on the obtained results, one can mention the positive effect of energy management on cooperation with suppliers among the influencing factors in green activities in companies. Also, the influencing factors in SCM processes can be adapted to the positive effect of green purchasing on environmental performance, the positive effect of green logistics on environmental performance and economic performance, and the positive effect of cooperation with suppliers on economic performance. In addition, based on the results of the influencing factor in the performance results section, it can be expanded to the positive and significant effect of environmental performance on economic performance.

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