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Analysis of the Influence of Green Supply Chain Management on Economic Performance

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Abstract

This study aims to analyze the influence of green supply chain management practices on economic performance, both directly and mediated by environmental and social performance, in furniture MSMEs in Yogyakarta. This research employs a quantitative descriptive approach, with the population being all furniture SMEs in Yogyakarta. The sampling technique used in this study is purposive sampling. The data used is primary data obtained through questionnaires and interviews. The analysis used in this study is Structural Equation Modeling (SEM) with Partial Least Squares (PLS) version 4.0. The results of this study indicate that green supply chain management practices have a positive impact on environmental and social performance, but green supply chain management practices do not have a positive impact on economic performance, either directly or indirectly mediated by environmental and social performance. Meanwhile, environmental performance has a positive impact on economic performance, while social performance does not have a positive impact on the company's economic performance. Furniture SMEs in Yogyakarta should further enhance the implementation of green supply chain management practices and elaborate on them with the development of existing information technology, adapting them to the conditions of each company to be effective and efficient, thus positively impacting the company's performance.

Keywords*: green supply chain management, environmental performance, social performance, economic performance.*

INTRODUCTION

Micro, Small and Medium Enterprises (MSMEs) play a central and crucial role in the economy, as their existence is quite dominant in Indonesia (Syaakir, 2017). In 2019, there were 65.4 million MSMEs that have supported Indonesia's economic growth. Data from the Ministry of Cooperatives and MSMEs shows that the contribution of SMEs to the national GDP is 60.5% and continues to increase every year (Cirprandy Riopaldo Tambunan, 2023). One of the flagship products of Indonesian MSMEs is wood-based furniture. This industry plays an important role in the Indonesian economy as it not only serves as a domestic player but has also taken a significant role in the international market (Djunaidi et al., 2018). In its development, this industry faces increasingly greater challenges with the growing consumer awareness of environmental issues, especially as globalization has resulted in increasingly competitive business competition and changed the phenomenon of business competition, which is no longer based on the capabilities of individual companies but rather on supply chains (Kusmantini et al., 2018). In Indonesia, companies that use wood as raw materials must obtain certification such as Sustainable Production Forest Management (SPHPL), Timber Legality Assurance System (SVLK), and Timber Tracking System (SLC) (Subulas Salam & Suherman, 2013). Various environmental regulations in this industry represent green supply chain management practices. The concept of Green Supply Chain

Management (GSCM) covers internal and external scopes. Researchers have operationalized GSCM by dividing it into internal and external environmental management (Feng et al., 2018) This requires companies to implement environmentally friendly policies (Priyono, 2009)

Although numerous studies have demonstrated a positive impact of Green Supply Chain Management (GSCM) on firm economic performance (Dian et al., 2022; Feng et al., 2018; Green et al., 2012; Huang, 2022; Jermsittiparsert et al., 2019; Kalyar et al., 2020; Mann & Kaur, 2020; Ramlawati R. et al., 2022; Siregar & Pinagara, 2022; Taj Hejazi et al., 2023; Yalviolita & Hendayani, 2022), this cannot be generalized to the impact of GSCM on company performance. Other research has shown that the impact of environmentally friendly supply chain management practices is inconsistent (Holling & Backhaus, 2023). The economic potential of environmentally friendly furniture and crafts is very high, but in fact, this subsector has not been able to optimize itself well, as evidenced by a 28% decrease in export value from January to September 2023 (Kompas.com, 2024). This problem is also experienced by furniture MSMEs in Yogyakarta. These problems are encapsulated in an upstream-downstream production process, namely environmentally friendly supply chain management. Therefore, we are interested in analyzing the impact of green supply chain management practices on the economic performance of furniture MSMEs in Yogyakarta. (Diskoperindag DIY, 2024)

Every organization has goals to achieve, and one common objective is to satisfy the interests of all stakeholders, both internal and external. Stakeholder theory encourages organizations to recognize and consider their stakeholders both internally and externally, promoting understanding and management of stakeholder needs, wants, and demands, where organizations have a holistic and responsible framework that goes beyond the focus of shareholders in the decision-making process, impacting the creation of maximum value and ensuring long-term success and sustainability (Mahajan et al., 2023). Many companies have implemented environmentally friendly concepts into their logistics services, in order to meet the environmental demands of stakeholders and to improve public safety (Taj Hejazi et al., 2023). Green Supply Chain Management (GSCM) has become a solution to address environmental pollution and GSCM can measure environmental performance by observing the supply chain from upstream to downstream (Yalviolita & Hendayani, 2022). Carter and Rogers (2008) define green supply chain management as a strategy that transparently integrates and achieves the organization's social and environmental goals

The concept of green supply chain management is an effort to incorporate environmental issues into the context of supply chain management (Hervani et al., 2005). Therefore, organizations must be sensitive in every policy for environmental sustainability without sacrificing the overall interests of the company. Green supply chain management practices do not operate in isolation, but there are factors that drive companies to implement green supply chain management practices. The primary goal of a company is to maximize profits (Alfa Puryono & Kurniawan, 2017). Environmental performance is one instrument of a company that focuses on operational activities to maintain environmental sustainability and minimize the environmental impact caused by company activities (Efendi Lubis & Rahyuda, 2022). The implementation of environmental practices through environmental conservation programs has a significant and positive impact on a company's financial performance in both developed and developing countries (Manrique & Martí-Ballester, 2017). The current business environment makes stakeholders view company performance not only from financial performance, but they also look at the company's non-financial performance. This requires companies to disclose financial information and non-financial

information of the company such as environmental and social aspects (Burhan & Rahmanti, 2012). In line with this, the development of public understanding of environmental issues means that companies must have a competitive advantage, therefore social performance in maintaining the sustainability of the company needs to be carried out (Firmansyah et al., 2021)

METHODS

This study employs a quantitative descriptive approach. The research population comprises all owners of micro, small, and medium-sized furniture businesses in Yogyakarta Province, Indonesia, or their representatives. The data collection method is purposive sampling using the criterion of export-oriented companies. Based on data from the local government, fifty-one companies meet the requirements and were selected as research respondents. Of all respondents, thirty-two agreed to participate in this study, while the rest declined. Data collection took place over two months, from March to April 2024. In data analysis, the standard of good convergent validity is used, where outer loading > 0.6, mean variance extraction (AVE) > 0.5, and composite reliability > 0.7. Additionally, Cronbach's alpha should be greater than 0.7 for each variable, indicating that all are sufficiently reliable and are the most appropriate items for each variable. The data was analyzed using Structural Equation Modeling (SEM) with Partial Least Squares (PLS) using SmartPLS 4.0 software. The following are the hypotheses of this study.
H1: Green Supply Chain Management has a positive influence on environmental performance.
H2: Green Supply Chain Management has a positive influence on social performance.
H3: Environmental performance has a positive influence on economic performance.
H4: Social performance has a positive influence on economic performance.
H5: Green Supply Chain Management has a direct positive influence on economic performance.
H6a: Environmental performance mediates the influence of Green Supply Chain Management on economic performance.
H6b: Social performance mediates the influence of Green Supply Chain Management on economic performance.

RESULTS AND DISCUSSION

Validity test result

Validity can be determined by convergent validity (outer model) with loading factor values of 0.70. In this study, validity testing refers to loading factor values > 0.70. The test results can be seen in Table 1.

Inndicator	Validity				Description
	Factor Loading				
	ECP	EP	GSCM	SP	
ECP1 ← Economic Performance	0.808				Valid
ECP2 ← Economic Performance	0.804				Valid
ECP3 ← Economic Performance	0.863				Valid
EP1 ← Environmental Performance		0.712			Valid
EP2 Environmental Performance		0.862			Valid

EP3 Environmental Performance		0.921			Valid
GSCM1 ← Green Supply Chain Management Practices			0.868		Valid
GSCM2 ← Green Supply Chain Management Practices			0.867		Valid
GSCM3 ← Green Supply Chain Management Practices			0.839		Valid
GSCM4 ← Green Supply Chain Management Practices			0.711		Valid
GSCM8 ← Green Supply Chain Management Practices			0.748		Valid
SP1 ← Social Performance				0.832	Valid
SP2 ← Social Performance				0.809	Valid
SP3 ← Social Performance				0.830	Valid

Table 1. Validity Test Results

Initial analysis showed that in the convergent validity evaluation, three indicators were found to be invalid due to having a loading factor <0.70, namely GSCMP5, GSCMP6, and GSCMP7, thus they had to be excluded from the analysis.

Reliability test results

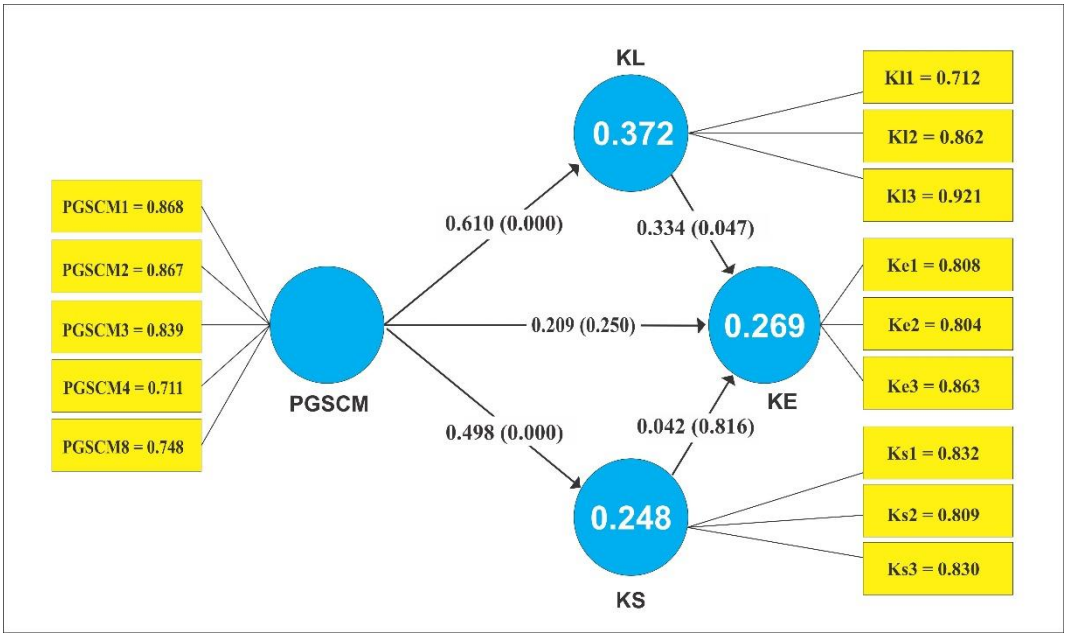
After the invalid indicators were removed, all indicators had a loading factor > 0.70, and it can be concluded that these indicators are valid. Furthermore, the reliability test, which assesses internal consistency, construct reliability, and variance extracted, showed that all variables had a Cronbach's alpha value greater than 0.7, with details as follows: GSCM → 0.863, EP → 0.778, SP → 0.769, and ECP → 0.774, indicating adequate reliability. Based on Table 2, it can be seen that all variables in this study are reliable.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)	Descriptions
Economic Performance	0.774	0.789	0.868	0.686	Reliable
Environmental Performance	0.778	0.783	0.873	0.698	Reliable
Green Supply Chain Management	0.863	0.885	0.894	0.518	Reliable
Social Performance	0.769	0.777	0.866	0.682	Reliable

Table 2. Reliability Test Results

Hypothesis test results

Hypothesis testing was conducted using PLS bootstrap with the results as shown in Figure 1. and more detailed analysis results can be seen in table 3.



Fugire 1. Bootstrap PLS

Hipotesis	Original Sample (O)	T Statistic (lO/STDEVl)	p-value	f-square
H1. GSCM → EP	0.610	8.788	0.000	0.591
H2. PGSCM → SP	0.498	6.492	0.000	0.329
H3. EP → ECP	0.334	1.984	0.047	0.076
H4. SP → ECP	0.042	0.233	0.816	0.001
H5. GSCM → ECP	0.209	1.151	0.250	0.036
H6a. GSCM → EP → ECP	0.205	1.865	0.062	0.374
H6b. GSCM → SP → ECP	0.021	0.221	0.825	0.250

Table 3. Hypothesis testing results

After knowing the results of the hypothesis test, the next step is to see the level of influence with the f-square criteria of 0.02 for low, 0.15 for medium, and 0.35 for high (Hair et al., 2019). Green Supply Chain Management practices in furniture companies will drive the creation of environmental performance with a high level of influence (f-square = 0.59) and drive the creation of social performance with a nearly high level of influence (f-square = 0.32). Meanwhile, environmental performance in influencing a company's economic performance is at a low level (f-square = 0.07)

Discussion

"The results of this study explain that Green Supply Chain Management practices have a positive influence on environmental performance (H1 accepted). This finding supports previous research by (Carter & Rogers, 2008; Dian et al., 2022; Huang, 2022; Shafira et al., 2021; Siregar & Pinagara, 2022; Yalviolita & Hendayani, 2022). By implementing GSCM practices, companies can manage the environment well, resulting in good environmental performance. Furniture SMEs in Yogyakarta that implement GSCM practices are able to minimize negative environmental impacts such as reducing production waste, reducing air pollution, and environmental

sustainability because they only use wood raw materials from certified (legal) suppliers.

The second hypothesis, stating that GSCM practices have a positive influence on a company's social performance (H2), is accepted. The results of this study show the importance of environmentally friendly practices by furniture SMEs so that they can create good social performance and eventually create sustainable performance in the company (Rosati & Faria, 2019). This research supports the previous findings of (Yildiz Çankaya & Sezen, 2019), which stated that GSCM practices not only have a positive impact on environmental performance but also on social performance. Although this study proves the positive influence of GSCM practices on both environmental and social performance, it does not prove the direct influence of GSCM practices on a company's economic performance (H5 rejected). This finding does not support previous research by (Dian et al., 2022; Feng et al., 2018; Green et al., 2012; Holling & Backhaus, 2023; Huang, 2022; Jermsittiparsert et al., 2019; Kalyar et al., 2020; Taj Hejazi et al., 2023)

The implementation of GSCM practices by furniture MSMEs does not immediately have a direct positive impact on a company's economic performance. Many factors influencing a company's economic performance mean that GSCM practices in this study are not significant. The positive influence of environmental performance on economic performance in this study (H3 accepted) proves and supports previous research by (Haholongan, 2016; Mann & Kaur, 2020; Manrique & Martí-Ballester, 2017). The implementation of GSCM practices in furniture SMEs through environmental conservation and the management of wood waste into high-value products is able to improve a company's economic performance.

Although environmental performance is proven to have a positive impact on economic performance in this study, social performance is not proven to have a positive impact on a company's economic performance (H4 rejected). This finding does not support the theory and previous findings of (Eriksson & Svensson, 2015; Margolis & Walsh, 2003). However, this research supports the research of (Mcwilliams & Siegel, 2000) which states that there is no positive influence of social performance on economic performance and it even tends to have a negative influence. Most furniture MSMEs in Yogyakarta are still medium-sized, so they do not have a special division to manage funds for social activities and corporate social responsibility. They should manage social aspects well so that they can improve the company's reputation, which will impact the company's economic performance (Suparjan & Sandy Mulya, 2012)

The hypothesis stating that there is a mediating effect of environmental and social performance is not proven in this study (H6a and H6b rejected). This finding does not support previous research conducted by (Green et al., 2012; Sueyoshi & Goto, 2010). The influence of GSCM practices on the economic performance of furniture MSMEs in Yogyakarta, both directly (H5) and indirectly or mediated by environmental and economic performance, is not proven (H6a and H6b). The efficiency achieved through the reuse of obsolete tools or the reconditioning of damaged tools, the management of waste into higher-value goods, and the reduction of waste management costs are unable to cover the costs incurred by the company to implement GSCM practices, such as employee training costs, the cost of using non-chemical materials, environmental maintenance costs, social community activity costs, and the cost of managing the legality certificates of raw materials issued by furniture MSMEs in Yogyakarta.

CONCLUSION

Furniture MSMEs in Yogyakarta face significant challenges in comprehensively implementing green supply chain management concepts to be able to compete globally on a

sustainable basis. In practice, furniture industries in Yogyakarta still face various obstacles, so the implementation has not been able to positively impact the company's economic performance, This study found that green supply chain management practices have a significant positive impact on environmental performance with a high f-square value of 0.59. Additionally, green supply chain management practices also have a positive impact on the company's social performance at a near-high level with an f-square value of 0.32. However, green supply chain management practices do not have a positive impact on the company's economic performance, either directly or indirectly. Meanwhile, the company's environmental performance as the first mediating variable in this study has been able to provide a positive impact on the company's economic performance, although still at a low level with an f-square value of 0.07. Social performance as the second mediating variable has not been able to provide a positive impact on the company's economic performance.

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