







“Enhancing sustainability in Indonesian SMEs through green HRM and supply chains”

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ENHANCING SUSTAINABILITY IN INDONESIAN SMES THROUGH GREEN HRM AND SUPPLY CHAINS

Abstract

This study aims to evaluate how green HRM enhances sustainable performance in Indonesian SMEs by integrating green supply chain management and fostering pro-environmental behavior. By analyzing data from 645 SMEs across various industries, this paper explores the mediating effects of green supply chain management and pro-environmental behavior. The findings demonstrate that while green HRM has a direct negative impact on sustainable performance, its integration with green supply chain management and pro-environmental behavior significantly enhances sustainability outcomes. Additionally, green supply chain management and pro-environmental behavior mediate the relationship between green HRM and sustainable performance, indicating that green HRM indirectly fosters sustainability through these pathways. The study also shows that pro-environmental behavior moderates the effects of green HRM and green supply chain management on sustainable performance, strengthening both relationships. These results suggest that while green HRM alone may not directly improve sustainable performance, its integration with green supply chain management and pro-environmental behavior significantly enhances sustainability outcomes for SMEs. This study underscores the importance of fostering pro-environmental behavior and incorporating green supply chain practices within green HRM frameworks. It provides valuable contributions to the literature on sustainable business practices and offers practical guidance for SMEs to improve their sustainability performance.

Keywords

sustainable performance, green management, pro-environmental behavior, Indonesian SMEs

JEL Classification

Q01, O44, D23

INTRODUCTION

The need for sustainability in the business world is increasingly urgent, along with increasing global awareness of climate change and environmental conservation. Companies in various sectors are now required to pursue financial returns and run environmentally and socially responsible operations (Ahmad et al., 2022). Green HRM has emerged as a strategic method incorporating environmental practices into human resource management. This approach promotes eco-friendly behaviors among employees, aiming to enhance the company's overall sustainable performance (Zihan & Makhbul, 2024).

Although extensive research has examined green HRM within large corporations, the small and medium enterprise (SME) sector remains largely underexplored. In developing countries like Indonesia, SMEs are vital to the economy but frequently encounter considerable obstacles when attempting to adopt sustainable practices. SMEs often lack the capacity and resources to implement complex sustainability strategies, especially those related to natural resource management and carbon footprint reduction (Koirala, 2019). This limitation makes implementing green HRM even more

crucial, given that SMEs have unique characteristics that differ from large companies, such as limited resources, organizational flexibility, and a different mindset in doing business.

The challenges SMEs face in adopting green HRM are pertinent, focusing on maximizing the potential of eco-conscious human resource practices to enhance operational efficiency and minimize environmental harm. Previous research shows that green HRM can improve operational efficiency and reduce a company's ecological footprint (Chaudhary, 2020). However, studies investigating the role of green HRM in the SME sector, especially in developing countries such as Indonesia, are still lacking.

1. LITERATURE REVIEW AND HYPOTHESES

The theory of sustainable performance is frequently tied to the triple bottom-line paradigm, which has three prongs: economic success, environmental quality, and social fairness (Elkington, 1997). This paper integrates the resource-based view, resource dependence theory, and value-belief-norm theory with the green HRM, supply chain management (SCM), and pro-environmental behavior frameworks to analyze how SMEs can optimize their sustainable performance. The resource-based view (RBV) philosophy emphasizes using the company's internal resources to gain a sustained competitive advantage. This idea was proposed by Barney (1986), who said that RBV views great corporate culture as one of the most important resources for generating competitive advantages since it is often valued, unique, inimitable, and non-substitutable (Chang & Chen, 2012).

The RBV has served as a framework for analyzing strategies to achieve sustainable competitive advantage in the public and private sectors by identifying resource attributes supporting long-term sustainability. Hart (1995) argued that green management could play a pivotal role in a company's strategic approach and should be recognized as a unique competency within the RBV framework (Chang & Chen, 2012).

According to the resource dependence theory, businesses are open systems that rely on outside environmental factors. Pfeffer and Salancik (2009) claimed that organizations are not autonomous entities; instead, they rely on a wider network of organizations in their environment to control resources and thrive. The following rationale is the value-belief-norm theory, introduced by Stern et al. (1999), which suggests that individuals who

adopt the core values of a movement perceive threats to those values and feel a personal obligation (or norm) to take actions that help restore them, leading to a natural inclination to offer support. Chen (2015) demonstrated that this theoretical framework effectively predicts pro-environmental behavior.

The literature on green HRM, pro-environmental behavior, and green SCM has grown, but several critical gaps remain. First, research has predominantly focused on large corporations in developed countries, leaving SMEs in developing nations underexplored. Second, the correlation between green behavior, green human resource management, and sustainable performance remains inadequately understood, especially in the context of SMEs (Liu et al., 2023). Third, although green SCM has been shown to enhance sustainable performance significantly, limited studies have integrated this approach with green HRM in the SME sector (Ren et al., 2018).

Green HRM (GHRM) and green supply chain management (GSCM) are two key concepts in companies' sustainable environmental management. Various previous studies suggest that green HRM enhances a company's environmental performance and operational efficiency by encouraging pro-environmental behavior among employees (Zihan & Makhbul, 2024). As known, the green HRM approach integrates environmentally friendly policies and practices into the entire human resource management cycle, from recruitment, training, and performance evaluation to compensation (C. Jabbour & A. Jabbour, 2016).

Green SCM is an approach that integrates sustainability principles into production, distribution, and logistics processes, which includes waste reduction, more efficient energy use, and product

recycling (Zhu et al., 2013). Previous research has shown that green SCM helps companies reduce environmental impact and improve economic performance. Green SCM can reduce resource consumption and environmental pollution, strengthening sustainable green economic management (Li, 2024). Comprehensive studies are needed to explore the long-term impacts and adaptation challenges across various industries. Additionally, few studies discuss the variation in the implementation of green SCM globally, with many research efforts focusing on developed regions. More quantitative and comparative studies across various regions are needed to understand the sustainable effects of green SCM (Choudhary & Sangwan, 2022). Thus, this study aims to close this knowledge gap, improve the comprehension of how green supply chain management contributes to attaining global sustainability objectives, and open the door for more robust global supply networks.

Recent studies have shown that GHRM has a significant impact on the implementation of GSCM in various industrial sectors (C. Jabbour & A. Jabbour, 2016). GHRM practices such as green recruitment, environmental training, and green performance-based incentive systems contribute to the success of GSCM implementation (Jawaad et al., 2022). Furthermore, companies that implement effective GHRM policies tend to have more sustainable and efficient supply chains (Carballo-Penela et al., 2023). Employee training on environmentally friendly practices, which is a dimension of GHRM, can improve the understanding and implementation of green strategies in the supply chain (Dahinine et al., 2023). Although many studies have shown the positive impact of GHRM on GSCM, there are some challenges in its implementation. Studies have shown that resistance to change can hinder the effectiveness of GHRM in supporting GSCM (Nejati et al., 2017). Companies with limited budgets and workforces often struggle to adopt GHRM practices that support GSCM (Carballo-Penela et al., 2023).

Nevertheless, the majority of existing research centers on large multinational corporations in developed nations. Conversely, studies investigating the application of green HRM in SMEs, particularly in developing countries such as Indonesia, remain scarce (Ren et al., 2018). This review

shows that GHRM has a significant influence on GSCM implementation in various industries. Through green recruitment, environmental training, and green organizational culture, GHRM can strengthen the effectiveness of GSCM and help companies achieve their sustainability goals.

Several studies have shown a positive relationship between GHRM and pro-environmental behavior. Pro-environmental behavior is defined as actions taken by individuals to reduce the harmful effects on the environment (Steg & Vlek, 2009). Previous studies have shown that such behavior can enhance a company's environmental performance (Bissing-Olson et al., 2013; Mouro & Duarte, 2021). Pro-environmental behavior refers to individual behaviors that voluntarily contribute to environmental sustainability, including energy efficiency, waste reduction, and involvement in green initiatives in the organization (Ojo et al., 2020). GHRM practices, such as green training and employee engagement, significantly increase pro-environmental behavior in the tourism industry (Elshaer et al., 2021). Green psychological climate and employee engagement are important mediators in the relationship between GHRM and pro-environmental behavior (Amini et al., 2024). This literature review shows that GHRM significantly influences pro-environmental behavior through various mechanisms such as green training, employee empowerment, and creating a work climate that supports sustainability.

Other studies have shown that effective GHRM implementation can improve a company's operational efficiency and environmental performance (Dumont et al., 2017; Renwick et al., 2013). Companies adopting GHRM showed improvements in sustainability performance through initiatives such as training on environmental practices, green incentive programs, and environmental-based performance evaluations (Chaudhary, 2020). However, most of these studies focus on large and multinational companies in developed countries, while studies examining the implementation of GHRM in SMEs, especially in developing countries such as Indonesia, are still limited (Ren et al., 2018).

GSCM is a supply chain management approach that focuses on environmental sustainability by reducing the negative impacts of production and

distribution on the environment. Sustainable performance includes environmental, economic, and social aspects that can be improved through the implementation of GSCM (Han & Huo, 2020). GSCM aspects such as green purchasing, green manufacturing, and green marketing contribute positively to economic, social, and environmental performance (Çankaya & Sezen, 2019). GSCM implementation can reduce operational costs and increase company competitiveness (Geng et al., 2017), minimize carbon emissions, production waste, and resource consumption (Feng et al., 2018), and improve employee welfare and customer satisfaction through socially responsible business practices (Ahmad et al., 2022).

Previous studies have shown that employee pro-environmental behavior plays an important role in improving organizational sustainability performance (Foster et al., 2022). Other studies have shown that pro-environmental behavior has a significant impact on organizational sustainability performance. Pro-environmental behavior, such as energy efficiency and waste reduction, can improve a company's environmental performance (Blok et al., 2015). Pro-environmental behavior supported by a company's green policy can increase profitability through resource efficiency (Liu et al., 2023). In addition, it contributes to improving employee well-being and community involvement in sustainability programs (Ren et al., 2018).

Mouro and Duarte (2021) highlighted the importance of organizational policies in encouraging pro-environmental behavior that contributes to sustainability performance. However, the specific processes through which pro-environmental behavior influences the link between green HRM and sustainable performance are not yet fully understood (Liu et al., 2023). This study seeks to fill this gap by examining how pro-environmental behavior strengthens this relationship in the context of Indonesian SMEs through an empirical approach. This review shows that pro-environmental behavior plays an important role in improving sustainable performance through reducing environmental impacts and improving economic efficiency and social welfare.

This study aims to examine the effect of pro-environmental behavior on sustainable performance, identify the mediating role in the relationship be-

tween GHRM and sustainable performance, and assess the moderating role of pro-environmental behavior on the relationship between GHRM and GSCM on sustainable performance.

Based on a review of previous findings, the following hypotheses are proposed:

- H1: Green HRM facilitates green supply chain management.*
- H2: Green HRM positively impacts pro-environmental behavior.*
- H3: SMEs' sustainable performance is positively impacted by green HRM.*
- H4: SMEs' sustainable performance is positively impacted by green supply chain management.*
- H5: The sustainable performance of SMEs is positively impacted by pro-environmental behavior conduct.*
- H6: Green HRM influences SMEs' sustainable performance mediated by green supply chain management.*
- H7: Green HRM influences SMEs' sustainable performance by encouraging pro-environmental behavior.*
- H8: The impact of green HRM on the sustainable performance of SMEs is moderated by pro-environmental behavior.*
- H9: The impact of green supply chain management on SMEs' sustainable performance is mitigated by pro-environmental behavior.*

2. METHODS

This study utilized a survey method, with questionnaires as the primary data collection tool. The data were collected from the manufacturing industry within Indonesia's SMEs. The research population consisted of all SMEs operating in the manufacturing sector in Central Java Province, Indonesia. The research sample was selected using the purposive technique, targeting manufac-

turing companies with the potential to generate waste (liquid, solid, or gas); a business scale with an annual turnover of at least IDR 300 million; a minimum of five employees; and respondents in the position of owner, director, or manager. A total of 709 responses were collected. After eliminating incomplete and ineligible responses, 645 valid responses were obtained for analysis. The demographic information of the respondents is presented in Table 1. The research variables were assessed using a five-point Likert scale, ranging from “strongly agree” to “strongly disagree.” The specific items included in the questionnaire can be found in Appendix A. Data analysis was conducted using SEM-PLS.

Table 1. Demographic information

Demographic Variable	Category	Frequency (n = 645)	Percent
Type of business	Textiles	207	32%
	Food and beverage	144	22%
	Furniture	127	20%
	Wood processing	52	8%
	Apparel	50	8%
	Rubber/plastic processing	42	6%
	Other processing	18	3%
	Tobacco processing	5	1%
Business ownership	Own capital	621	96%
	Joint capital	24	4%
Business scale	Small business	562	87%
	Medium business	83	13%
Number of employees	5 to 25 people	513	80%
	26 to 100 people	114	17%
	More than 100 people	18	3%
Export orientation	Not export-oriented	509	79%
	Export-oriented	136	21%
Company age	Less than 5 years	80	12%
	Between 5 and 10 years	101	16%
	More than 10 years	464	72%
Respondent's position	Owner	618	95%
	Manager	17	3%
	Director	10	2%
Gender	Male	431	67%
	Female	214	33%

3. RESULTS AND DISCUSSION

The data analysis followed a two-step process using PLS-SEM. The first step involved evaluating the validity and reliability of the measurement model. In line with the guidelines of Hair et al. (2022), the

analysis focused on key indicators, including loading factors, composite reliability, average variance extracted (AVE), and discriminant validity. The results in Table 2 and Appendix B demonstrate strong internal consistency, as the composite reliability values exceed the recommended threshold of 0.70. Additionally, all loading factors are above the acceptable level of 0.7, and the AVE values exceed the minimum threshold of 0.50, confirming the validity of the constructs. Discriminant validity was assessed using the heterotrait-monotrait (HTMT) ratio of correlations, which must be below 0.90 (Henseler et al., 2015). As shown in Table 3, all HTMT values are within the acceptable range, indicating that discriminant validity has been adequately established for the model.

Table 2. Validity and reliability of the measurement model

Construct	Loading Factor	Composite Reliability	AVE
GHRM	0.837–0.887	0.973	0.749
GSCM	0.741–0.808	0.927	0.601
PEB	0.762–0.824	0.874	0.608
SP	0.723–0.904	0.980	0.779

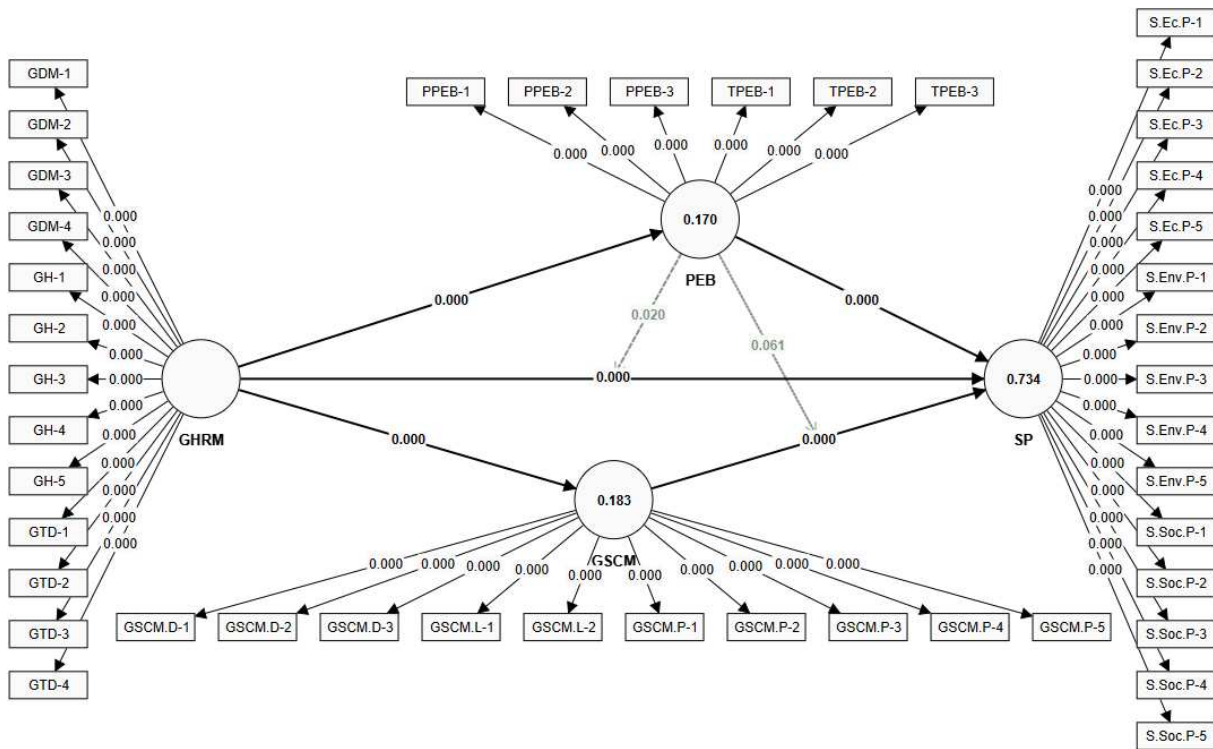
Note: GHRM means green human resources management; GSCM means green supply management; PEB means pro-environmental behavior; SP means sustainable performance.

Table 3. Heterotrait-monotrait (HTMT) ratio

Construct	GHRM	GSCM	PEB
GHRM	–	–	–
GSCM	0.450	–	–
PEB	0.448	0.772	–
SP	0.048	0.730	0.762

Note: GHRM means green human resources management; GSCM means green supply management; PEB means pro-environmental behavior; SP means sustainable performance.

Before testing the hypothesized relationships, the coefficient of determination (R^2) and predictive relevance (Q^2) were used to assess the structural model. The blindfolding approach suggests that any Q^2 value should be greater than 0 using cross-validated redundancy (Hair et al., 2022). Green HRM (0.723), green SCM (0.512), pro-environment behavior (0.453), and sustainable performance (0.726) are the Q^2 values for this analysis. R^2 value in Figure 1 showed that green HRM caused 17.0% of changes in pro-environment behavior and 18.3% of changes in green SCM. Green HRM, pro-environment behavior, and green SCM caused 73.4% of changes in sustainable performance.



Note: GHRM means green human resources management; GSCM means green supply management; PEB means pro-environmental behavior; SP means sustainable performance.

Figure 1. Measurement model

The proposed model, illustrated in Figure 1, employs a bootstrapping approach with 5,000 subsamples to assess statistical significance, yielding *t*-values and standard errors. Table 4 highlights the statistical significance of the path coefficients ($p < 0.05$). The findings reveal a significant positive correlation between pro-environmental behavior, green supply chain management (SCM), and green human resource management, thereby supporting *H1* and *H2*. Contrary to *H3*, the analysis indicates that green HRM negatively impacts sustainable performance. Otherwise, both green SCM and pro-environmental behavior independently have a substantial positive effect on sustainable performance, supporting hypotheses *H4* and *H5*. The mediation analysis shows that green HRM indirectly improves sustainable performance via green SCM, with pro-environmental behavior mediating the positive link between green HRM and sustainable performance, confirming *H6* and *H7*. Further analysis of the moderation effect shows that pro-environmental behavior strengthens the relationship between green SCM and sustainable performance. Moreover, its moderating role amplifies the impact of green HRM on sustainable performance, leading to the acceptance of *H8* and *H9*.

Additionally, this study examines the effects of control variables, such as company age, type of business ownership, and company size, which influence sustainable performance significantly.

This study found that green HRM positively impacts green SCM, showing that environmentally focused hiring practices can effectively drive green supply chain implementation. The green HRM dimension shows that SMEs prioritize recruiting employees with environmental awareness, which facilitates the integration of green principles in supply chain operations. Dahinine et al. (2023) confirmed the importance of green recruitment as a first step in green SCM implementation. The green training and development dimension reflects SMEs' attention to developing employee competencies related to environmental issues. Green training helps employees understand their role in reducing negative environmental impacts (Dahinine et al., 2023). Meanwhile, the green discipline management dimension received the highest score, indicating a solid discipline management system ensuring environmental policy compliance. C. Jabbour and A. Jabbour (2016) suggest

Table 4. Hypotheses results

Paths	Original sample (O)	T statistics (O/STDEV)	P values
GHRM → GSCM	0.428	12.016	0.000
GHRM → PEB	0.410	11.809	0.000
GHRM → SP	-0.284	8.746	0.000
GSCM → SP	0.453	12.969	0.000
PEB → SP	0.455	15.484	0.000
GHRM → GSCM → SP	0.194	7.704	0.000
GHRM → PEB → SP	0.187	8.901	0.000
PEB x GSCM → SP	0.071	1.833	0.033
PEB x GHRM → SP	0.089	1.929	0.027
Control Variables			
CA 5–10 years → SP	0.000	0.005	0.498
CA >10 years → SP	-0.094	2.947	0.002
Joint capital → SP	0.055	2.088	0.018
Medium Bus → SP	0.119	5.010	0.000

Note: GHRM means green human resources management; GSCM means green supply management; PEB means pro-environmental behavior; SP means sustainable performance; CA means company age.

that green discipline management improves compliance throughout the supply chain and strengthens operational sustainability.

However, other findings suggest that green HRM can hurt sustainability performance, contrary to the results of previous research. This could be due to ineffective implementation, lack of management support, or an excessive focus on long-term environmental goals at the expense of short-term economic goals. Zaid et al. (2018) revealed that green HRM practices can have limited or negative impacts on sustainable performance's economic and social dimensions without strong green supply chain support. Lack of training and awareness can also reduce employee morale and overall performance (Roscoe et al., 2019). In contrast, green SCM has positively influenced sustainability performance, primarily through dimensions such as green design, logistics, and purchasing. With sustainability practices in mind, SMEs pay attention to environmental aspects in product design, green logistics, and procurement. The green purchasing dimension scored the highest, highlighting the attention to selecting suppliers committed to environmental practices. These findings are in line with Abdallah and Al-Ghwayeen (2020) and Dzikriansyah et al. (2023), who confirmed that these practices improve environmental and operational performance.

Employee pro-environmental behavior (comprising the dimensions of proactive behavior that demonstrate individual initiative beyond formal

responsibilities and task-related behavior that reflects the application of environmentally friendly habits in daily tasks) highly influences a company's sustainable performance. Mouro and Duarte (2021) and Bissing-Olson et al. (2013) confirmed that these proactive behaviors and green habits contribute significantly to the environmental efficiency of organizational operations. This study also found that pro-environmental behaviors play a moderating role in the relationships between green HRM and sustainable performance, as well as between green SCM and sustainable performance. In the context of green HRM, these behaviors help bridge green policies with concrete actions, ensuring the effectiveness of policies in improving environmental, social, and economic performance. For example, as per Shoaib et al. (2022), green training increases employee awareness and active participation in green initiatives. Without pro-environmental behavior, green HRM policies alone are likely to be less effective or even counter-productive (Elshaer et al., 2021). In the context of green SCM, proactive employee behavior strengthens the effectiveness of dimensions such as green procurement and internal environmental management. When employees actively support green policies, green SCM is more effective in achieving sustainable performance. This is supported by Cousins et al. (2019) and Çankaya and Sezen (2019), who highlighted that proactive behavior magnifies the impact of green SCM on operational efficiency and environmental performance.

This paper reveals some interesting findings regarding the factors that influence sustainable performance. Medium-sized companies have more influence on sustainable performance than small companies. Medium-sized companies have more significant resources to invest in green technology and product innovation. They can also achieve operational efficiency through economies of scale and are better equipped to respond to external pressures, such as environmental regulations or consumer demand for green products (Majid et al., 2023). Then, companies under five years influence sustainable performance more than those operating for over 10 years. Young companies are more flexible in adopting sustainability practices such as green innovation and environmental management, as complex orga-

nizational structures do not yet bind them. They utilize sustainability to attract investors, partners, and environmentally conscious consumers. In contrast, older companies are more focused on operational efficiency or risk conservation, whose impact is slower than the proactive approach of younger companies (Singh et al., 2020). Companies with common ownership have more influence on sustainable performance than individual businesses. Joint ownership enables diversification of resources, knowledge, and management skills, which supports investment in large-scale sustainability projects. This is in line with Yin et al. (2022), who stated that capital collaboration between partners reduces project financial risk and increases access to capital for sustainable project development.

CONCLUSION

This study aims to evaluate how green HRM enhances sustainable performance in Indonesian SMEs by integrating green supply chain management and fostering pro-environmental behavior. The findings reveal that while green HRM alone negatively impacts sustainable performance, its indirect effects through green supply chain management and pro-environmental behavior significantly contribute to achieving sustainability goals. Moreover, pro-environmental behavior strengthens the positive influence of both green HRM and green supply chain management on sustainable performance.

These results underscore the importance of integrating green HRM practices with supply chain initiatives and fostering pro-environmental behaviors among employees to maximize sustainability outcomes. For SMEs, this entails prioritizing green training programs, collaborating with environmentally conscious suppliers, and encouraging employee initiatives that support environmental goals.

From a practical perspective, the study offers actionable insights for SMEs and policymakers to implement comprehensive green strategies. However, the study's reliance on managerial perceptions highlights the need for future research to include employee perspectives and adopt mixed-method approaches for a more holistic understanding of green practices in SMEs.

AUTHOR CONTRIBUTIONS

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APPENDIX A

Table A1. Constructs/Items used in the research questionnaire

Construct	Definition	Dimension	Item	Adopted from	
Sustainable Performance	Performance considering the triple bottom line concept: economic, performance, and social performance	Environmental Performance			Yusliza et al. (2020), Laosirihongthong et al. (2013), Zhu et al. (2013)
		S.Env.P-1.	Improved compliance with environmental standards		
		S.Env.P-2.	Reduction of air emissions		
		S.Env.P-3.	Reduction of energy consumption		
		S.Env.P-4.	Reduction of material consumption		
		S.Env.P-5.	Reduction of consumption of hazardous materials		
		Economic Performance			
		S.Ec.P-1.	Reducing the cost of purchasing materials		
		S.Ec.P-2.	Reducing energy consumption costs		
		S.Ec.P-3.	Reducing waste processing costs		
		S.Ec.P-4.	Reduced waste disposal costs		
		S.Ec.P-5.	Reducing fines for environmental accidents		
		Social Performance			
		S.Soc.P-4.	Increasing stakeholder welfare		
		S.Soc.P-4.	Improved public health and safety		
S.Soc.P-4.	Reducing environmental impacts and risks for society				
S.Soc.P-4.	Improving employee health and safety				
S.Soc.P-5.	Increased awareness and protection of community claims and rights				
Green Human Resources Management	A set of employee management approaches, policies, methods, and strategies to create an environmentally friendly, resource-efficient, and socially responsible work atmosphere	Green Hiring			Darvishmotevali and Altinay (2022), Nisar et al. (2021), Ren et al. (2018)
		GH-1.	Job applicant’s environmental knowledge		
		GH-2.	Environmental knowledge interviews of job applicants		
		GH-3.	Selection based on environmental standards		
		GH-4.	The job description includes environmental aspects		
		GH-5.	Environmental values are listed in job advertisements		
		Green Training and Development			
		GTD-1.	Green training program		
		GTD-2.	Organizing green training for employee promotion		
		GTD-3.	Green training is a company priority and investment		
		GTD-4.	Green training needs assessment		
		Green Discipline Management			
		GDM-1.	Implementation of discipline management		
GDM-2.	Publication and dissemination of environmentally friendly rules				
GDM-3.	Progressive disciplinary system for violators of environmentally friendly rules				
GDM-4.	Implementation of layoff penalties for violators of environmentally friendly rules				
Pro-Environmental Behavior	Conscious behavior to minimize the negative impact of individual actions on nature to achieve an effective workplace sustainability program	Proactive Pro-environmental Behavior			Darvishmotevali and Altinay (2022), Nisar et al. (2021), Bissing-Olson et al. (2013)
		PPEB-1.	Activeness in environmental protection at work		
		PPEB-2.	The initiative acts in an environmentally friendly way		
		PPEB-3.	Goes above and beyond what is expected for the workplace environment		
		Task-related Pro-environmental Behavior			
		TPEB-1.	Completing tasks in an environmentally friendly manner		
		TPEB-2.	Fulfilling responsibilities in an environmentally friendly manner		
TPEB-3.	Carry out expected tasks in an environmentally friendly manner				

Table A1 (cont.). Constructs/Items used in the research questionnaire

Construct	Definition	Dimension	Item	Adopted from
Green Supply Chain Management	It is building a network of suppliers to reduce a product's harmful ecological consequences throughout its life cycle	Green Design		Khan et al. (2021), Sadeghi et al. (2020), Eltayeb and Zailani (2009)
		GSCM.D-1.	Product design helps reduce material and energy consumption	
		GSCM.D-2.	Products are designed to be recyclable	
		GSCM.D-3.	Product design avoids the use of hazardous materials	
		Green Logistic		
		GSCM.L-1.	The company recycles/ reuses/ remanufactures used products from consumers	
		GSCM.L-2.	The company orders the recycling, reuse, and reproduction of used products from suppliers	
		Green Purchasing		
		GSCM.P-1.	Specifications of materials purchased from suppliers	
		GSCM.P-2.	Contains dangerous substances	
		GSCM.P-3.	Providing environmentally friendly labels on products	
		GSCM.P-4.	Collaboration with environmentally friendly suppliers	
GSCM.P-5.	Supplier evaluation			

APPENDIX B

Table B1. Measurement model validity and reliability

Construct	Items	Loading Factor	Composite Reliability	AVE
GHRM	GHRM.DM-1 ← GHRM	0.860	0.973	0.749
	GHRM.DM-2 ← GHRM	0.865		
	GHRM.DM-3 ← GHRM	0.861		
	GHRM.DM-4 ← GHRM	0.865		
	GHRM.H-1 ← GHRM	0.887		
	GHRM.H-2 ← GHRM	0.868		
	GHRM.H-3 ← GHRM	0.837		
	GHRM.H-4 ← GHRM	0.868		
	GHRM.H-5 ← GHRM	0.861		
	GHRM.TD-1 ← GHRM	0.860		
	GHRM.TD-2 ← GHRM	0.872		
	GHRM.TD-3 ← GHRM	0.880		
GHRM.TD-4 ← GHRM	0.866			
GSCM	GSCM.D-1 ← GSCM	0.783	0.927	0.601
	GSCM.D-2 ← GSCM	0.772		
	GSCM.D-3 ← GSCM	0.808		
	GSCM.L-1 ← GSCM	0.741		
	GSCM.L-2 ← GSCM	0.770		
	GSCM.P-1 ← GSCM	0.759		
	GSCM.P-2 ← GSCM	0.804		
	GSCM.P-3 ← GSCM	0.772		
	GSCM.P-4 ← GSCM	0.778		
GSCM.P-5 ← GSCM	0.764			
PEB	PPEB-1 ← PEB	0.814	0.874	0.608
	PPEB-2 ← PEB	0.763		
	PPEB-3 ← PEB	0.808		
	TPEB-1 ← PEB	0.788		
	TPEB-2 ← PEB	0.824		
	TPEB-3 ← PEB	0.762		

Table B1 (cont.). Measurement model validity and reliability

Construct	Items	Loading Factor	Composite Reliability	AVE
SP	S.Ec.P-1 ← SP	0.880	0.980	0.779
	S.Ec.P-2 ← SP	0.904		
	S.Ec.P-3 ← SP	0.887		
	S.Ec.P-4 ← SP	0.883		
	S.Ec.P-5 ← SP	0.880		
	S.Env.P-1 ← SP	0.902		
	S.Env.P-3 ← SP	0.723		
	S.Env.P-4 ← SP	0.892		
	S.Env.P-5 ← SP	0.877		
	S.Soc.P-1 ← SP	0.895		
	S.Soc.P-2 ← SP	0.898		
	S.Soc.P-3 ← SP	0.900		
	S.Soc.P-4 ← SP	0.902		
	S.Soc.P-5 ← SP	0.891		

Note: GHRM means green human resources management; GSCM means green supply management; PEB means pro-environmental behavior; SP means sustainable performance.