

The Impact of Green Supply Chain Management on Sustainability Performance: Evidence from Vietnam

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Abstract. Green supply chain management has become an important managerial approach for manufacturing firms seeking to improve sustainability performance under increasing environmental pressure, stakeholder expectations, regulatory requirements, and global market standards. In emerging economies such as Vietnam, manufacturing firms are encouraged to integrate environmental considerations into purchasing, production, distribution, product design, customer cooperation, and information systems while maintaining competitiveness in global value chains. The objective of this study is to examine the effect of green supply chain management practices on sustainability performance in Vietnamese manufacturing firms, with sustainability performance evaluated through environmental, economic, operational, and social dimensions. The study applies a quantitative research design based on data collected from 123 manufacturing firms operating in Vietnam. Green supply chain management is measured through ten practices: internal environmental management, green information systems, eco-design, environmental education, customer cooperation, green distribution, investment recovery, green purchasing, green manufacturing, and green marketing. The hypotheses are tested using regression-based analysis in Stata. Descriptive statistics are also used to assess the overall distribution of the variables. The empirical results show that eco-design, environmental education, customer cooperation, green distribution, and investment recovery have positive and significant effects on sustainability performance at the 5% level. Green information systems also have a positive effect at the 10% significance level. In contrast, internal environmental management, green purchasing, green manufacturing, and green marketing do not show statistically significant effects. Investment recovery has the strongest coefficient among the significant variables. The study concludes that sustainability performance in Vietnamese manufacturing firms is mostly enhanced by practical and externally oriented green activities rather than by formal internal policies, green procurement, green manufacturing, or green communication alone. Future studies should expand the sample size, include other industries and countries, and examine mediating variables such as green innovation, environmental capabilities, and supply chain resilience.

Keywords: green supply chain management; sustainability performance; Vietnamese manufacturing firms; green distribution; eco-design; environmental education; investment recovery; customer cooperation; green information systems; green purchasing; green manufacturing; green marketing.

JEL Classification: M11; Q56; Q01; L25; O33

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Introduction. Green supply chain management has emerged to be an increasingly valuable approach for organizations that seek to enhance their sustainability performance amid environmental challenges, stakeholder demands, and regulatory obligations. As supply chain functions including purchasing, production, packaging, logistics, and waste treatment in manufacturing industries can create significant negative environmental impacts, companies are urged to include environmental concerns in their supply chain decisions so as to cut down waste, optimize resource usage and gain greater competitive advantage. Earlier research shows that green supply chain management practices can help firms achieve greater sustainability performance and can contribute to their economic, operational, environmental, and social performance (Laosirihongthong et al., 2013; Nguyen, 2026a; Sarkis et al., 2011). Yet, the impact of individual GSCM practices may vary from one country to another and depending on the particular institutional environment.

Manufacturing companies in emerging markets, such as Vietnam, have been experiencing increased pressure for adopting green business practices due to international trade constraints, regulation, and deeper engagement in global supply chains (Hsu et al., 2013; Nguyen, 2025b). At the same time, financial constraints, inadequate technologies, lack of management competence, and poor supplier cooperation may be the limiting factors for firms' GSCM practices.

Green development has become an important strategic direction for developing countries as they seek to balance economic growth, environmental protection, and social well-being (Song & Hua, 2024; Umar & Safi, 2023; Xue et al., 2023). In these economies, rapid industrialization and export-oriented growth have contributed significantly to employment and income generation, but they have also increased pressure on natural resources, energy consumption, waste generation, and carbon emissions (Khan et al., 2021; Nguyen, 2026b; Wang et al., 2023). As global markets place stronger emphasis on environmental standards, carbon reduction, and responsible production, firms in developing countries are increasingly required to integrate sustainability into their business operations and supply chains (Nguyen & Tran, 2026; Nguyen et al., 2025).

Vietnam provides a relevant context for examining this issue (Nguyen et al., 2026b). As one of the fastest-growing manufacturing and export-oriented economies in Southeast Asia, Vietnam is under growing pressure to pursue green growth while maintaining competitiveness in global value chains (Nguyen et al., 2026a; Tang et al., 2016). The country's commitment to achieving net-zero emissions by 2050 and its National Green Growth Strategy for 2021-2030, with a vision to 2050, reflect a clear policy orientation toward sustainable development. In this context, green supply chain management has become an important managerial approach because it encourages firms to incorporate environmental considerations into

purchasing, production, logistics, cooperation with suppliers, and customer relationships (Nguyen, 2025a). Therefore, examining how green supply chain management affects sustainability performance in Vietnam can provide useful evidence for both managers and policymakers in developing economies.

This research assesses the direct impacts of GSCM practices on sustainability performance with the data collected from 123 manufacturing companies in Vietnam. The GSCM practices are measured through ten dimensions: green purchasing, green manufacturing, green marketing, green distribution, eco-design, internal environmental management, environmental education, investment recovery, customer cooperation, and green information systems (Anthony Jr, 2019; Sarkis et al., 2013). Sustainability performance is assessed with four dimensions, which are environmental performance, economic performance, operational performance, and social performance.

This study adds to the literature by using empirical data from Vietnam, as there is a lack of research in this country about the impact of GSCM practices on sustainability performance. From the analysis, it can be found that green distribution, eco-design, environmental education, investment recovery, customer cooperation, and green information systems positively and significantly impact sustainability performance. Meanwhile, green purchasing, green manufacturing, green marketing, and internal environmental management practices do not have a significant impact on sustainability performance. These results indicate that Vietnamese manufacturing companies gain more from the practical and external green practices rather than from the internal green practices or green practices that are still not integrated into their activities.

The remainder of this paper is organized as follows. The next section reviews the relevant literature and develops the research hypotheses. The following section presents the research methodology, including data collection, variable measurement, and the empirical model. The results section reports the empirical results. The discussion section interprets the findings, and the conclusion summarizes the main findings, presents theoretical and practical implications, discusses limitations, and suggests directions for future research.

Literature Review. Internal environmental management pertains to the degree of inclusion of the environmental responsibility in the internal policies, managerial commitment, organizational procedures, and coordination within functions of an organization. Previous literature indicates that the strong top management support is required for green supply chain management to be adopted since it involves resource allocation, participation of employees and process (Seman et al., 2012). Using stakeholder theory framework, it can be expected that organizations with higher internal environmental management are going to be better at

responding to regulatory, customer, employee, and community pressures (Singh & Trivedi, 2016). With regard to manufacturing organizations, the internal environmental management can lead to the establishment of environmental audits, ISO 14001, pollution control, and continuous improvement activities. The latter will contribute to better sustainability performance due to reduced environmental risk, improved operational effectiveness and increased social legitimacy of the firm.

Green information systems will enable firms to gather, process, and communicate information about the environment throughout different business activities and their supply chain. Firms might use information systems to track energy usage, emissions, waste, inventory management, transportation, and suppliers' performance. Studies have found that information sharing and technological capabilities play an essential role in supply chain coordination and performance improvement (Zhu et al., 2005). In terms of green supply chain management, green information systems enable managers to improve decision-making processes on the basis of timely and relevant environmental information. In Vietnam, digital technologies may be especially crucial for firms because they are obliged to meet environmental standards and provide information to their customers, authorities, and export markets. Through increased transparency, coordination, and control, green information systems will improve firms' sustainability performance.

Eco-design means the incorporation of environmental aspects in product design and packaging design. Eco-design includes reduced use of materials, increased product recyclability, reduced use of harmful substances, packaging reuse design, and consideration of environmental effects during the entire lifecycle of the product (Bashar et al., 2023). Past studies contend that eco-design is one of the most critical sustainable supply chain practices since design decisions have an impact on purchasing, production, distribution, consumption, and disposal actions (Harju et al., 2026). According to the natural resource-based view theory, eco-design has the potential to generate competitive advantages due to reduced waste generation, minimized consumption of resources, and differentiation of products. In Vietnam, eco-design is increasingly significant because there is increasing pressure on manufacturers from consumers and foreign markets to reduce plastic waste. Thus, eco-design is expected to lead to better environmental, operational, economic, and social results.

Environmental education means education, training, seminar, and other learning activities for enhancing environmental consciousness among employees and supply chain partners. Previous studies indicate that green supply chain management cannot be achieved without the employees' knowledge, behavior, and learning process (Parmawati et al., 2023). Environmental education is helpful for employees to know about environmental policy, eliminate wasteful activities, abide by environmental

regulations, and become part of sustainability efforts (Teixeira et al., 2016). Environmental education might even lead to better collaboration with the suppliers, contractors, and consumers due to environmental awareness creation. In developing countries like Vietnam, there might still be a lack of environmental knowledge among employees of various firms, particularly small and medium manufacturing organizations. Hence, training and education would play an essential role in putting the green strategy into practice. Organizations that give importance to environmental education would be able to accomplish better sustainability performance results.

Customer cooperation is defined as the process of firms working together with their customers in areas like eco-design, cleaner production, green packaging, energy saving, and environmentally sustainable consumption of the product. Past research indicates that external collaboration is an important aspect of green supply chain management since companies cannot attain sustainability targets on their own and will have to rely on customer cooperation among others (Zhu et al., 2017). While customers may force companies to be more environmentally oriented, they may also give valuable input concerning the design of the product and green packaging (Andalib Ardakani et al., 2023). In the case of Vietnamese manufacturing firms operating in the export market, customer cooperation becomes particularly significant because buyers demand adherence to environmental and social standards. Thus, customer cooperation can help firms in improving product quality, minimizing environmental footprint, increasing customer satisfaction, and creating sustainable business relationships.

Green distribution implies environmentally friendly activities of logistics and distribution, which include such measures as use of cleaner transportation, improvement of consolidation of shipments, minimization of travel distance, routing optimization, and application of recyclable or reusable packages. There could be considerable environmental impacts created by distribution activities due to fuel consumption, emission production, creation of packaging wastes, and inefficiency of transportation. According to the existing research, green distribution can promote sustainability performance by minimizing the cost of logistics, lowering emissions, and enhancing delivery efficiency (Al Masri & Wimanda, 2024; Çankaya & Sezen, 2018). Distribution and logistics have an importance for Vietnam since companies operating in manufacturing sector often face high transportation cost, insufficient infrastructure, and rising demands on cutting carbon emissions. Green distribution could assist companies in enhancing their environmental performance and delivery efficiency.

The practice of investment recovery involves reselling, recycling, or reusing excess materials, scrap, obsolete equipment, and unused inventory (Sun et al., 2023). Through this process, companies can get value from what is normally considered to be a waste of resources. Previous studies have

shown that investment recovery is a significant green supply chain management practice due to its ability to connect environmental protection with economic gains (Çankaya & Sezen, 2018; Chen et al., 2024). The resell or reuse of excess materials and obsolete equipment helps companies to save money on waste disposal costs, costs of holding inventory, and increase resource efficiency. For manufacturing companies, the implementation of investment recovery practices may help to decrease the negative impact of waste produced by companies during their activities. As far as Vietnamese companies are concerned, the issue of cost efficiency is particularly important for them; hence, investment recovery can be a viable practice for them. Thus, the implementation of this practice will positively affect the sustainability performance of organizations.

Green procurement entails incorporating environmental considerations in the process of supplier selection, purchasing activities, material sourcing, and supplier evaluation. This includes choosing environmentally-certified suppliers, performing supplier audits, using environment-friendly materials, and working with suppliers in achieving environmental goals. According to previous research, green procurement is essential as a first step in green supply chain management since the products and operations of the supplier influence the environmental effects of manufacturing activities (Ghosh, 2019; Liu et al., 2025). From the perspective of stakeholders, companies are supposed to ensure that their suppliers satisfy their environmental expectations and regulations. In Vietnam, green procurement can assist manufacturing enterprises in minimizing environmental risks and becoming more competitive in participating in global supply chains. Its effectiveness may be contingent upon supplier readiness and access to green materials. In general, green procurement is expected to contribute to the sustainability performance of the company.

Green manufacturing encompasses manufacturing operations that decrease wastes, emissions, energy usage, water usage, and hazardous substances. Green manufacturing also comprises cleaner manufacturing techniques, pollution management, process re-design, and efficient resource use. Previous research indicates that green manufacturing can enhance the performance of firms regarding sustainability by decreasing environmental harm and increasing efficiency (Abualfaraa et al., 2020; Al-Hakimi et al., 2022). Under the natural resource-based theory, green manufacturing might create internal resources that are challenging for other firms to replicate, including cleaner manufacturing knowledge, waste management skills, and energy efficient operations. Green manufacturing becomes more and more relevant in the case of manufacturing firms operating in Vietnam as firms operate under increasing environmental regulation and customer demand. Hence, through reducing pollution and increasing production efficiency, green manufacturing can improve the performance of firms environmentally, economically, operationally, and socially.

Green marketing involves promoting, communicating about, pricing, packaging, and distributing products in an environmentally responsible manner. It is a way for businesses to convey the environmental commitment to consumers, regulators, and the general public. Previous studies have shown that green marketing can help improve the company's image and consumer confidence and contribute to market legitimacy provided that there is environmental action backing (Braik et al., 2024; Raharjo, 2019). For manufacturing companies, green marketing can help develop eco-friendly products and educate consumers about sustainable consumption. In Vietnam, consumers and business clients become increasingly aware of the environmental concerns in the areas of packaging, food, textile, electronics, and exports. If the green philosophy is well communicated by the business and marketing efforts are aligned with environmental achievements, businesses will definitely improve their social and economic performance.

Aims. The aim of this study is to examine the effect of green supply chain management practices on sustainability performance in Vietnamese manufacturing firms. The study focuses on ten GSCM dimensions, namely green purchasing, green manufacturing, green marketing, green distribution, eco-design, internal environmental management, environmental education, investment recovery, customer cooperation, and green information systems, and evaluates their influence on sustainability performance.

The objectives of the study are to assess the direct impacts of individual GSCM practices on sustainability performance; to evaluate sustainability performance through environmental, economic, operational, and social dimensions; to identify which green supply chain practices have significant effects in Vietnamese manufacturing firms; and to provide practical implications for managers seeking to improve sustainability outcomes through targeted green supply chain initiatives.

The study tests the following hypotheses:

H1: Internal environmental management positively affects sustainability performance.

H2: Green information systems have a positive impact on sustainability performance.

H3: Eco-design has a positive influence on sustainability performance.

H4: Environmental education positively affects sustainability performance.

H5: Customer cooperation has a positive influence on sustainability performance.

H6: Green distribution has a positive impact on sustainability performance.

H7: Investment recovery has a positive effect on sustainability performance.

H8: Green procurement positively influences sustainability performance.

H9: Green manufacturing has a positive effect on sustainability performance.

H10: Green marketing positively affects sustainability performance.

Methodology. This study employs a quantitative research design to examine the effect of green supply chain management practices on sustainability performance in Vietnamese manufacturing firms. The research population consists of manufacturing firms operating in Vietnam, and the final sample includes 123 valid firm-level observations collected through structured questionnaires. The questionnaire was developed based on prior studies on green supply chain management and sustainability performance, with necessary adjustments to fit the Vietnamese manufacturing context.

Green supply chain management is measured through ten dimensions, namely internal environmental management, green information systems, eco-design, environmental education, customer cooperation, green distribution, investment recovery, green purchasing, green manufacturing, and green marketing. Sustainability performance is measured as a multidimensional construct covering environmental, economic, operational, and social performance. All measurement items were assessed using a Likert scale to capture respondents' perceptions of the extent to which each practice is implemented in their firms.

To ensure the reliability and validity of the measurement model, Cronbach's alpha, composite reliability, and average variance extracted were examined. The hypotheses were then tested using regression-based analysis to evaluate the direct effects of each green supply chain management practice on sustainability performance. This method is appropriate because the study aims to test causal relationships among latent constructs and identify which green supply chain practices significantly contribute to sustainability outcomes in Vietnamese manufacturing firms.

Results. In total, there were 123 questionnaires obtained from companies that operate in Vietnam within the manufacturing industry. These questionnaires were checked to be eligible for further analysis. The descriptive statistics of dependent and independent variables were performed by Stata. The outcomes of the analysis show the overall distribution of green supply chain management practices and sustainability performance of Vietnamese manufacturing companies. Table 1 gives the mean, median, standard deviation, minimum, and maximum values of all the variables of the study.

From the descriptive statistics, it is evident that the Vietnamese manufacturing organizations have reported fairly high rates for their green supply chain management practices and sustainability performance. In terms of sustainability performance measures, the highest mean values were observed for the measure operational performance, implying that the green practices might be highly influential in enhancing the efficiency of production and delivery of the products. Considering the GSCM practices, higher mean values were observed in green information systems, eco-design and green distribution; while green purchasing and green marketing were relatively lower in value. This implies that Vietnamese firms tend to

emphasize the practical aspects of green practices more than green communication and selecting suppliers.

Table 1. Descriptive Statistics

Variable	Obs.	Mean	Median	Std. Dev.	Minimum	Maximum
EP	123	6.118	6.200	0.812	3.000	7.000
ECP	123	5.874	6.000	0.936	2.400	7.000
OPP	123	6.246	6.333	0.728	3.200	7.000
SOCP	123	6.057	6.125	0.841	3.000	7.000
GP	123	5.684	5.833	0.982	2.000	7.000
GMF	123	5.912	6.000	0.914	2.200	7.000
MKT	123	5.731	5.833	1.026	1.800	7.000
GD	123	6.185	6.250	0.756	3.000	7.000
ECO	123	6.204	6.250	0.779	3.250	7.000
IEM	123	5.967	6.000	0.884	2.571	7.000
EDU	123	6.032	6.250	0.861	2.500	7.000
IR	123	6.147	6.333	0.793	2.667	7.000
CUST	123	6.073	6.250	0.835	2.750	7.000
GIS	123	6.226	6.333	0.742	3.333	7.000

Source: authors' calculation from Stata

This section presents the hypothesis testing results obtained from the regression analysis conducted in Stata. The analysis examines the direct effects of green supply chain management practices on sustainability performance among 123 Vietnamese manufacturing firms. Sustainability performance is used as the dependent variable, while the ten dimensions of green supply chain management are included as independent variables. The results are presented in Table 2.

Table 2. Hypothesis Testing Results for Sustainability Performance

Variable	Coefficient	t-statistic	Prob.	Description
C	0.736	3.984	0.000	Constant
IEM	0.043	0.824	0.412	Positive, not significant
GIS*	0.088	1.807	0.073	Positive, significant at 10%
ECO**	0.132	2.487	0.014	Positive, significant
EDU**	0.126	2.963	0.004	Positive, significant
CUST**	0.141	3.214	0.002	Positive, significant
GD**	0.157	3.086	0.003	Positive, significant
IR**	0.168	4.275	0.000	Positive, significant
GP	-0.027	-0.692	0.490	Negative, not significant
GMF	0.052	1.118	0.266	Positive, not significant
MKT	0.019	0.431	0.667	Positive, not significant

Note: indicates significance at the 5% level; * indicates significance at the 10% level.

Source: authors' calculation from Stata.

The results of the regression analysis indicate that there is a significant positive impact of six green supply chain management practices on the sustainability performance. Particularly, eco-design, environmental education, customer cooperation, green distribution, and investment recovery are significantly associated with the dependent variable at 5%, whereas green information systems are significantly correlated at 10%. Among the independent variables mentioned above, investment recovery has

the highest coefficient. Therefore, it means that Vietnamese manufacturing companies can increase their sustainability performance due to the reuse, recycling, and sale of any excess material, outdated equipment, and production leftovers. Green distribution and customer cooperation have significant impacts on sustainability performance as well.

On the other hand, internal environmental management, green purchasing, green manufacturing, and green marketing do not show any statistically significant effects on sustainability performance. In particular, green purchasing presents a negative coefficient, which means that supplier environmental performance might be immature and ineffective in Vietnamese manufacturing companies. The same applies to green manufacturing and green marketing, which could be at an early stage of development, or used mostly as compliance tools and communications. Thus, it could be concluded that Vietnamese manufacturing companies' sustainability performance is affected more by practical and externally oriented green activities, than by internal activities or generic green communications.

In summary, the findings of the hypothesis test offer partial evidence to support the proposed research model. The hypotheses H3, H4, H5, H6, and H7 are supported, meaning that eco-design, environmental education, customer collaboration, green logistics, and investment recovery have significant positive impacts on sustainability performance. Hypothesis H2 is also supported with the 10% significance level, implying that green information systems have a weak positive impact on sustainability performance. In contrast, H1, H8, H9, and H10 are not supported, since internal environmental management, green procurement, green manufacturing, and green marketing do not exert any significant impacts. Therefore, sustainability performance in Vietnamese manufacturing firms is influenced primarily by practical and outward-facing green practices rather than by internal measures, green procurement, manufacturing processes, or green marketing activities.

Discussion. The findings show that the sustainability performance of Vietnamese manufacturing firms is more strongly influenced by practical and externally oriented green supply chain management practices than by internal policies, green purchasing, green manufacturing, or green marketing activities alone. In particular, eco-design, environmental education, customer cooperation, green distribution, and investment recovery have positive and significant impacts on sustainability performance. Green information systems also show a positive effect at the 10% significance level.

The significant impact of eco-design indicates that firms can improve sustainability outcomes by incorporating environmental considerations into product and packaging design. This may help reduce material use, increase recyclability, reduce harmful substances, and improve lifecycle-related

environmental performance. In the Vietnamese manufacturing context, where firms are under increasing pressure from export markets and consumers to reduce environmental impacts, eco-design appears to be a useful and practically relevant GSCM practice.

Environmental education also has a significant positive effect, suggesting that employee knowledge, awareness, and environmental learning activities are important for implementing green strategies. This result is especially meaningful in developing country contexts, where environmental knowledge and technical expertise may still be uneven across firms. Training and education can help employees understand environmental policies, comply with regulations, reduce wasteful activities, and contribute to sustainability initiatives.

Customer cooperation also positively affects sustainability performance. This finding supports the argument that sustainability cannot be achieved by firms alone, but requires collaboration with external stakeholders, especially customers. In export-oriented manufacturing sectors, customer cooperation may help firms improve eco-design, green packaging, cleaner production, and compliance with international environmental and social standards.

Green distribution has a significant positive impact on sustainability performance, which means that logistics-related green practices can improve both environmental and operational outcomes. Cleaner transportation, route optimization, shipment consolidation, and reusable packaging can reduce emissions, lower logistics costs, and improve delivery efficiency. For Vietnamese firms facing transportation challenges and rising environmental expectations, green distribution can provide both cost and sustainability advantages.

Investment recovery has the strongest coefficient among the significant variables. This result suggests that reuse, recycling, resale of excess materials, obsolete equipment, and production leftovers can strongly improve sustainability performance. Investment recovery is particularly important because it links environmental protection with economic efficiency. In manufacturing firms, recovering value from unused or waste materials can reduce disposal costs, improve resource efficiency, and support circular economy practices.

In contrast, internal environmental management, green purchasing, green manufacturing, and green marketing do not show significant effects. These results suggest that some green practices may still be at an early stage of implementation in Vietnamese manufacturing firms or may not yet be fully integrated into core operations. Internal environmental management may exist more as formal policy than as effective practice. Green purchasing may be limited by supplier readiness and availability of green materials. Green manufacturing may require higher technological investment, while

green marketing may remain mainly a communication activity if not supported by substantive environmental achievements.

Overall, the results suggest that Vietnamese manufacturing firms should focus less on formal or symbolic green practices and more on practices that directly affect operational processes, external collaboration, knowledge development, logistics, and resource recovery. The study therefore confirms that sustainability performance in emerging manufacturing economies depends not only on adopting GSCM policies, but also on implementing practices that produce measurable operational and environmental benefits.

Conclusions. The research in this paper investigates the impact of green supply chain management on sustainability performance based on empirical evidence gathered from 123 manufacturing organizations in Vietnam. The results confirm partially the hypothesis of the research model. In particular, eco-design, environmental education, customer cooperation, green distribution, and investment recovery have positive and significant impacts on sustainability performance, whereas green information systems exhibit a positive impact at the 10% level of significance. Meanwhile, internal environmental management, green purchasing, green manufacturing, and green marketing do not have any significant impact. Thus, it can be concluded that sustainability performance of Vietnamese manufacturing organizations is mostly enhanced by practical and externally oriented green activities.

This research makes a contribution to existing studies by providing empirical data in regard to Vietnam, which is an emerging economy where manufacturers are facing growing demands concerning implementation of environmental activities in supply chains in accordance with customers' environmental expectations. The results of this research have important practical implications for managers. Instead of concentrating on formal approaches related to GSCM such as communication about GSCM, companies should pay more attention to those practices, which can be implemented in daily operations of a company and include effective distribution of goods, product re-design, material recovery, customer collaboration and development of environmental skills among employees.

The present study faces many limitations. First, the sample used consists of only 123 manufacturing companies in Vietnam that may affect the ability to generalize the results. Second, the questionnaire method was used to gather data; therefore, the results can be influenced by the personal opinion of the respondents. Third, the study only considers the impact of green supply chain management practices on the sustainability performance of companies without considering any other factors. Further research may increase the sample size or consider other industries. Other variables that might be studied include green innovation, environmental capabilities, or

supply chain resilience as mediators of the relationship between green supply chain management practices and sustainability performance.

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