

THE GREEN TRANSFORMATIONAL LEADERSHIP, GREEN HUMAN RESOURCE MANAGEMENT, GREEN INNOVATION AND SUSTAINABLE PERFORMANCE: EVIDENCE FROM VIETNAM

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Abstract

Sustainable performance has been an interesting topic and attracted a lot of attention among businesses, scholars and policy planners. Green transformational leadership (GTL), green human resource management (GHRM) and green innovation (GI) are seen as the most important factors in shaping green behaviors, improving competitive advantages and achieving sustainable performance. This study examines the effect of GTL, GHRM, GI on sustainable performance, including environment performance (EP), economic performance (EcP) and social performance (SP). Besides that, this paper also studies the effect of GTL on GHRM and GI as well as the impact of GHRM on GI. A multi-respondent survey was conducted to collect data. Indicators including item loading, cronbach's alpha, composite reliability, average variance extracted are applied to assess the constructs' convergent credibility and internal consistency. The discriminant validity of the measuring instruments was evaluated using the Fornell - Larcker Criterion and the Heterotrait - Monotrait Ratio. The PLS-SEM analysis method was applied to test hypotheses. The findings of this study reveal that GTL positively and significantly influences GHRM practices and GI. Regarding sustainable performance, the findings of this study also suggest that GTL is positively related to EcP and SP, whereas EP is not. Regarding GHRM, the proposed relationship between GHRM and EP and SP are supported, however, the findings do not support the relationship between GHRM and EcP. Besides that, the result suggests that GHRM positively and significantly affects GI. Concerning the relationship between GI and sustainable performance, the findings show that GI only positively influences EcP and does not impact EP and SP.

Keywords

Green transformational leadership, green human resource management, green innovation, sustainable performance

JEL Classification

M12 Personnel Management * Executives; Executive Compensation

M16 Corporate Culture * Diversity * Social Responsibility

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Introduction

Over the past few decades, many issues within our ecosystem have deteriorated to such an extent that they lead to a severe environmental disaster such as pollution, global warming, deforestation [2]. Therefore, environmental threats are considered as one of the most notable problems to cope with and sustainable business performance has been an interesting topic and caught attention of businesses, scholars and policy planners.

Nowadays, businesses have learnt how to protect the natural environment and display green behaviors as the new ways to optimise their resources, increase their competitive advantage and achieve sustainable performance [53]. Sustainable performance can be achieved when the companies carry their business activities without impacting the quality of the environment and society [76]. Every company is an integral part of society, meaning they have responsibilities to contribute to the development of the whole society [37]. A green company operates its business functions considering the welfare of the general public and the quality of natural resources even at the global level [66]. A company can have a highly sustainable business performance when the managers as well as employees are aware of environmental and social requirements of consumers, potential customers, and government and do not compromise on environmental quality and society welfare just for having a little more profit [76].

Green behavior refers to a series of behaviors, such as protecting ecology, saving resources, and turning waste into treasure, which contributes to environmental sustainability [50]. Given the importance of employee green behavior, scholars have begun to explore what management measures organizations can take to motivate employee green behavior [49]. Among these measures, green transformational leadership and green human resource management practices have received much attention [25,59]. Following green transformational leadership, a leader motivates employees to achieve green goals and exhibit green behaviors that exceed expectations [17,54]. Green transformational leadership includes four aspects: green idealized influence, green inspirational motivation, green intellectual stimulation, and green individualized consideration [60]. According to Renwick et al [56], the practice of green human resource management is mainly reflected in the introduction of green environmental issues into the recruitment, training, performance evaluation, compensation, and benefits management activities. Through these green-oriented management activities, employees are more likely to demonstrate green behavior.

Competitive advantage may be gained through green innovation as customers become increasingly concerned about the environment and green products become more commonplace in the market [17]. Companies may use green innovation to differentiate themselves from their competitors, but it can also be used to address environmental requirements in the market [24].

In Vietnam, industrial revolution contributed a lot to environmental degradation. Sustainable performance has emerged as the guiding principle and long-term goal for the Parliament and Government [68]. Many related policies were issued and implemented to ensure sustainable performance goals and the implementation of international agreements to which Vietnam is a party [45]. Vietnam is actively pursuing green transformations, which can be interpreted as practices of radical economic, societal, and institutional change that transcends sectors and levels [61]. The country has experienced managed and highly accelerated transformations involving significant economic reforms, substantial shifts in sectors, the establishment of new production capabilities, and the creation of a massive number of jobs [62]. An increasing number of Vietnamese businesses are currently formulating green transformational strategies with the goal of achieving sustainable performance. The study examined the relationship between green transformational leadership, green human resource management, green innovation and sustainable performance, including environment performance, economic performance and social performance.

Literature review

Green transformational leadership and sustainable performance

Sustainability has become a primary focus for many organizations due to climate change and regulatory and social pressures towards greater environmental and social responsibility [74]. The evaluation of sustainable performance is usually achieved by assessing the three main pillars of environmental, economic and social factors [30], with equal importance given to each [66]. Environmental performance (EP) is related to an organization's ability to reduce waste, limit air emissions, minimize the use of hazardous materials, and prevent environmental accidents [79]. Economic performance (EcP) is linked to the marketing and financial benefits an organization can gain by implementing green practices, positioning it favorably compared to other organizations in the industry [78]. Social performance (SP) is concerned with the social impacts of companies and how they affect the image of the organization in the eyes of various stakeholders [48]. Thus, companies have a responsibility to society to balance economic, social, and environmental performance [43].

The influence of transformational leadership in active markets is crucial to a firm's present and future actions [8]. Avolio et al. [4] and Avolio and Bass [5] assert that transformational leaders aim to increase subordinates' awareness by inspiring them with higher ideals such as freedom, justice, fairness, and humanitarianism, and by encouraging them to prioritize the organization's interests over their personal interests. Zhu et al. [78] proposes that transformational leadership leads to higher levels of motivation, trust, cohesion, commitment, and performance. Moreover, research has demonstrated that the intellectually stimulating aspect of transformational leadership has a positive effect on performance management, talent management, and employee efficiency [38,14].

Green transformational leadership can be defined as a leadership behavior wherein key goal of leadership is to provide clear vision, inspiration, motivation to the employees and also support their developmental needs towards achievement of environmental goals of organization [63,46,17]. GTL is crucial for improving corporate sustainability performance [55]. Green transformational leadership puts an emphasis on the team's overall performance and promotes and supports employee green behavior in business operations. Green transformational leadership can also improve employee green engagement [20], green intrinsic and extrinsic motivation, green creativity [42], green mindfulness and green self-efficacy [18]. These competencies enable the employees to produce green products and services, which minimizes the negative influence on the environment and contribute to improving the company's social and financial performance by lowering the cost of waste [71]. Thus, the firm can achieve sustainable business development. Hence, this paper recommends that:

Hypothesis (H) 1a: GTL is positively related to environmental performance (EP)

H1b: GTL is positively related to economic performance (EcP)

H1c: GTL is positively related to social performance (SP)

Green transformational leadership and green human resource management

Green human resource management (GHRM) is a set of human resource management practices that focus on the environmental impact of firms and how these practices can align with the green behaviors of employees [56]. GHRM is an essential aspect of sustainable human resource management literature and serves as a platform to connect human resource management practices to the environmental management activities of the firm [63]. The green elements of GHRM are aimed at promoting and sustaining the green behavior of employees within the organization [25]. GHRM involves the integration of the organization's environmental management goals with human resource management processes such as recruitment and selection, training and development, performance management and evaluation, and rewards and recognition [47,57].

Several researches have demonstrated the relationship between GTL and GHRM practices [63,36,13]. Top managers' values, attitudes, and behaviors are fully embraced by transformational leadership, which has a significant impact on the HRM processes of an organization [38]. As key decision-makers, green transformational leaders establish the business's vision and direction, fostering employee cooperation, commitment, and trust while managing organizational resources to support GHRM initiatives [78]. The adoption and application of human resource management policies and practices can also be influenced by leaders' pro-environmental behavior in order to guarantee that organizational activities and routines are carried out in an environmentally responsible manner [36]. As a result, this paper hypothesizes that GTFL in an organization plays a critical role in the development of GHRM policies and practices to assist the firm in delivering on its strategies and visions to achieve sustainable performance.

H2: GTL is positively related to GHRM

Green transformational leadership and green innovation

Green innovation (GI) refers to hardware or software innovation related to green products or processes, including technologies that promote energy savings, pollution prevention, waste recycling, green product designs, or corporate environmental management. This type of innovation can be classified into "green product innovation" and "green process innovation." [17]. García-Morales et al. [29] found evidence to support the idea that transformational leadership can enhance innovation by developing key competencies and capabilities through collective decision-making processes to achieve common goals. This type of leadership can motivate employees to think creatively and perform at higher levels [17].

Green transformational leadership (GTL) stimulates employees to think creatively and disseminate green practices and policies, leading to innovative changes [42]. GTL can promote green innovation by incorporating market knowledge and trends, providing financial resources, implementing updated green technologies, and training employees in innovation processes [72]. GTL can also foster new knowledge and creative ideas [18] and increase the likelihood of green innovation [6]. Additionally, the high-level GTL can help in the development of green products [77] and have the potential to stimulate firms to generate new and innovative ideas [9]. Strategic resources associated with GTL can act as a vehicle to motivate employees to acquire new knowledge and develop green products and processes innovation in the markets [9]. This paper suggests that GTL has positive effect on GI.

H3: GTL is positively related to GI

Green human resource management and green innovation

Several past studies suggest that HRM positively and significantly influences firms' innovation [70,63]. GHRM can enhance employees' ability, motivation, and opportunities through green training, green pay and reward, green involvement, and so forth for enhancing organizational human capital, which further affect the firm's green product or process innovation [64]. Organizations may encourage employees to engage in innovative work behavior by implementing practices that improve employees' capabilities and opportunities [12]. HRM can also play an important role in generating employees' green creativity, which is a necessary part of innovation [38,17]. Thus, this study proposes the hypothesis:

H4: GHRM is positively related to GI

Green human resource management and sustainable performance

Previous studies have shown that GHRM has a positive impact on the sustainable performance of businesses in many areas [76,65,11]. GHRM is responsible for communicating the organization's green vision and direction to its personnel [40,78]. Through activities like recruitment, training, development, and compensation, GHRM can influence employees' green behaviors, attitudes, mindsets,

competencies, and performance [38,75]. GHRM practices can help attract talented employees, enhance process competency, decrease and eliminate environmental harm, restore human resource policies and procedures resulting in greater efficiency and lower costs, thereby improving the environmental and economic performance of the business [75,67,11]. Employees who are aware, passionate, and committed to the business's long-term objectives will actively learn and improve their work in order to improve corporate sustainability performance [31,75]. In addition, investing in GHRM can also help to promote a positive image and reputation of the organization with stakeholders, which improves social performance [69,39]. Therefore, this study proposes that GHRM can affect an organization's environmental, economic and social performance.

H5a: GHRM is positively related to environmental performance (EP)

H5b: GHRM is positively related to economic performance (EcP)

H5c: GHRM is positively related to social performance (SP)

Green innovation and sustainable performance

Green innovation can positively affect corporate environmental performance by reducing energy consumption and pollutant emissions and increasing green productivity [73]. Through implementing green innovation practices, firms can fulfill governmental and industry requirements, decrease waste and pollution, and protect the environment [71]. Furthermore, GI not only reduce the negative environmental impacts of the business, but they also have positive effects on social and economic development [63]. By investing in green product innovation and green process innovation, corporations are able to not only increase the productivity of the resource but also develop and manufacture green products, allowing them to move upmarket and improve their corporate image, as well as gain the competitive advantages [19,16, 27]. Hence, this paper suggests that green innovation is beneficial to the corporation's sustainable performance.

H6a: GI is positively related to environmental performance (EP)

H6b: GI is positively related to economic performance (EcP)

H6c: GI is positively related to social performance (SP)

Methodology

Data collection

For this study, questionnaires method was applied to collect data. The questionnaires were developed in English, after that the questionnaires were translated into Vietnamese (local language) for collecting data. A multi-respondent survey was conducted to obtain the perception of 248 participants who are managers working in various Vietnamese businesses and are associated with environmentally conscious practices within the business context.

Measurement

In this research, multi-item scales were engaged to measure six constructs. They are Green Transformational Leadership (GTL), Green Human Resource Management (GHMR), Green Innovation (GI) and Sustainable Performance bundle constructs which consist of three sub-constructs: Economic Performance (EcP), Environmental Performance (EP) and Social Performance (SP). The initial items were obtained following an examination of the previous questionnaire and research literature. All objects were assessed utilizing a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree).

GTL was assessed using 6 items taken from the research of Singh et al. [63], Chen et al. [17], Sun et al. [65], Li et al. [42], Begum et al. [9], Mansoor et al. [44] and Zhao et al.[76]. The GTL construct consisted of six items. They are respectively: Inspiring Subordinates with an Environmental Plan (GTL1); Providing Subordinates with a Clear Environmental Vision (GTL2); Encouraging Subordinates to Work

on Environmental Plans (GTL3); Encouraging Employees to Achieve Environmental Goals (GTL4); Considering the Environmental Beliefs of My Subordinates (GTL5); Stimulating Subordinates to Think and Share Their Green Ideas (GTL6).

GHRM was measured utilizing six items adapted from Dumont et al.[25], Chen, T., & Wu, Z. [15], Mansoor et al. [44] and Peng et al. [55]. Meanwhile, GI used eight items, adapted from Singh et al. [63], Sun et al. [65], Begum et al.[9], Zhao et al. [76], Chen et al. [19].

For GHRM, the included items are as follows: My company sets green goals for its employees (GHRM1); My company provides employees with green training to promote green values (GHRM2); My company provides employees with green training to develop employees' knowledge and skills required for green management. (GHRM3); My company considers employees' workplace green behavior in performance appraisals. (GHRM4); My company relates employees' workplace green behaviors to rewards and compensation. (GHRM5); My company considers employees' workplace green behaviors in promotion (GHRM6). Secondly, for GI, the included items are: My company use materials that product least pollution (GI1); My company use materials that consumes less energy and resources (GI2); My company use materials that to design environment friendly product (GI3); My company use materials that are easy to recycle, reuse, and decompose (GI4); The manufacturing process of my company effectively reduces hazardous substance or waste (GI5); The manufacturing processes of my company effectively reduces consumption of coal, oil, electricity or water (GI6); The manufacturing processes of my company effectively reduces use of raw materials (GI7); The manufacturing process of the company recycles waste and emission that allow them to be treated and reused (GI8).

Finally, the Sustainable Performance bundle construct consisted of three dimensions, namely, EcP, EP and SP. For EP, five items were adapted from Zhu et al. [78,79] and Zaid et al. [75]. For EcP, four items were adapted from Yong et al.[74], Zaid et al.[75], Zhu et al. [79], Laosirihongthong et al. [41] and Paulraj [51]. Lastly, five items were adapted for SP from Zaid et al.[75], De Giovanni [22], and Abdullah et al.[1].

EP comprises five items: Reduced Emission of Harmful Chemicals into the Air and Water (EP1); Minimized Waste Generation and Increased Material Recycling in the Manufacturing Process (EP2); Expanded Utilization of Renewable Energy and Sustainable Fuels (EP3); Improved Overall Environmental Performance of the Company (EP4) and Decreased Frequency of Environmental Incidents (EP5). EcP consists of four items: Reduction in Material Procurement Costs (EcP1); Lowered Energy Consumption Costs (EcP2); Reduction in Waste Treatment Fees (EcP3); Reduction in Fines for Environmental Accidents (EcP4). SP comprises five items: Employee's health and safety (SP1); Improving community health and safety (SP2); Development of economic activities (SP3); Providing inducements to engage local employment (SP4); Lowering the adverse impact of products and processes on the local community (SP5).

Results

To test hypotheses, the PLS-SEM analysis method was applied using the SmartPLS 3 software, which is a second-generation multivariate analytical tool used to determine novel theories. PLS-SEM can concurrently identify the hypotheses and statistical properties of a conceptual framework [32]. Presently, this technique is widely utilised in research on management [52].

To specify the 6 reflective constructs' reliability and validity, four tests were conducted to assess the item loading, Cronbach's Alpha, Composite Reliability (CR), Average Variance Extracted (AVE) of constructs. As mentioned by Hair et al [33], item loadings ranged above 0.708 are recommended. Besides this, the Cronbach's Alpha values and Composite Reliability (CR) equal to or greater than 0.70 achieve the status of "satisfactory to good", as posited by DeVellis [23] and Bagozzi & Yi [7] respectively.

The measure employed to assess the convergent validity of a construct involves calculating the average variance extracted (AVE) across all items. Hock & Ringle [35] stated that a satisfactory AVE is considered to be 0.50 or above, signifying that the construct accounts for at least 50 percent of the variability present in its items.

Table 1: testing for construct reliability and validity (source: authors)

Reflective constructs	Construct items	Outer loading	Cronbach's alpha	CR	AVE	Sources
GTL	GTL1	0.852	0.868	0.9	0.602	Singh et al. [63], Chen et al. [17], Sun et al. [65], Li et al. [42], Begum et al. [9], Mansoor et al. [44] and Zhao et al.[76]
	GTL3	0.828				
	GTL4	0.775				
	GTL2	0.759				
	GTL5	0.72				
	GTL6	0.709				
GHRM	GHRM1	0.759	0.736	0.835	0.558	Dumont et al.[25], Chen, T., & Wu, Z. [15], Mansoor et al. [44] and Peng et al. [55]
	GHRM3	0.741				
	GHRM4	0.745				
	GHRM6	0.742				
GI	GI1	0.73	0.876	0.904	0.572	Singh et al. [63], Sun et al. [65], Begum et al.[9], Zhao et al. [76], Chen et al. [19]
	GI2	0.754				
	GI4	0.777				
	GI5	0.729				
	GI6	0.751				
	GI7	0.763				
	GI8	0.789				
EP	EP1	0.879	0.86	0.9	0.643	Zhu et al. [78,79] and Zaid et al. [75]
	EP2	0.782				
	EP3	0.855				
	EP4	0.718				
	EP5	0.766				
EcP	EcP1	0.89	0.811	0.876	0.639	Yong et al.[74], Zaid et al.[75], Zhu et al. [79], Laosirihongthong et al. [41] and Paulraj [51]
	EcP2	0.735				
	EcP3	0.768				
	EcP4	0.795				
SP	SP1	0.806	0.869	0.905	0.655	Zaid et al.[75], De Giovanni [22], and Abdullah et al.[1]
	SP2	0.828				
	SP3	0.825				
	SP4	0.765				
	SP5	0.822				

Next, it is essential to assess the discriminant validity of the measurement model to ensure the dissimilarity between measurement items of different constructs. In this study, the discriminant validity of the measuring instruments was evaluated using the Fornell - Larcker Criterion and the Heterotrait - Monotrait Ratio (HTMT). According to Fornell and Larcker [28], the construct(s) has discriminant validity if the square root of the (AVE) is greater than other constructs' correlations in the study.

Table 2: Testing for discriminant validity with Fornel – Larcker criterion (source: authors)

	EP	EcP	GHRM	GI	GTL	SP
EP	0.802					
EcP	0.17	0.799				
GHRM	0.352	0.239	0.747			
GI	0.234	0.358	0.334	0.757		
GTL	0.258	0.391	0.393	0.449	0.776	
SP	0.213	0.637	0.34	0.286	0.345	0.81

The discriminant validity of measurement can also be assessed using the correlations' Heterotrait - Monotrait ratio (HTMT) and the HTMT ratio should not be greater than 0.85 [34]. Table 3 illustrates all of the HTMT test values ranging from 0.212 to 0.748, less than 0.85.

Table 3: Testing for discriminant validity with HTMT (source: authors)

	EP	EcP	GHRM	GI	GTL	SP
EP						
EcP	0.212					
GHRM	0.446	0.3				
GI	0.26	0.414	0.413			
GTL	0.288	0.433	0.476	0.49		
SP	0.25	0.748	0.424	0.321	0.385	

The results of hypothesis test for this study are shown in Table 4 and Figure 1.

Table 4: Testing for hypothesis (source: authors)

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	P - Values	Decision
GTL -> EP (H1a)	0.106	0.099	0.086	0.218	Rejected
GTL -> EcP (H1b)	0.269	0.272	0.072	0.000	Accepted
GTL -> SP (H1c)	0.204	0.207	0.072	0.005	Accepted
GTL -> GHRM (H2)	0.393	0.397	0.066	0.000	Accepted
GTL -> GI (H3)	0.376	0.379	0.062	0.000	Accepted

GHRM -> GI (H4)	0.186	0.187	0.06	0.002	Accepted
GHRM -> EP (H5a)	0.279	0.282	0.08	0.001	Accepted
GHRM -> EcP (H5b)	0.061	0.064	0.076	0.418	Rejected
GHRM -> SP (H5c)	0.22	0.225	0.065	0.001	Accepted
GI -> EP (H6a)	0.093	0.104	0.074	0.211	Rejected
GI -> EcP (H6b)	0.217	0.218	0.081	0.007	Accepted
GI -> SP (H6c)	0.121	0.119	0.08	0.129	Rejected

As shown in Table 5, the R-squared adjusted statistics of GHRM shows that 15.1% variance being explained by all other exogenous constructs. The R-squared adjusted value of GI is 0.225, which indicates that 22.5% of the variance in green innovation can be explained by the constructs proposed in this model. Concerning the adjusted R-squared adjusted of sustainable performance variables, the amount of adjusted variance explained of environmental performance, economic performance and social performance are 0.137, 0.188 and 0.170 respectively.

Table 5: R-squared adjusted (source: authors)

R Square Adjusted				
GHRM	GI	EP	EcP	SP
0.151	0.225	0.137	0.188	0.170

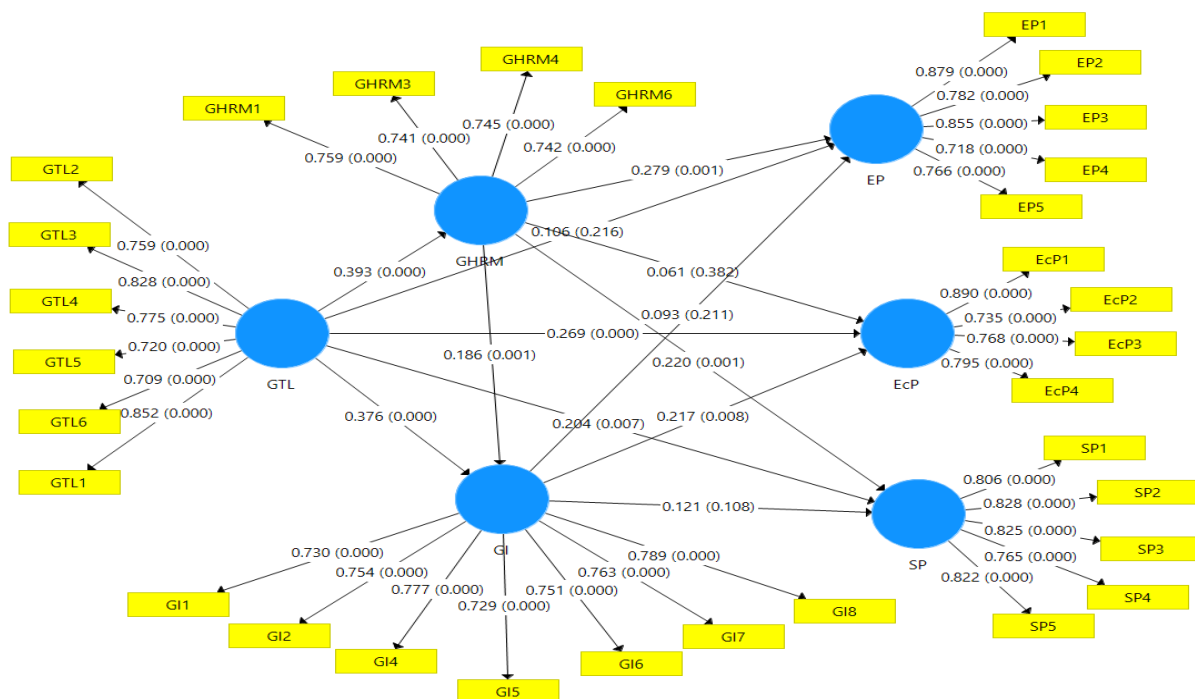


Figure 1: Measurement model results (source: authors)

Conclusion and discussion

The results show that green transformational leadership positively and significantly influences green HRM practices (with original sample = 0.393), green innovation (with original sample = 0.376). Regarding sustainable performance, the findings of this study also suggest that green transformational leadership is positively related to economic performance (with original sample = 0.269) and social performance (with original sample = 0.204), whereas environmental performance is not.

About GHRM, the proposed relationship between GHRM and sustainable performance with its two components, environmental performance (with original sample = 0.279) and social performance (with original sample = 0.220), are supported. However, the findings do not support the relationship between GHRM and economic performance. Besides that, the result suggests that green HRM positively and significantly affects green innovation (with original sample = 0.186).

Concerning the relationship between green innovation and sustainable performance, the findings show that GI only positively influences economic performance (with original sample = 0.217) and does not impact environmental and social performance.

Overall, the results of this study have a number of theoretical and practical implications.

Theoretical implications

First, based on the findings of this study, this paper proposes that GTFL should be recognized as a strategic resource that firms can utilize to shape and implement GHRM practices. This, in turn, will have an influence on green innovation and environmental performance. Additionally, this study suggests that firms should leverage GTFL to establish and enforce GHRM policies and practices that enhance employees' green abilities and motivations. Furthermore, giving employees the opportunity to participate in environmental management activities at the workplace is critical [10,26]. These measures will contribute to the enhancement of green innovation and environmental performance [56,17].

Second, this study's empirical findings support the notion that incorporating environmental management into HRM aspects contributes to improved environmental performance and social performance. GHRM plays a crucial role in guiding a firm's sustainability efforts by examining values and assumptions that result in the restructuring of organizational culture and promoting an understanding of sustainability. These changes are then reflected in the daily actions of employees, as discussed by De Souza Freitas et al. [21] and Rimanoczy & Pearson [58].

Third, our findings suggest that green innovation, both independently and when influenced by GHRM practices, has an impact on a firm's economic performance. These results align with the research by Asadi et al. [3], which suggests that encouraging employee creativity and implementing innovative technologies, resources, and techniques aimed at mitigating negative environmental impacts can lead to improved operational performance, enhanced reputation, and consistent economic performance within the business.

Practical implications

Our research has several significant implications for leaders and managers on how to foster green innovation and improve sustainable performance.

First, from a practical perspective, this research offers valuable insights on how firms can achieve strong sustainable performance by linking their environmental strategic objectives with specific HRM practices. It is recommended that firms should invest in GHRM practices and consider them as strategic assets in order to efficiently utilize their workforce's capacity for environmental management activities.

Second, based on the findings of this study, we propose that top management should focus on integrating the environmental goals of the organization with GHRM policies and practices. This integration will provide support and ensure the long-term success of green processes and product

innovation. Furthermore, we suggest that implementing GHRM practices necessitates a development-oriented culture and a flat organizational structure, both of which will facilitate and strengthen green innovation.

Third, we propose that the firm's transformational leadership creates a supportive environment where employees with green abilities and motivation feel comfortable. The leadership should also provide these employees with opportunities to utilize their green potential and contribute to the firm's green innovation efforts in both processes and products.

Finally, the results of this study offer valuable guidance to managers seeking to improve sustainable performance. It is essential for managers to consider these findings when determining the actions to adopt in order to have a significant impact on the Triple Bottom Line of sustainability.

References

- [1] Abdullah, M., & Thurasamy, R. (2015). An exploratory study of green supply chain management practices and supply chain integration among Malaysia manufacturing firms. *Aust. J. Basic Appl. Sci*, 9(37), 50-56.
- [2] Ali, H., & Khan, E. (2017). Environmental chemistry in the twenty-first century. *Environmental Chemistry Letters*, 15(2), 329-346.
- [3] Asadi, S., Pourhashemi, S. O., Nilashi, M., Abdullah, R., Samad, S., Yadegaridehkordi, E., ... & Razali, N. S. (2020). Investigating influence of green innovation on sustainability performance: A case on Malaysian hotel industry. *Journal of cleaner production*, 258, 120860.
- [4] Avolio, B. J., Waldman, D. A., & Yammarino, F. J. (1991). Leading in the 1990s: The Four I' s of Transformational Leadership. *Journal of European Industrial Training*, 15(4).
- [5] Avolio, B. J., & Bass, B. M. (2004). Multifactor leadership questionnaire (TM). *Mind Garden, Inc. Menlo Park, CA*.
- [6] Awan, U., Nauman, S., & Sroufe, R. (2021). Exploring the effect of buyer engagement on green product innovation: Empirical evidence from manufacturers. *Business Strategy and the Environment*, 30(1), 463-477.
- [7] Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the academy of marketing science*, 16, 74-94..
- [8] Bass, B., & Avolio, B. (1995). *MLQ multifactor leadership questionnaire*. Mind Garden.
- [9] Begum, S., Ashfaq, M., Xia, E., & Awan, U. (2022). Does green transformational leadership lead to green innovation? The role of green thinking and creative process engagement. *Business Strategy and the Environment*, 31(1), 580-597.
- [10] Berrone, P., & Gomez-Mejia, L. R. (2009). Environmental performance and executive compensation: An integrated agency-institutional perspective. *Academy of Management Journal*, 52(1), 103-126.
- [11] Bon, A. T., Zaid, A. A., & Jaaron, A. (2018). Green human resource management, Green supply chain management practices and Sustainable performance. *Proceedings of the International Conference on Industrial Engineering and Operations Management Bandung, Indonesia*. <http://www.ieomsociety.org/ieom2018/papers/56.pdf>
- [12] Bos-Nehles, A. C., Renkema, M., & Janssen, M. (2017). HRM and innovative work behaviour: a systematic literature review. *Personnel Review*, 46(7), 1228–1253. <https://doi.org/10.1108/pr-09-2016-0257>
- [13] Cahyadi, A., Natalisa, D., Poór, J., Perizade, B., & Szabó, K. (2022). Predicting the Relationship between Green Transformational Leadership, Green Human Resource Management Practices, and Employees' Green Behavior. *Administrative Sciences*, 13(1), 5.

- [14] Carton, A. M., Murphy, C., & Clark, J. R. (2014). A (blurry) vision of the future: How leader rhetoric about ultimate goals influences performance. *Academy of Management Journal*, 57(6), 1544-1570.
- [15] Chen, T., & Wu, Z. (2022). How to facilitate employees' green behavior? The joint role of green human resource management practice and green transformational leadership. *Frontiers in psychology*, 13, 906869.
- [16] Chen, Y. (2008). The Positive Effect of Green Intellectual Capital on Competitive Advantages of Firms. *Journal of Business Ethics*, 77(3), 271–286. <https://doi.org/10.1007/s10551-006-9349-1>
- [17] Chen, Y., & Chang, C. S. (2012). The Determinants of Green Product Development Performance: Green Dynamic Capabilities, Green Transformational Leadership, and Green Creativity. *Journal of Business Ethics*, 116(1), 107–119. <https://doi.org/10.1007/s10551-012-1452-x>
- [18] Chen, Y., Chang, C. S., & Lin, Y. (2014). Green Transformational Leadership and Green Performance: The Mediation Effects of Green Mindfulness and Green Self-Efficacy. *Sustainability*, 6(10), 6604–6621. <https://doi.org/10.3390/su6106604>
- [19] Chen, Y., Lai, S., & Wen, C. (2006). The Influence of Green Innovation Performance on Corporate Advantage in Taiwan. *Journal of Business Ethics*, 67(4), 331–339. <https://doi.org/10.1007/s10551-006-9025-5>
- [20] Çöp, S., Olorunsola, V. O., & Alola, U. V. (2020). Achieving environmental sustainability through green transformational leadership policy: Can green team resilience help? *Business Strategy and the Environment*, 30(1), 671–682. <https://doi.org/10.1002/bse.2646>
- [21] De Souza Freitas, W. R., Jabbour, C. J. C., Mangili, L. L., Filho, W. L., & de Oliveira, J. H. C. (2012). Building sustainable values in organizations with the support of human resource management: evidence from one firm considered as the 'best place to work' in Brazil. *Journal of Human Values*, 18(2), 147-159.
- [22] De Giovanni, P., & Vinzi, V. E. (2012). Covariance versus component-based estimations of performance in green supply chain management. *International Journal of Production Economics*, 135(2), 907-916.
- [23] DeVellis, R. F., & Thorpe, C. T. (2021). *Scale development: Theory and applications*. Sage publications.
- [24] Ding, X., Qu, Y., & Shahzad, M. (2020). Stock market's reaction to self-disclosure of environmental administrative penalties: An empirical study in China. *Polish Journal of Environmental Studies*, 29(6), 4011–4029.
- [25] Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. *Human resource management*, 56(4), 613-627.
- [26] Eiadat, Y., Kelly, A., Roche, F., & Eyadat, H. (2008). Green and competitive? An empirical test of the mediating role of environmental innovation strategy. *Journal of World business*, 43(2), 131-145.
- [27] El-Kassar, A., & Singh, S. (2019). Green innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices. *Technological Forecasting and Social Change*, 144, 483–498. <https://doi.org/10.1016/j.techfore.2017.12.016>
- [28] Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- [29] García-Morales, V. J., Jiménez-Barrionuevo, M. M., & Gutiérrez-Gutiérrez, L. (2012). Transformational leadership influence on organizational performance through organizational learning and innovation. *Journal of business research*, 65(7), 1040-1050.

- [30] GRI, (2006). Sustainability reporting guidelines. (Vol. G3). Amsterdam.
- [31] Haddock-Millar, J., Sanyal, C., & Müller-Camen, M. (2016). Green human resource management: a comparative qualitative case study of a United States multinational corporation. *The International Journal of Human Resource Management*, 27(2), 192-211.
- [32] Hair Jr, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107-123.
- [33] Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, 31(1), 2-24.
- [34] Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- [35] Hock, M., & Ringle, C. M. (2010). Local strategic networks in the software industry: An empirical analysis of the value continuum. *International Journal of Knowledge Management Studies*, 4(2), 132-151.
- [36] Huelgas, S. M., & Arellano, V. A. (2021). Green transformational leadership, green human resource management and green innovation: Key to environmental performance of selected port management offices of Philippine ports authority. *IOER International Multidisciplinary Research Journal*, 3, 48-58.
- [37] Huong, P. T., & Quynh, P. H. (2019). Corporate Social Responsibility Regarding Education of Foreign Direct Investment Companies in Vietnam. *Journal of International Economics and Management*, (118), 50-63.
- [38] Jia, J., Liu, H., Chin, T., & Hu, D. (2018). The Continuous Mediating Effects of GHRM on Employees' Green Passion via Transformational Leadership and Green Creativity. *Sustainability*, 10(9), 3237. <https://doi.org/10.3390/su10093237>
- [39] Khurshid, R., Darzi, M. A. (2016). Go green with green human resource management practices. *International Journal of Research in Commerce & Management*, 7 (1), 19-21.
- [40] Lado, A. A., & Wilson, M. E. (1994). Human Resource Systems and Sustained Competitive Advantage: A Competency-Based Perspective. *Academy of Management Review*, 19(4), 699–727. <https://doi.org/10.5465/amr.1994.9412190216>
- [41] Laosirihongthong, T., Adebajo, D., & Choon Tan, K. (2013). Green supply chain management practices and performance. *Industrial Management & Data Systems*, 113(8), 1088-1109.
- [42] Li, W., Bhutto, T. A., Xuhui, W., Maitlo, Q., Zafar, A. U., & Bhutto, N. A. (2020). Unlocking employees' green creativity: The effects of green transformational leadership, green intrinsic, and extrinsic motivation. *Journal of Cleaner Production*, 255, 120229. <https://doi.org/10.1016/j.jclepro.2020.120229>
- [43] Longoni, A., Luzzini, D., & Guerici, M. (2018). Deploying environmental management across functions: the relationship between green human resource management and green supply chain management. *Journal of Business Ethics*, 151, 1081-1095.
- [44] Mansoor, A., Farrukh, M., Lee, J. K., & Jahan, S. (2021). Stimulation of employees' green creativity through green transformational leadership and management initiatives. *Sustainability*, 13(14), 7844.
- [45] Ministry of Natural Resources and Environment of Vietnam (2014) Initial biennial updated report of Vietnam to the UNFCCC
- [46] Mittal, S., & Dhar, R. L. (2016). Effect of green transformational leadership on green creativity: A study of tourist hotels. *Tourism Management*, 57, 118–127. <https://doi.org/10.1016/j.tourman.2016.05.007>

- [47] Muller-Carmem, M., Jackson, S., Jabbour, C. J., & Renwick, D. (2010). Green human resource management. *Zeitschrift für Personalforschung*, 24(1), 95-96.
- [48] Newman, A., Miao, Q., Hofman, P. S., & Zhu, C. J. (2016). The impact of socially responsible human resource management on employees' organizational citizenship behaviour: the mediating role of organizational identification. *The international journal of human resource management*, 27(4), 440-455.
- [49] Norton, T. A., Parker, S. L., Zacher, H., & Ashkanasy, N. M. (2015). Employee green behavior: A theoretical framework, multilevel review, and future research agenda. *Organization & Environment*, 28(1), 103-125.
- [50] Ones, D. S., & Dilchert, S. (2012). Environmental sustainability at work: A call to action. *Industrial & Organizational Psychology*, 5(4), 444-466.
- [51] Paulraj, A. (2011). Understanding the relationships between internal resources and capabilities, sustainable supply management and organizational sustainability. *Journal of Supply Chain Management*, 47(1), 19-37.
- [52] Peng, D. X., & Lai, F. (2012). Using partial least squares in operations management research: A practical guideline and summary of past research. *Journal of operations management*, 30(6), 467-480.
- [53] Peng J., Hou N., & Pang, Y. (2019). Employees' green behavior: Summarizing the concept and the theoretical explanation. *Advances in Psychological Science*, 27(7), 1297-1306
- [54] Peng, J., Zhao, L. J., Xu, Y., Hou, N. (2019). The consequences of green transformational leadership and its theoretical explanation. *Journal of Psychological Science*, 42(4), 928-934.
- [55] Peng, J., Yin, K., Hou, N., Zou, Y., & Nie, Q. (2020). How to facilitate employee green behavior: The joint role of green transformational leadership and green human resource management practice. *Acta Psychologica Sinica*, 52(9), 1105-1120. <https://doi.org/10.3724/sp.j.1041.2020.01105>
- [56] Renwick, D. W., Redman, T., & Maguire, S. (2013). Green human resource management: A review and research agenda. *International journal of management reviews*, 15(1), 1-14.
- [57] Renwick, D., Redman, T., & Maguire, S. (2008). Green HRM: A review, process model, and research agenda. *University of Sheffield Management School Discussion Paper*, 1(1), 1-46.
- [58] Rimanoczy, I., & Pearson, T. (2010). Role of HR in the new world of sustainability. *Industrial and commercial training*, 42(1), 11-17.
- [59] Robertson, J. L., & Barling, J. (2013). Greening organizations through leaders' influence on employees' pro-environmental behaviors. *Journal of organizational behavior*, 34(2), 176-194.
- [60] Robertson, J. L. (2018). The nature, measurement and nomological network of environmentally specific transformational leadership. *Journal of Business Ethics*, 151(4), 961-975.
- [61] Schmitz, H., & Becker, B. (2013). From sustainable development to the green transformation-a rough guide.
- [62] Schmitz, H. (2015). Green transformation. *The politics of green transformations*, 170.
- [63] Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological forecasting and social change*, 150, 119762.
- [64] Song, W., Yu, H., & Xu, H. (2020). Effects of green human resource management and managerial environmental concern on green innovation. *European Journal of Innovation Management*, 24(3), 951-967. <https://doi.org/10.1108/ejim-11-2019-0315>
- [65] Sun, X., Askary, A. E., Meo, M. S., Zafar, N., & Hussain, B. (2022). Green transformational leadership and environmental performance in small and medium enterprises. *Ekonomika Istrazivanja-economic Research*, 35(1), 5273-5291. <https://doi.org/10.1080/1331677x.2021.2025127>

- [66] Svensson, G., Ferro, C., Høgevoid, N., Padin, C., Varela, J. C. S., & Sarstedt, M. (2018). Framing the triple bottom line approach: Direct and mediation effects between economic, social and environmental elements. *Journal of cleaner production*, 197, 972-991.
- [67] Teixeira, A. C., Jabbour, C. J. C., De Sousa Jabbour, A. B. L., Latan, H., & De Oliveira, J. H. C. (2016). Green training and green supply chain management: evidence from Brazilian firms. *Journal of Cleaner Production*, 116, 170–176. <https://doi.org/10.1016/j.jclepro.2015.12.061>
- [68] Tran, H. N. (2018). Renewable energy in achieving sustainable development goals (SDGs) and nationally determined contribution (NDC) of Vietnam. *Renewable Energy in Developing Countries: Local Development and Techno-Economic Aspects*, 41-56.
- [69] Wagner, M. (2013). 'Green' Human Resource Benefits: Do they Matter as Determinants of Environmental Management System Implementation?. *Journal of Business Ethics*, 114(3), 443–456. <https://doi.org/10.1007/s10551-012-1356-9>
- [70] Wei, L., Liu, J., & Herndon, N. C. (2011). SHRM and product innovation: testing the moderating effects of organizational culture and structure in Chinese firms. *International Journal of Human Resource Management*, 22(1), 19–33. <https://doi.org/10.1080/09585192.2011.538965>
- [71] Weng, H., Chen, J., & Chen, P. (2015). Effects of Green Innovation on Environmental and Corporate Performance: A Stakeholder Perspective. *Sustainability*, 7(5), 4997–5026. <https://doi.org/10.3390/su7054997>
- [72] Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of business research*, 101, 697-706.
- [73] Yan, X., & Zhang, Y. (2021). The effects of green innovation and environmental management on the environmental performance and value of a firm: an empirical study of energy-intensive listed companies in China. *Environmental Science and Pollution Research*, 28(27), 35870–35879. <https://doi.org/10.1007/s11356-021-12761-9>
- [74] Yong, J., Yusliza, M. Y., Ramayah, T., Jabbour, C. J. C., Sehnem, S., & Mani, V. (2019). Pathways towards sustainability in manufacturing organizations: Empirical evidence on the role of green human resource management. *Business Strategy and the Environment*, 29(1), 212–228. <https://doi.org/10.1002/bse.2359>
- [75] Zaid, A. A., Jaaron, A. A., & Bon, A. T. (2018). The impact of green human resource management and green supply chain management practices on sustainable performance: An empirical study. *Journal of Cleaner Production*, 204, 965–979. <https://doi.org/10.1016/j.jclepro.2018.09.062>
- [76] Zhao, W., & Huang, L. (2022). The impact of green transformational leadership, green HRM, green innovation and organizational support on the sustainable business performance: Evidence from China. *Economic Research-Ekonomska Istraživanja*, 35(1), 6121-6141.
- [77] Zhou, S., Zhang, D., Lyu, C., & Zhang, H. (2018). Does seeing “mind acts upon mind” affect green psychological climate and green product development performance? The role of matching between green transformational leadership and individual green values. *Sustainability*, 10(9), 3206..
- [78] Zhu, W., Chew, I. M. L., & Spangler, W. E. (2005). CEO transformational leadership and organizational outcomes: The mediating role of human–capital-enhancing human resource management. *Leadership Quarterly*, 16(1), 39–52. <https://doi.org/10.1016/j.leaqua.2004.06.001>
- [79] Zhu, Q., Sarkis, J., & Lai, K. H. (2008). Confirmation of a measurement model for green supply chain management practices implementation. *International journal of production economics*, 111(2), 261-273.