JDI
JOURNAL OF DEVELOPMENT AND INTEGRATION
JOURNAL OF DEVELOPMENT AND INTEGRATION
No. 87 (2026) 53-59 | jdi.uef.edu.vn

The Impact of Green Human Resource Management on Green Innovation in Vietnamese Small and Medium Enterprises

Tang My Sang[1], Tang My Ha[2,*]
[1]Ho Chi Minh City University of Banking, Vietnam
[2]Ho Chi Minh City University of Economics and Finance, Vietnam

KEYWORDS

Green Innovation, Top management's perception, Sustainable development, Green Human Resource Management, Green Intellectual Capital.

ABSTRACT

The purpose of the study is to investigate into how Green Innovation (GI) is affected by Green Human Resource Management (GHRM); the mediating role of Green Intellectual Capital (GIC) and the moderating role of top management's perception on the relationship between GHRM and GI. Data were collected from 222 leaders working at Vietnamese small and medium enterprises (SMEs) in Ho Chi Minh City. The results of PLS analysis showed that GHRM strongly influences GIC. GIC and GHRM have an impact on GI. Finally, the relationship between GHRM and GI is mediated by GIC and moderated by top management's perception. These findings provide new insights into the factors influencing GI, contributing managerial implications to achieve sustainable development goals.

1. Introduction

According to the 2023 Southern Region Environmental Quality Report, the general environmental situation in the South is showing signs of high pollution (Southern Environmental Monitoring Center, 2023), reducing pollution is an important issue that needs to be implemented by businesses. To cope with the increasing pressure on environmental protection, companies need to expand their employees' knowledge of green practices (Pham et al., 2020), and build human resources with an environmental mindset. Previous research has shown that GHRM plays an indispensable role in increasing employees' ecological knowledge (Kumar et al., 2020). GHRM describes the process of incorporating environmental policies and practices into an organization's HRM operations, considering environmental aspects in employee recruitment, training, performance appraisal, and compensation, as well as internal communications and organizational culture (Siddique, 2024). Companies pursuing these strategies demonstrate support for eco-innovation, meeting environmental challenges while improving business performance (Amrutha & Geetha, 2020).

GHRM integrates environmentally friendly practices within the HR functions from recruitment to retirement (Hameed et al., 2020). Environmental care and awareness of sustainability are given special focus while recruiting the candidates. The employees are educated about green practices (Shah et al., 2024), developing green human capital which allows a business to respond to the environment more effectively. GHRM also strengthens stakeholder relationships, building green intellectual capital, i.e., green management skills of employees and innovative solutions (Haldorai et al., 2022). The capital supports an environment-friendly culture, which is essential for long-term sustainability and knowledge transfer of green knowledge. GIC companies are able to lead environmental innovations, interconnecting opportunity discovery with operation

*Corresponding author. Email: *hatm@uef.edu.vn*
http://doi.org/10.61602/jdi.2026.87.06
Submitted: 4-Nov-2025; Revised: 25-Dec-2025; Accepted: 26-Dec-2025; Online first: 5-Jan-2026
ISSN (print): 1859-428X, ISSN (online): 2815-6234

effectiveness, to foster sustainability-driven growth (Martínez et al., 2024).

Despite the rich literature, three important research gaps remain. First, most of the existing studies focus on large corporations in developed countries, while Vietnamese SMEs - which account for the majority of the economy - have not been fully explored. Second, the mediating role of GIC in the GHRM - GI nexus has not been clearly established, especially in an empirical context. Third, although the moderating effect of top management's perception, which is related to strategic decision making and environmental commitment, has been largely ignored. To address these gaps, this study aimed to explore the relationship between GHRM and GI in Vietnamese SMEs, examining the mediating role of GIC and the moderating role of TMP. Based on the RBV (Resource-Based View) and AMO (Ability-Motivation-Opportunity), this study aims to provide both theoretical and practical insights into how SMEs can build green capabilities and foster innovation. Based on the above discussion, this study is guided by the following three research questions: How does GHRM influence GI in Vietnamese SMEs? Does GIC mediate the relationship between GHRM and GI? Does TMP moderate the relationship between GHRM and GI?

2. Theoretical Framework

2.1. Foundational Theories

According to the RBV paradigm, unique, valuable, and rare resources are the source of competitive advantage. In this context, GHRM is considered an important strategy to encourage environmentally friendly behavior, promote innovationis a strategy used to promote environmentally friendly behavior from employees; it is a form of promoting creativity. It also helps businesses to use human resources to attain sustainability (Yong et al., 2019).

At the same time, the AMO model explains how GHRM through green recruitment, training and rewards can enhance the capacity, motivation and opportunities for employees to participate in environmental initiatives The AMO model investigates GHRM and its hiring, educating, and rewarding workers. The integration of RBV and AMO allows the study to clarify how green intellectual resources and human capital are developed and transformed into GI, thereby contributing to the sustainable competitive advantage of enterprises. The approach is designed to address the link between environmental knowledge transfer, human capital, and GHRM.

2.2. Hypothesis Development

AMO theory examines GHRM through hiring, training, and rewards and enhances employee motivation and environmental competency. In the context of GHRM, it focuses on going green, work-life balance, productivity, cutting cost, ensuring socioeconomic well-being, and minimizing carbon footprint (Aggarwal & Agarwala, 2023). Three aspects of GHRM include green hiring practices, green training, and green incentives.

Green recruitment emphasizes on the people who care about the environment (Hameed et al., 2020). Green education introduces the ability to conserve energy and reduce waste, as well as awareness and environmentally friendly behavior. Green education is crucial in an effective environmental management system as well as for green culture (Siddique, 2024). Aided by the RBV and AMO theories, HR-focused organizations have higher opportunities to practice GHRM. The suggested study hypothesis is based on research by Martínez et al. (2024), which demonstrates that GHRM has a good impact on GI.

Hypothesis H1: Green innovation is positively impacted by green HRM.

GHRM promotes employees' environmental awareness and sustainability skills, allowing companies to develop sustainable solutions (Aggarwal & Agarwala, 2023). Effective GHRM policies have the potential to promote environmentally conscious attitudes and behaviors among employees within and outside the organization (Shoaib et al., 2021), play an important role in prioritizing sustainability in the field of HRM, facilitating the achievement of organizational reputation, improving efficiency, and establishing favorable working conditions for employees. In response to external environmental pressures, companies manage green human resources to cultivate GIC capable of addressing environmental concerns (Yong et al., 2019).

Strong GIC organizations have characteristics such as advanced green infrastructure, use of modern environmental technologies, and adoption of strategic approaches, are more likely to excel in achieving GI, effectively addressing environmental pollution by restructuring production processes, and enhancing green productivity (Haldorai et al., 2022). It has been demonstrated that corporate green initiatives, such as eco-innovation, are significantly impacted by GIC (Shah et al., 2024), serving as a facilitator in the connection between GI and GHRM, influencing all stages of the GHRM process from recruitment, training, and green rewards to GI.

Hypothesis H2: Green HRM positively influences green intellectual capital.

The KBV posits that knowledge assets, such as GIC, are critical for generating novel solutions. Organizations with strong GIC—comprising GHRM, green structural capital, and green relational capital—are better positioned to identify opportunities for eco-friendly products, processes, and services (Haldorai et al., 2022). GIC facilitates knowledge sharing, problem-

solving, and collaboration, all of which are essential for GI. Thus, higher levels of GIC should result in greater GI.

Hypothesis H3: Green innovation is positively impacted by green intellectual capital.

Although GHRM can directly impact GI, this effect can be amplified through GIC. GHRM helps develop environmental capabilities and motivation in employees, but these capabilities need to be stored, systematized, and shared within the organization to generate sustainable innovations (Martínez et al., 2024). GIC acts as a "knowledge repository," transforming the capabilities formed by GHRM into innovation outcomes, which is consistent with KBV's view that knowledge is the driving force of competitive advantage. Therefore, GIC is proposed as a mediating variable in the relationship between GHRM and GI.

Hypothesis H4: The connection between green HRM and green innovation is mediated by green intellectual capital.

An essential link in the promotion of green initiatives within the company is the top management, which promotes staff willingness to participate in the company's green growth plans (Yong et al., 2019). The establishment of an enterprise's environmental management system and sustainability-based culture creation require top management support in the form of the prioritization of environmental problems. The top management of a green company should lead as a sustainable leader and promote GHRM to increase the impact on the business through GI. The green company's environment is promoted and resistance to GI projects is reduced due to the presence of environmental knowledge at the upper level. Environmental consciousness promotes green business practices, GI investment, and the identification of commercial prospects (Wang et al., 2021). Based on these factors, the following research hypothesis is proposed.

Hypothesis H5: The relationship between green innovation and green human resource management is moderated by the perception of top management.

The study aims to examine the effect of GHRM on GI, mediated by GIC and moderated by top management's perception of SMEs in Vietnam. In accordance with the RBV and AMO theories, as well as other theoretical foundations, the author proposes the research model illustrated in Figure 1.

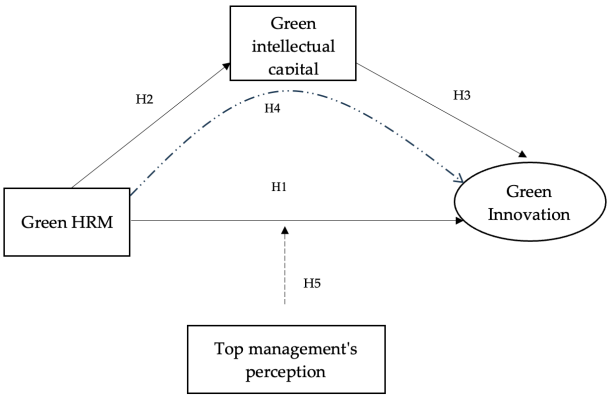

Figure 1. The research model

3. Research Method

3.1. Research Data

The study collected data from leaders of SMEs in Ho Chi Minh City through an online questionnaire via Google Forms from September 2023 to January 2024. The questionnaire was pre-tested with 10 experts to ensure clarity and validity before the official release. A convenience sampling method was used, with 230 surveys sent out, 225 responses received Three responses were excluded due to incomplete answers and inconsistencies in the survey data, leaving 222 valid observations for analysis. The study applied Structural Equation Modeling (SEM), and the sample size of 222 meets minimum requirement of 200.

3.2. Measurement Scales

The measurement scales used in the research model are based on prior studies. GIC is measured using (Zaragoza-Sáez et al., 2023), top management's environmental awareness from (Jiang et al., 2023), GHRM from (Mousa & Othman, 2020), and GI from (Wang et al., 2021). All items were measured on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Details of the measurement scales for each variable are provided in Table 1.

3.3. Data Analysis Method

The author uses PLS-SEM and SmartPLS 4.0 software for data analysis. PLS-SEM is suitable for exploring complex relationships between theoretical constructs and latent variables that cannot be directly measured (Zeng et al., 2021). Assessing the measurement model (composite reliability, Cronbach's Alpha, AVE, factor loadings, and HTMT) and the structural model to evaluate the hypotheses are the two stages of the analysis.

4. Research Results

4.1. Measurement Model Evaluation Results

Table 1 presents the reliability and validity assessment results for all measurement constructs, including factor loadings, Cronbach's alpha, composite reliability, AVE, HTMT ratios, and VIF values. These indices confirm that the measurement model meets the required standards for internal consistency,

Table 1. Measurement Model Analysis Results

Variable	Content	Outer Loading	Cronbach's Alpha	Composite Reliability (rho_a)	Average Variance Extracted (AVE)
Green Intellectual Capital (GIC)	GIC1	0.779	0.867	0.870	0.758
	GIC2	0.797			
	GIC3	0.726			
	GIC4	0.809			
	GIC5	0.752			
	GIC6	0.764			
	GIC7	0.795			
Top management's perception (TMP)	TMP1	0.914	0.858	0.863	0.708
	TMP2	0.722			
	TMP3	0.804			
	TMP4	0.911			
	TMP5	0.738			
	TMP6	0.758			
	TMP7	0.901			
	TMP8	0.815			
Green Human Resource Managemen (GHRM)	GHRM1	0.895	0.931	0.937	0.718
	GHRM2	0.890			
	GHRM3	0.867			
	GHRM4	0.838			
	GHRM5	0.804			
	GHRM6	0.863			
	GHRM7	0.809			
	GHRM8	0.815			
	GHRM9	0.808			
	GHRM10	0.876			
	GHRM11	0.809			
	GHRM12	0.899			
	GHRM13	0.803			
	GHRM14	0.805			
	GHRM15	0.806			
	GHRM16	0.833			
	GHRM17	0.805			
	GHRM18	0.841			
	GHRM19	0.868			
	GHRM20	0.883			
	GHRM21	0.812			
	GHRM22	0.842			
Green Innovation (GI)	GI1	0.755	0.859	0.871	0.706
	GI2	0.791			
	GI3	0.919			
	GI4	0.887			

convergent validity, discriminant validity, and absence of multicollinearity. Table 2. further demonstrates discriminant validity, with HTMT values below 1.

Table 2. Measurement Model Analysis Results

	GI	TMP	GHRM	GIC
GI				
TMP	0.409			
GHRM	0.556	0.615		
GIC	0.604	0.723	0.704	

4.2. Structural model evaluation results

At a 95% confidence level, the size and significance of path coefficients (β) were estimated using bootstrapping with 5,000 resamples. Table 3's findings demonstrate that both GHRM and GIC had a substantial impact on GI ($p < 0.01$), with GIC's effect being greater than GHRM's (path coefficients of 0.243 and 0.124, respectively). These results confirm hypotheses H1 and H3. Additionally, GHRM has a strong impact on GIC ($p = 0.000$, $\beta = 0.612$), confirming hypothesis H2. The variation in GI is explained by the model's variables, with an R^2 of 59.7%.

The analysis results in Table 3 also show that GIC has a positive indirect influence on the GHRM-GI relationship ($p = 0.000$; $\beta = 0.134$). The results also confirm the positive moderating role of top management's perception (TMP) on the GHRM-GI relationship ($p = 0.004$; $\beta = 0.060$). The study findings therefore confirm hypotheses H4 and H5.

4.3. Discussion

According to the findings, this study was conducted to address three key research gaps identified in the introduction.

The findings confirm that GHRM has a significant positive impact on GI, consistent with studies of Kumar et al. (2020), Hameed et al. (2020), and Amrutha & Geetha (2020). This demonstrates that integrating environmental values into HRM practices - from recruitment, training to performance management - helps create a workforce that supports and initiates GI. This is particularly relevant in the context of SMEs in Vietnam, where green innovation is emerging as a strategic imperative due to growing environmental concerns.

The analysis confirms the mediating role of GIC, suggesting that GHRM indirectly influences GI through enhancing environmental knowledge, skills, and collaboration within the organization. These findings extend the knowledge-based view of the firm and build on previous studies (e.g. Shoaib et al., 2021), which have emphasized the importance of intellectual capital for environmental performance. The results also highlight that GIC is not only an outcome of Green HRM but also a mechanism for realizing more effective innovation.

The results show that TMP plays a moderating role, strengthening the relationship between GHRM and GI when top managers are environmentally aware and supportive. This reinforces the argument that leadership commitment is critical to the success of environmental initiatives and provides a novel contribution compared to previous studies such as Martínez et al. (2024), which focused on leadership but did not explore its moderating effects.

In summary, this study addresses all three research questions and contributes to closing the gaps identified in the literature. The study highlights that GHRM is a key driver of GI, especially when GIC is developed and when top management demonstrates a strong commitment to the environment. These insights not only enrich the theoretical framework of the AMO and RBV models but also provide practical implications for SMEs in developing countries that are striving to become more sustainable and innovative. The results of the study provide empirical evidence for policy makers and business leaders in promoting integrated green strategies across the entire knowledge system of HR, leadership, and organization.

Table 3. Measurement Model Analysis Results

Relationship	Impact Coefficient	t-value	p-value	Conclusion
		Direct Effect		
GHRM → GI	0.124	1.795	0.004	Accept Hypothesis H1
GHRM → GIC	0.612	10.456	0.000	Accept Hypothesis H2
GIC → GI	0.243	2.711	0.005	Accept Hypothesis H3
		Indirect Effect		
GHRM → GIC → GI	0.134	2.041	0.002	Accept Hypothesis H4
		Moderating Effect		
GHRM * TMP → GI	0.060	2.097	0.004	Accept Hypothesis H5

5. Conclusion, Managerial Implications, and Limitations of The Study

5.1. Conclusion

This study examines the relationship between GHRM and GI, taking into account the moderating effects of GIC and the mediating effect of TMP. The results show that GHRM positively affects both GI and GIC, and that GIC significantly affects GI as well. TMP also serves as a moderator between GI and GHRM.

Theoretically, the study integrates RBV and AMO models and provides new contributions to the relationship between GHRM and GI to SMEs. The focus on Vietnamese SMEs gives an innovative insight, demonstrating how these firms can benefit from environmentally-motivated innovation. In practice, the research brings out the importance of top managers in championing GHRM and the role played by environmental awareness to trigger green initiatives.

5.2. Managerial Implications

The study finds that GHRM has a strong positive influence on GIC and GI. Therefore, companies need to strengthen their GHRM initiatives, emphasizing sustainable training and green practices in creating awareness and knowledge regarding the importance of sustainability to promote a corporate culture with GI. Participation in green activities, such as workshops and sustainable events, allows employees to engage with experts and leaders, sharing ideas and stimulating innovative initiatives. Green training and participation can stimulate employees and managers to actively pursue environmental issues and develop sustainable solutions, thus establishing a culture that promotes exploration and experimentation of new ideas for business improvement.

Moreover, companies can enhance GI through effective green performance and green rewards management. By incorporating sustainability and environmental issues in the measurement and reward mechanisms for employees, managers improve employees' active participation in sustainability programs, with an incentive for employees to always search for green alternatives. Similarly, green rewards and management can ensure cooperation in finding sustainable solutions and achieving environmental objectives, guaranteeing investment in research and advanced green technologies.

The study also highlights awareness at the top management to build GHRM and GI in SMEs. If top leaders are also aware of the ecological concerns and the importance of sustainability, they develop a strategic vision to build the green knowledge of employees and foster GI in the company. This consciousness should be implemented within the corporate culture, advocating sustainable thinking within all levels of organisation, urging employees to pursue green solutions more aggressively and adopt sustainable practices. Additionally, senior management that is aware of environmental trends and regulations can foresee market development and adjust ahead of time, and thus ensure SMEs stay competitive and in step with the growing demand for sustainable products and practices in good time.

5.3. Limitations of The Study and Future Research Directions

There are several limitations on this study. First of all, its explanation of GI is constrained because it solely discusses the effects of GHRM. Subsequent studies must incorporate other elements that influence GHRM. Second, while this study interviews managers in SMEs, it does not look at some industries, so the findings may not give full solutions based on each type of business. Future studies can also explore further in this area and propose remedies specific to the unique characteristics of different industries.

REFERENCES

Aggarwal, P., & Agarwala, T. (2023). Relationship of green human resource management with environmental performance: mediating effect of green organizational culture. *Benchmarking*, 30(7), 2351–2376. DOI: https://doi.org/10.1108/BIJ-08-2021-0474.

Amrutha, V. N., & Geetha, S. N. (2020). A systematic review on green human resource management: Implications for social sustainability. *Journal of Cleaner Production*, 247, 119131. DOI: https://doi.org/10.1016/j.jclepro.2019.119131.

Haldorai, K., Kim, W. G., & Garcia, R. L. F. (2022). Top management green commitment and green intellectual capital as enablers of hotel environmental performance: The mediating role of green human resource management. *Tourism Management*, 88(September 2021), 104431. DOI: https://doi.org/10.1016/j.tourman.2021.104431.

Hameed, Z., Khan, I. U., Islam, T., Sheikh, Z., & Naeem, R. M. (2020). Do green HRM practices influence employees' environmental performance? *International Journal of Manpower*, 41(7), 1061–1079. DOI: https://doi.org/10.1108/IJM-08-2019-0407.

Jiang, Y., Asante, D., Ampaw, E. M., & Zheng, Y. (2023). The effects of simmelian ties on innovation of low-carbon technology: a study of top managers' environmental awareness and stakeholder pressure in China. *Environmental Science and Pollution Research*, 30(3), 6716–6729. DOI: https://doi.org/10.1007/s11356-022-22648-y.

Kumar, S., Del, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting & Social Change*, 150, 119762. DOI: https://doi.org/10.1016/j.techfore.2019.119762.

Martínez, J., Eduardo, F., García, S., Marco, B., Patrocinio, L., & Sáez, Z. (2024). Discover Sustainability Green human resource management and green ambidexterity innovation in the wine industry : exploring the role of green intellectual capital and top management environmental awareness. *Discover Sustainability*, 5(1), 1–19. DOI: https://doi.org/10.1007/s43621-024-00333-z.

Mousa, S. K., & Othman, M. (2020). The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework. *Journal of Cleaner Production*, 243. DOI: https://doi.org/10.1016/j.jclepro.2019.118595.

Southern Environmental Monitoring Center (2023). *National environmental status report 2023*

Pham, N. T., Hoang, H. T., & Phan, Q. P. T. (2020). Green human resource management: a comprehensive review and future research agenda. *International Journal of Manpower*, 41(7), 845–878. DOI: https://doi.org/10.1108/IJM-07-2019-0350.

Shah, P., Singh Dubey, R., Rai, S., Renwick, D. W. S., & Misra, S. (2024). Green human resource management: A comprehensive investigation using bibliometric analysis. *Corporate Social Responsibility and Environmental Management*, 31(1), 31–53. DOI: https://doi.org/10.1002/csr.2589.

Shoaib, M., Abbas, Z., Yousaf, M., Zámečník, R., Ahmed, J., & Saqib, S. (2021). The role of GHRM practices towards organizational commitment: A mediation analysis of green human capital. *Cogent Business and Management*, 8(1). DOI: https://doi.org/10.1080/23311975.2020.1870798.

Siddique, H. (2024). Examining the Effect of Green Human Resource Management Practices on Green Environmental Performance with the Moderating Impact of Green Values. *International Journal of Business Strategy and Horizon*, 1(1), 199–233.

Wang, H., Khan, M. A. S., Anwar, F., Shahzad, F., Adu, D., & Murad, M. (2021). Green Innovation Practices and Its Impacts on Environmental and Organizational Performance. *Frontiers in Psychology*, 11(January), 1–15. DOI: https://doi.org/10.3389/fpsyg.2020.553625.

Yong, J. Y., Yusliza, M. Y., Ramayah, T., & Fawehinmi, O. (2019). Nexus between green intellectual capital and green human resource management. *Journal of Cleaner Production*, 215, 364–374. DOI: https://doi.org/10.1016/j.jclepro.2018.12.306.

Zaragoza-Sáez, P. C., Claver-Cortés, E., Marco-Lajara, B., & Úbeda-García, M. (2023). Corporate social responsibility and strategic knowledge management as mediators between sustainable intangible capital and hotel performance. *Journal of Sustainable Tourism*, 31(4), 908–930. DOI: https://doi.org/10.1080/09669582.2020.1811289.