Received: 28 March 2025 | Accepted: 13 October 2025 | Published: 20 December 2025

Sustainable Trends & Business Research

Vol. 03 | Issue 02 | Pages 91-104 |

Research Article

Navigating the Green Horizon: The Interplay of Green Innovation and Green Human Resource Strategies in Driving Sustainable Organizational Performance

Rabia Aslam[1*] | Naila Kausar[2] | Muhammad Tasneem[3]

Authors Information

[1*] Department of Management Sciences, International Institute of Science, Art and Technology, Gujranwala, Pakistan.
Email: rabiaaslamro@gmail.com

[2] Department of Management Sciences, International Institute of Science, Art and Technology, Gujranwala, Pakistan.
Email: nailaazeem0@gmail.com

[3] Department of Management Sciences, International Institute of Science, Art and Technology, Gujranwala, Pakistan. Email: muhammadtasneem101@gmail.com

Declaration of Interests
The authors declare no competing financial or personal interests.

Abstract

Nowadays firms are focusing on "going green" to protect the environment and achieve sustainable growth. Sustainable performance has become an area of interest when considering other corporate, economic, and financial goals. The goal of this investigation is to examine the impact of green human resources management (GHRM) practices on sustainable performance, with the mediating role of green innovation. Data were collected from 333 managers through online survey-based questionnaires and analyzed using SPSS and AMOS. The results show that green hiring, training, and motivation are positively and significantly associated with sustainable performance. Green innovation positively and significantly mediates the relationship between green hiring, green training, green motivation, and sustainable performance, while it is insignificant between practice management and sustainable performance. Finding recommended that firms executives balance sustainable performance with GHRM practices and policies to foster green processes and product innovation. Furthermore, GHRM practices represent the organization's strategic plan for sustainable prevention, enabling workers to exhibit environmentally friendly work habits that reduce pollution.

Keywords: Green human resource management; Green innovation; Sustainable performance; Resource-based view theory; Environmental management, Pakistan.

How to Cite this Work:

Aslam, R., Kausar, N. & Tasneem, M. (2025), "Navigating the green horizon: the interplay of green innovation and green human resource strategies in driving sustainable organizational performance", *Sustainable Trends and Business Research*, Vol. 03 No. 02, pp. 91-104.

@ 2025 | Published by ResearchApt SMC Pvt. Ltd. Pakistan

1 INTRODUCTION

Sustainable development has emerged as a central global concern in response to increasing environmental degradation, excessive exploitation of natural resources, and the long-term consequences of industrial and economic expansion (Deslatte et al., 2025; Rizavi et al., 2025). The concept gained formal recognition following the 1972 Stockholm Conference, which highlighted that human activities significantly damage the natural environment and threaten the well-being of future generations. In response, the United Nations General Assembly established the World Commission on Environment and Development (WCED) in 1983. The Commission's Brundtland Report, Our Common Future, published in the aftermath of the Chernobyl disaster, offered the most widely cited definition of sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." Since then, sustainable development has remained a cornerstone of international policy debates, emphasizing economic growth, environmental protection, and improved quality of life through responsible governance and management practices (Jain & Garg, 2025; Omri et al., 2025).

Parallel to these global developments, scholars and practitioners have increasingly emphasized the importance of non-financial performance indicators in organizational evaluation. As early as 1954, Peter Drucker, in The Practice of Management, introduced the concept of management by objectives, highlighting the need to align organizational goals with broader societal outcomes (Drucker, 2012). In contemporary business environments, integrated quality and environmental management systems are recognized as critical tools for organizations to monitor and mitigate the environmental impacts of their operations, products, and services. This need is particularly pronounced in manufacturing industries, where production processes rely heavily on natural resources such as water and fuel and contribute substantially to pollution, greenhouse gas emissions, and resource depletion (Bux et al., 2024; Gull et al., 2023; Shaukat & Ali, 2023). Rapid population growth, globalization, and industrialization have further intensified the consumption of natural resources, amplifying environmental risks and accelerating climate change (Chaudhry & Amir, 2020). Uncontrolled water usage, excessive fuel consumption, and the emission of hazardous pollutants have created severe environmental and public health challenges (Ong et al., 2019). In response, environmental regulations and stakeholder pressures have encouraged manufacturing firms to adopt green practices and environmentally responsible strategies. However, regulatory compliance alone is insufficient to ensure sustainable performance (Aydin et al., 2024). The transition toward genuinely sustainable organizations requires the internalization of environmental values within organizational systems and employee behavior. Consequently, the development of "green organizations" has become a prerequisite for long-term business survival and competitiveness.

Despite this growing awareness, a significant gap remains in how organizations operationalize sustainability at the human resource level. Manufacturing firms, while being engines of economic growth, are also among the largest contributors to environmental degradation. This dual role underscores the importance of aligning human resource management (HRM) practices with environmental objectives. Scholars argue that linking HRM functions—particularly training, performance management, and motivation—with environmental goals is essential for building employees' green competencies and fostering pro-environmental behavior (Lasrado & Zakaria, 2020). Green training initiatives, for instance, enhance employees' awareness, skills, and commitment toward environmental protection, while green performance management systems help evaluate and reinforce environmentally responsible behaviors (Pham, 2020). Green human resource management (GHRM) has therefore emerged as a strategic approach to embedding sustainability into organizational culture. Practices such as green hiring, green training, green performance management, and green motivation align employees' behaviors and perceptions with organizational environmental goals (Garavan et al., 2023). Through these practices, organizations can meet the expectations of both stakeholders and society while improving sustainable performance (Deslatte et al., 2025; Rafique et al., 2025; Rizavi et al., 2025; Sarifudeen et al., 2025). Moreover, environmental management has evolved into a multidisciplinary domain, integrating finance, accounting, marketing, and human resource functions (Rawashdeh, 2018). GHRM practices not only help reduce the adverse effects of climate change but also enhance green innovation, enabling firms to develop environmentally friendly products and processes.

The relevance of these issues is particularly pronounced in developing economies such as Pakistan. Pakistan faces severe environmental challenges, including water scarcity, air and water pollution, and climate change vulnerabilities. The manufacturing sector, which contributes approximately 13–14% of GDP and employs around 16.1% of the labor force, plays a crucial role in shaping the country's environmental performance (Government of Pakistan, 2024). However, many firms in this sector struggle to effectively integrate environmental management practices with human resource systems. Prior studies have largely focused on environmental regulations, technological solutions, or

operational efficiency, while the mediating role of green innovation in linking GHRM practices to sustainable performance remains underexplored—especially in the Pakistani context.

Accordingly, the purpose of this study is to examine the impact of GHRM practices—specifically green hiring, green training, green performance management, and green motivation—on sustainable performance (SP), with green innovation serving as a mediating mechanism. Grounded in the resource-based view theory, this research argues that green human capital and innovation capabilities represent valuable, rare, and inimitable resources that can generate long-term competitive advantage while addressing environmental challenges. This study offers important theoretical, practical, and policy implications. Theoretically, it extends the GHRM and sustainability literature by integrating green innovation as a key explanatory mechanism linking HR practices to sustainable performance outcomes (Omarova & Jo, 2022; Raza & Khan, 2022). Practically, the findings provide managers with actionable insights on designing HR systems that promote environmentally responsible behavior and innovation. From a policy perspective, the study supports the formulation of labor and industrial policies that encourage sustainable employment practices and green innovation. Furthermore, the research aligns with the United Nations Sustainable Development Goals (SDGs), particularly SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action), by emphasizing the strategic role of human resources and innovation in sustainable industrial development.

The remainder of this paper is organized as follows. The next section reviews the relevant literature and develops the research hypotheses. This is followed by the research methodology outlining the data collection and analytical techniques. The subsequent section presents the empirical results, which are then discussed in light of existing literature. Finally, the paper concludes with key implications, limitations, and directions for future research.

2 LITERATURE REVIEW AND HYPOTHESIS TESTING

A resource-based perspective examines an organization's internal resources and focuses on those that can assist in developing a plan for improving a competitive but long-term advantage. The RBT, which was founded in the mid-1980s by Werner felt (1984), Rumelt (1984), and Barney (1986), assumes that funds are allocated diffusely across companies and tends to focus on their 'advantage-creating' vital assets as the primary determinants of competitive advantage and superior performance (Kostopoulos et al., 2002). When vital resources cut costs or charge high prices, they gain short-term competitive advantage. Intangible assets include time-management skills (processes and traits), intellectual capital, data, and technological investment. By emphasizing the relevance of green innovation in a long-term performance model, it defines intangible resources such as core competencies, methods, and systems (Xu, Li, & Choe, 2022) GHRM (Xu et al., 2022). However, according to a previous study, green innovation provides a competitive edge that leads to long-term success (Paulet et al., 2021). Green innovation, which can refer to either a product or a process, has the potential to enhance long-term performance, as demonstrated by El-Kassar and Singh (2019). Al-Aomar and Hussain (2017) emphasized the importance of effective human resource practices for achieving sustainable competitive advantage, with environmentally friendly HR practices playing a key role in green innovation (Khanra et al., 2022). Additionally, a few studies have investigated the influence of green HRM on SP (SP), with green innovation serving as a mediator in this relationship.(Kanan et al., 2023; Ullah et al., 2022).

Green training is vital to motivate stakeholders in environmental systems. The growing emphasis on environmental sustainability has necessitated the need to teach staff the significance of green and environmental efforts. For staff to be knowledgeable and confident in implementing an organization's green initiatives. These practices assist the organization in obtaining the targeted environmental performance set for itself. By including workers in the learning process, the firm will be able to raise employee awareness and motivation for environmental well-being. Environmental training is the most essential method of GHRM to assist EMS. For environmental effectiveness, employees are educated to deal with the company’s green components, such as green supply chain management, customer service, and stakeholder concerns. The association between the GHRM practices package, which includes green training and long-term performance, was explored by (Zaid et al., 2018). According to these findings, green training has a positive influence on the performance of a sustainable environment. Based on the literature considerations presented above, the author presents the study's initial hypothesis as follows

H1: Green training positively influences SP.

Induction, training, and awareness programmers that assist improve employees' environmental understanding are examples of green training and engagement (Guerci et al., 2016). Green interest and staff training in the execution of environmental actions are critical for achieving beneficial outcomes (Kramar, 2022). As a result, employees are more

motivated (Garavan et al., 2023). Consequently, they efficiently engage in the organization's environmental efforts. When environmental policies and EMS, as defined by organizational status, are implemented efficiently by the organization's personnel, the prospects of enhanced long-term performance are increased (Amir et al., 2021; Amir et al., 2020), organizational performance can be enhanced through the implementation of incentives and competencies, which also promote a greater commitment to environmental actions within the organization (Daily et al., 2012). It aims to build employee competencies from the perspective of taking environmentally friendly or pro-environmental initiatives (Renwick et al., 2013). Demonstrated a substantial relationship between green engagement and EP in Palestine's industrial sector. Based on the above arguments, the second hypothesis of this research is given as follows

H2: Green training and employee involvement positively influence SP.

A managerial framework is essential to match training instructions with the organization's EMS. Green performance management, as well as the pay component of GHRM, is described as a system of monitoring and rewards that encourages employees to participate in environmental management systems (Berrone & Gomez-Mejia, 2009). Employees can use green performance management and pay as a guide to connect their actions, while protecting the environment and targets. This type of counseling can help employees become more adaptable to environmental concerns, resulting in long-term success. Green reward and GPMS are two HRM approaches that they used. The findings revealed that the dependent and independent variables had a significant relationship (Rawashdeh, 2018) HR managers are thus in charge of assessing the implications and viability of these goals, which were set in the best interests of environmental sustainability and a greener firm (Chaudhary et al., 2020; Chaudhry et al., 2020; Chaudhry & Chaudhry, 2022; Khalil Bagy et al., 2020; Malik et al., 2021). A peer-reviewed study examined the link between green HRM practices such as green training, performance management, recruiting, employee green involvement, and environmental performance. Studies have revealed that green HRM practices and environmental performance are positively associated. Research on the link between GHRM and EP has been conducted in Jordan's healthcare sector. Following the above literature, the author proposes the relationship between green performance management and SP of the manufacturing sector of Pakistan as follows

H3: Green performance management has a positive impact on SP

Green performance evaluation, reward, and pay systems based on increasing environmental performance are all parts of developing green motivation (Renwick et al., 2013), which is the drive to participate in environmentally friendly conduct that comes from inside the individual because it is inherently satisfying. Consequently, this drive is motivated by the desire to protect and preserve the environment. According to the ability–motivation–opportunity (AMO) paradigm, developing employee capacities and motivating and involving workers are critical drivers of employee performance (Tang et al., 2018). GHRM provides a robust foundation for enterprises to create workers who are cognizant of a firm's sustainability and environmental performance. Based on the above arguments, the hypothesis of this research is given as follows

H4: Green motivation positively influences SP

Green innovation is stimulated by the need to survive and plays an important role in achieving long-term success (Mehta & Chugan, 2015; Saudi et al., 2019). Even though it influences a business's survival, it varies depending on the type of innovation (Xiu et al., 2017). Green Innovation works as a UPS for ongoing action in GHRM, big data, and mid-range products. This means it can reap benefits by replacing them with GHRM and big data of both kinds of green innovation, product and process innovation, On the Road to Sustainable Action. Sustainability is a pressing issue facing businesses (Ali & Haseeb, 2019; Salem et al., 2018). Sustainability has a long history of use. Hans Carl von Markowitz used the phrase in 1712 to indicate long-term forest management. Eventually, the phrase became well known in the 1980s and is now the subject of scholarly discussion. In 1992, it became the focal point of the worldwide policy debate (Schmidheiny & Timberlake, 1992). In response to the growing debate on sustainability, businesses should strive to produce high-quality products while maintaining economic viability and a sustainable environment (Nagahi et al., 2021). Sustainable business practices are critical to today's rapidly changing global business climate. An increasing percentage of global customers are willing to pay more for consumer durables (Nielsen, 2015). Companies are planning to redesign and downsize their internal processes to effectively address the environmental and social impacts of their operations. This comes in response to the sustainability challenges posed by issues such as climate change. These efforts aim to improve the overall development and lasting impact of the company's operations. (Ling, 2019). New environmental issues force businesses to adapt, allowing them to move their attention away from conventional green operations and toward long-term sustainability (Saudi et al., 2019). These pressures drive green innovation, which plays a crucial role

in recovery. Therefore, sustainability outcomes are important (Saunila et al., 2018). However, green innovation affects organizational performance. It depends on the type of innovation (Guo et al., 2019). Green innovation, according to the resource-based perspective, can help competitive advantage and result in long-term performance (Singh et al., 2020) This link, on the other hand, has gotten little attention and warrants additional investigation. Thus, the following hypothesis was formulated:

H5: Green innovation significantly mediates the relationship between green hiring and SP.

H6: Green innovation significantly mediates the relationship between green training and SP.

H7: Green innovation significantly mediates the relationship between green performance management and SP.

H8: Green innovation significantly mediates the relationship between green motivation and SP.

Figure 1 illustrates the proposed research model, which conceptualizes GHRM practices—green hiring, green training, green performance management, and green motivation—as key antecedents of sustainable performance, with green innovation serving as a mediating mechanism. The model is grounded in the resource-based view, emphasizing the role of internal green capabilities and innovation in achieving long-term sustainable organizational performance.

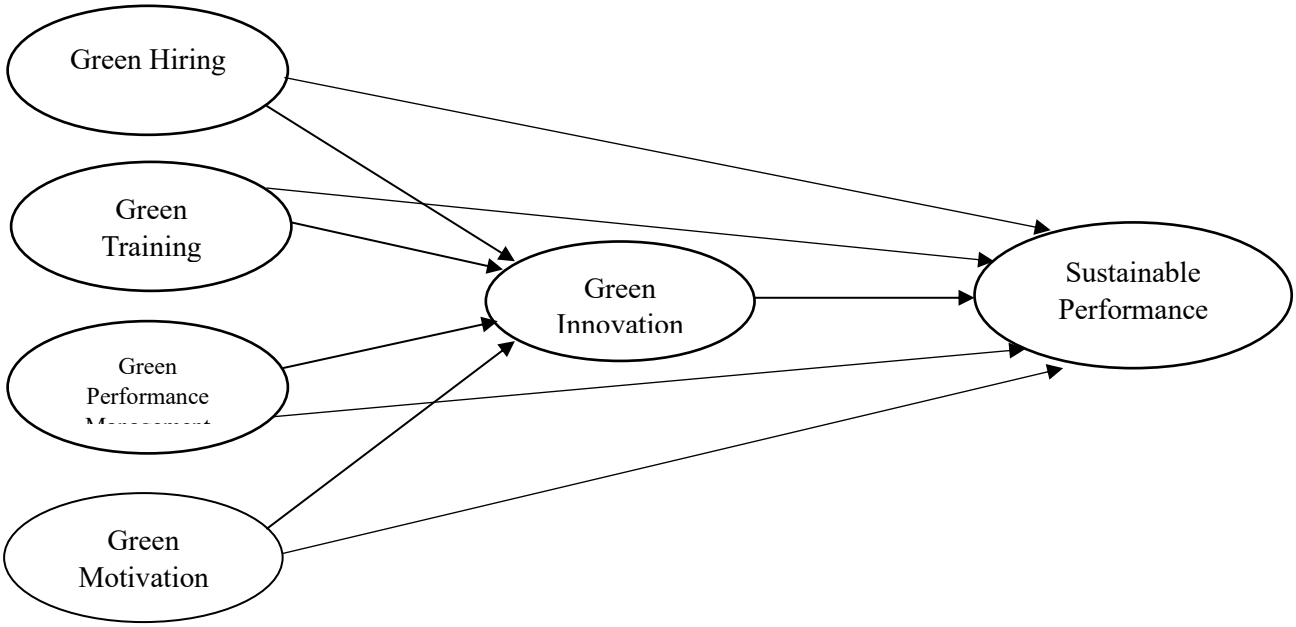

Figure 1. Theoretical Framework

Source(s): Author's work.

3 RESEARCH METHODOLOGY

The present study employs a quantitative research methodology to examine the influence of GHRM practices on sustainable performance through the mediating role of green innovation. A positivist research philosophy is adopted, as the study seeks to test theory-driven hypotheses using empirical data and statistical techniques. The research design is deductive and cross-sectional, which is appropriate for examining causal relationships among latent constructs within a single time frame. This methodological approach is consistent with prior empirical studies in the domains of GHRM, green innovation, and sustainability performance (Renwick et al., 2013; Tang et al., 2018; Zaid et al., 2018).

3.1 Population and Sample

The target population firms managerial-level employees working in Pakistan's industrial and manufacturing sector. These respondents are considered appropriate because they are directly involved in policy formulation, human resource practices, and sustainability-related decision-making. As the exact population size of such managers is not publicly available, the population is treated as unknown, justifying the use of non-probability purposive sampling. Data were collected from ISO-certified manufacturing firms, as these organizations are more likely to implement formal environmental management systems and structured HR practices (Rawashdeh, 2018). Respondents included human resource managers, marketing managers, operations managers, and accounting professionals to ensure a holistic

organizational perspective. Greater emphasis was placed on HR managers due to their central role in recruitment, training, performance management, and motivation systems. A total of 333 valid questionnaires were obtained and used for analysis. This sample size exceeds the minimum threshold recommended for structural equation modeling (SEM), which suggests at least 200 observations or a ratio of 10 responses per estimated parameter (Hair et al., 2019), thereby ensuring robust and reliable model estimation.

3.2 Measurement of Variables

All study variables were measured using previously validated multi-item scales adapted from established literature to ensure content validity and comparability. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used for all items.

i. Green Hiring (GH) was measured using three items adapted from Renwick et al. (2013) and Tang et al. (2018). These items assess the extent to which environmental criteria are incorporated into recruitment and selection processes.
ii. Green Training (GT) was measured using four items adapted from Zaid et al. (2018) and Guerci et al. (2016), focusing on employee training programs designed to enhance environmental knowledge, skills, and awareness.
iii. Green Performance Management (GPM) was measured using three items adapted from Berrone and Gomez-Mejia (2009) and Rawashdeh (2018). These items evaluate how environmental objectives are integrated into performance appraisal and reward systems.
iv. Green Motivation (GM) was measured using three items adapted from Renwick et al. (2013) and Tang et al. (2018), capturing intrinsic and extrinsic motivation to engage in environmentally responsible behavior.
v. Green Innovation (GI) was measured using four items adapted from El-Kassar and Singh (2019) and Singh et al. (2020). These items assess both green products and green process innovation aimed at reducing environmental impact.
vi. Sustainable Performance (SP) was measured using five items adapted from Zaid et al. (2018) and Saunila et al. (2018), covering environmental, economic, and operational sustainability outcomes.

The use of these established measures is consistent with prior empirical research and aligns with the reliability and validity results reported in the analysis section, including Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE).

3.3 Data Analysis Techniques

Data analysis was conducted using Statistical Package for Social Sciences (SPSS) version 22 and AMOS version 26. SPSS was used for data screening, descriptive statistics, reliability analysis, and preliminary diagnostics, including checks for missing values, outliers, skewness, and normality. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were performed using AMOS 26 to assess the measurement model and test the hypothesized structural relationships. Model fit was evaluated using multiple goodness-of-fit indices, including CMIN/DF, GFI, IFI, TLI, CFI, and RMSEA, following commonly accepted thresholds (Hair et al., 2019). Mediation effects of green innovation were tested using bootstrapping procedures, allowing for robust estimation of indirect effects.

3.4 Ethical Considerations

Ethical standards were strictly observed throughout the research process. Participation was voluntary, and respondents were informed of the study's purpose prior to data collection. Anonymity and confidentiality were guaranteed, and no personally identifiable information was collected. The data were used exclusively for academic research purposes. These procedures are consistent with ethical guidelines for social science research and enhance the credibility and integrity of the study findings.

4 EMPERICAL FINDINGS

A total of 333 valid responses were collected for this study. As shown in Table 1, the majority of respondents were male (231 respondents, 69.4%), while female respondents accounted for 30.3% (102 respondents). The gender distribution reflects the male-dominated managerial structure of Pakistan's manufacturing sector. Regarding age, most respondents belonged to the 30–39 years age group (51.1%), followed by those aged 20–29 years (36.6%). Only a small proportion of respondents were below 20 years (1.2%) or above 40 years (11.1%), indicating that the sample largely comprised mid-career professionals actively involved in managerial and sustainability-related roles.

In terms of educational qualifications, the respondents were well educated. Approximately 42.9% held postgraduate degrees, while 42.6% had completed undergraduate studies. A smaller proportion had higher qualifications (12.3%), suggesting that respondents possessed sufficient academic background to understand and respond accurately to questions related to green HRM practices and sustainable performance. Regarding marital status, 61% of respondents were single and 39% were married. With respect to organizational tenure, nearly half of the respondents (49.5%) had 2–3 years of experience, followed by those with 3–4 years (36.6%), indicating adequate organizational exposure to assess HR practices and sustainability initiatives.

Table 1. Respondent's Profile

Variable	Category	Frequency	Percent
Age	Below 20 years	4	1.2
	20-29 years	122	36.6
	30-39 years	170	51.1
	40-49 years	37	11.1
	Total	333	100.0
Gender	Male	231	69.4
	Female	102	30.3
	Total	333	100.0
Qualification	Undergraduate	7	2.1
	Graduation	142	42.6
	Post-Graduate	143	42.9
	Higher Studies	41	12.3
	Total	333	100.0
Marital Status	Single	203	61
	Married	130	39
	Total	100	100
Tenure	1-2 years	12	3.6
	2-3 years	165	49.5
	3-4 years	122	36.6
	5 and more years	34	10.2
	Total	333	100.0

Source(s): *Author's work.*

Table 2 presents the descriptive statistics for all study constructs, including minimum values, maximum values, means, standard deviations, and skewness. The mean values for all constructs ranged between 3.40 and 4.01, indicating generally positive perceptions of green HRM practices, green innovation, and sustainable performance among respondents. The moderate standard deviation values further suggest acceptable variability in responses, reflecting consistency across observations. Skewness values for all constructs fell within the acceptable range of −1 to +1, confirming that the data were approximately normally distributed. Furthermore, the observed minimum and maximum values (1 and 5) indicate that the data did not contain extreme outliers, supporting the suitability and robustness of the dataset for subsequent multivariate and structural equation modeling analyses.

Table 2. Descriptive Statistics of Study Variables

Variable	**Min**	**Max**	**Mean**	**SD**	**Skewness**	**SE**
Sustainable Performance	1	5	4.01	0.89	−0.87	0.10
Green Hiring	1	5	3.72	1.19	−0.73	0.16
Green Training	1	5	3.40	1.24	−0.36	0.13
Green Performance Management	1	5	3.60	1.04	−0.81	0.12
Green Motivation	1	5	3.87	1.08	−1.04	0.13
Green Innovation	1	5	3.87	1.08	−1.04	0.11

Note. *Min = minimum; Max = maximum; SD = standard deviation; SE = standard error. All variables were measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).* ***Source(s):*** *Author's work.*

Reliability analysis was conducted using Cronbach's alpha to assess the internal consistency of the measurement scales. All constructs exhibited Cronbach's alpha values well above the recommended threshold of 0.70, indicating high reliability (see Table 3). Specifically, sustainable performance reported a Cronbach's alpha of 0.958, green hiring 0.976, green training 0.982, green performance management 0.982, and green motivation 0.902. These results confirm that the measurement items were reliable and suitable for subsequent analysis.

Convergent and discriminant validity were assessed using composite reliability (CR), average variance extracted (AVE), and maximum shared variance (MSV), as presented in Table 3. The CR values for all constructs exceeded 0.70, while AVE values were above the recommended threshold of 0.50, confirming convergent validity. Additionally, MSV values were lower than AVE values for all constructs, indicating adequate discriminant validity. The square root of AVE for each construct was greater than its correlations with other constructs, further confirming that the constructs were distinct and measured unique concepts. These results demonstrate that the measurement model was valid and appropriate for structural equation modeling.

Table 3. Convergent and Discriminant validity

Variable	CR	AVE	MSV	GM	SP	GH	GTR	GPM	GI
GM	0.902	0.754	0.241	0.868					
SP	0.958	0.718	0.095	0.202	0.847				
GH	0.900	0.693	0.241	0.491	0.309	0.832			
GTR	0.949	0.788	0.195	0.114	0.253	0.442	0.888		
GPM	0.918	0.691	0.127	0.150	0.120	0.357	0.160	0.831	
GI	0.899	0.599	0.235	0.242	0.259	0.485	0.390	0.106	0.774

Note. *CR = composite reliability; AVE = average variance extracted; MSV = maximum shared variance. Diagonal elements (in bold) represent the square root of AVE. Off-diagonal elements represent inter-construct correlations. Discriminant validity is established when the square root of AVE for each construct exceeds its correlations with other constructs.* ***Source(s):*** *Author's work.*

Confirmatory factor analysis (CFA) was conducted to assess the overall fit of the measurement model. As shown in Table 4, the model fit indices met recommended threshold values. The chi-square to degrees of freedom ratio (CMIN/DF) was 1.927, which is below the recommended maximum of 3. The goodness-of-fit index (GFI) was 0.867, while incremental fit index (IFI), Tucker–Lewis index (TLI), and comparative fit index (CFI) were 0.954, 0.949, and 0.954, respectively, all exceeding the recommended cutoff of 0.90. The root mean square error of approximation (RMSEA) was 0.053, indicating a good model fit. Collectively, these indices confirm that the measurement model adequately fits the data and supports proceeding to structural model analysis.

Table 4. Model Fit Indices

CFA Indicators	CMIN/DF	GFI	IFI	TLI	CFI	RMSEA
Threshold value	≤ 3	≥ 0.80	≥ 0.90	≥ 0.90	≥ 0.90	≤ .80
Calculated value	1.927	0.867	0.954	0.949	0.954	0.053

Source(s): *Author's work.*

Table 5. Results of Structural Equation Modeling and Hypotheses Testing

Path	Estimate	SE	p	Decision
Green Hiring → Sustainable Performance	0.153	0.052	.009	Accepted
Green Training → Sustainable Performance	0.099	0.042	.043	Accepted
Green Performance Management → Sustainable Performance	−0.017	0.047	.711	Rejected
Green Motivation → Sustainable Performance	0.201	0.046	.001	Accepted
Green Hiring → Green Innovation → Sustainable Performance	0.113	0.030	.010	Accepted
Green Training → Green Innovation → Sustainable Performance	0.079	0.023	.010	Accepted
GPM → Green Innovation → Sustainable Performance	0.003	0.017	.680	Rejected
Green Motivation → Green Innovation → Sustainable Performance	0.039	0.020	.026	Accepted

Note. *SE = standard error. Direct effects are reported for main paths, and indirect effects are reported for mediation relationships. Statistical significance is evaluated at $p < .05$.* ***Source(s):*** *Author's work.*

Structural equation modeling (SEM) was employed using AMOS to test the hypothesized relationships among the study variables. SEM was chosen due to its ability to simultaneously estimate multiple relationships and examine

both direct and indirect effects within a single analytical framework. The results of hypothesis testing are presented in Table 5. The results indicate that green hiring has a positive and statistically significant effect on sustainable performance ($\beta = 0.153$, $p < 0.01$), supporting Hypothesis 1. Green training also showed a positive and significant relationship with sustainable performance ($\beta = 0.099$, $p < 0.05$), supporting Hypothesis 2. In contrast, green performance management exhibited a negative and insignificant relationship with sustainable performance ($\beta = -0.017$, $p > 0.05$), leading to the rejection of Hypothesis 3. Green motivation demonstrated a strong positive effect on sustainable performance ($\beta = 0.201$, $p < 0.001$), supporting Hypothesis 4. With respect to mediation analysis, green innovation significantly mediated the relationships between green hiring and sustainable performance ($\beta = 0.113$, $p < 0.01$), green training and sustainable performance ($\beta = 0.079$, $p < 0.01$), and green motivation and sustainable performance ($\beta = 0.039$, $p < 0.05$), thereby supporting Hypotheses 5, 6, and 8. However, the mediating effect of green innovation between green performance management and sustainable performance was not statistically significant ($\beta = 0.003$, $p > 0.05$), leading to the rejection of Hypothesis 7. Testing of the structural model in AMOS presented in the Figure 2.

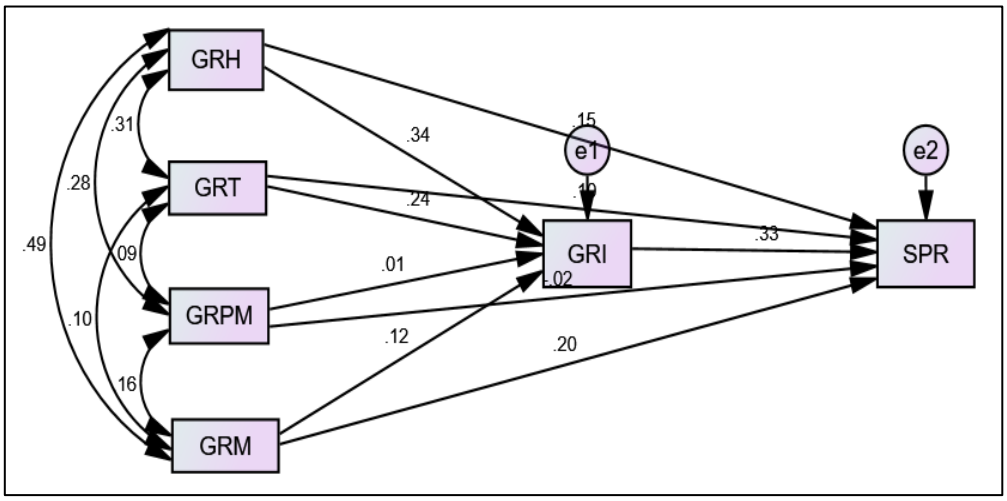

Figure 2. Theoretical Framework tested in AMOS v26

Source(s): Author's work.

5 DISCUSSION ON RESULTS

This study's empirical evidence suggests that alternative green practices have a favorable and significant impact on SP. By emulating the expertise of the aforementioned employee, green performance management and effective remuneration enable organizations to function sustainably. In order to protect resources, a green environment is essential. As a result of the study, it was found that green recruitment methods have a significantly positive impact on the long-term performance of the Pakistan manufacturing industry. This is because incorporating modern technology into an organization's recruitment system allows the organization to save money on paperwork and leverage this advantage to build a more sustainable environment for company growth. The study analyzed the impact of green training on SP using advanced analytical tools and data gathered through surveys of managers and stakeholders in the manufacturing sector. The results indicate that green training has a positive impact on the SP of the Pakistani manufacturing sector.

This resulted in acceptance of the initial hypothesis of this investigation. The most significant and major function of green HRM practices is green training, which helps workers to comprehend and educate themselves about the benefits and importance of incorporating green initiatives for improved SP (Deslatte et al., 2025; Khan et al., 2019; Rizavi et al., 2025). This finding is consistent with previous studies on green training and its impact on SP. For example, (Guerci et al., 2016) empirically proved that green training improved long-term performance. In addition, 2018, (Bon et al., 2018) investigated the link between green training and long-term environmental sustainability (Bux et al., 2024). As a result, there is no harm in indicating that implementing green training will assist businesses in improving their long-term performance. Therefore, the second hypothesis is that green performance management has a large and beneficial influence on SP. GHRM practices are strong indicators of environmental sustainability through the effective alignment of transformational leadership (Chen and Yan, 2022).

The results obtained from utilizing the analytical tool AMOS indicate that the Pakistani manufacturing data supports the three research hypotheses proposed in this study. Previous investigations, including those focused on the use of green practices and their implications for ecological and environmental performance management, have produced

consistent experimental results (Amir et al., 2024). The findings of the present study (Zaid, Jaaron, et al., 2018) align with the experimental evidence. Studies have consistently demonstrated a negative relationship between green practice management and environmental performance. For instance, Shahriari et al. (2020) examined the role of green performance management and its impact on the environmental performance of the dwindling Steinem manufacturing industry, while Pham et al. (2020) explored the environmental impact of green operations management on the hospitality industry. These studies highlight the importance of green management practices in enhancing an organization's environmental performance. To test the fourth hypothesis, we proposed a significant relationship between green motivation and SP. The analysis conducted using AMOS revealed a significant association between SP and green motivation, providing empirical evidence to support the fourth hypothesis. For example, Zaid, Perisamy, et al. (2018) also confirmed the positive relationship between green workers and PE, while Masri & Jaaron (2017) demonstrated the impact of green HRM practices on empowering green workers in a sustainable environment. Based on the empirical findings of this study, all research hypotheses were accepted.

These empirical findings highlight the importance of green innovation for improving environmental sustainability performance through the application of green HRM practices in Pakistan's industrial sector. “Green innovation" or "environmental innovation" can be defined as a process that promotes the development of new products and technologies aimed at reducing the negative effects of environmental hazards, such as pollution and exploitation of natural resources. This helps organizations achieve standardized levels of environmental protection by adopting environmentally friendly human resource management practices. Appropriate implementation of green intangible resources leads towards achievement of green innovation (Serrano-García et al., 2022). GHRM provides insights into the effective alignment of SP (Amir et al., 2020; Amir et al., 2022; Cumming et al., 2020). Government regulations regarding green innovation help to enhance SP (Hu et al., 2021). Researchers have investigated the mediating impact and green innovation models. The empirical findings of this study are supported by these investigations. This study is supported by a lot of empirical evidence (Phan et al., 2020) (Deslatte et al., 2025; Kaur et al., 2025; Naseer & Bagh, 2024); Green HRM techniques such as green training, green performance management, and green employee participation have all been investigated by the author. The author investigated the influence of these green HRM practices on the hospitality sector's long-term sustainability. The findings imply that GHRM adoption will boost Pakistan’s manufacturing SMEs' goodwill among decision-makers, such as workers, clients, and the public, and hence increase their economic effectiveness.

6 CONCLUSION

The purpose of this study is to examine the influence of green innovation on green human resources practices, specifically green recruitment, training, and motivation, in order to promote the long-term success of Pakistan's manufacturing industry. This research investigates GHRM practices, which include green hiring, green training, green performance management, and green motivation, as dimensions of GHRM practices in the study. Eight hypotheses were developed based on the proposed framework, and a quantitative data-gathering strategy was employed, involving an online survey of managers in Pakistan's manufacturing industry. A total of 333 questionnaires were analyzed using SPSS and AMOS, revealing that GHRM practices have a significant positive impact on environmental performance in industrial enterprises. Furthermore, green performance management, awards, training, and engagement were found to have a positive influence on environmental performance.

6.1 Implication of the Study

This study offers important theoretical, practical, and policy-related implications that are consistent with the objectives outlined in the introduction and supported by the empirical findings. From a theoretical perspective, the study extends the GHRM literature by empirically validating the resource-based view in a sustainability context. Specifically, the findings confirm that internally developed green capabilities—such as green hiring, green training, and green motivation—serve as strategic intangible resources that enhance sustainable performance primarily through green innovation (Renwick et al., 2013; Khanra et al., 2022; Kanan et al., 2023). By empirically demonstrating the mediating role of green innovation, this study strengthens prior arguments that sustainability outcomes are achieved not merely through green practices themselves but through innovation-driven capability development (El-Kassar & Singh, 2019; Paulet et al., 2021). Moreover, by focusing on Pakistan’s manufacturing sector, the study contributes contextual evidence from a developing economy, addressing a notable gap in the management and sustainability literature (Mahmood et al., 2016; Malik et al., 2021).

From a practical perspective, the results provide clear guidance for managers and organizational leaders. The empirical analysis shows that green training and green motivation have a significant positive impact on sustainable performance, highlighting the importance of investing in employee skills, environmental awareness, and intrinsic motivation (Zaid et al., 2018; Garavan et al., 2023). These findings suggest that organizations should prioritize structured green training programs and motivational mechanisms to encourage pro-environmental behavior and innovation. In contrast, the insignificant direct effect of green performance management on sustainable performance indicates that performance appraisal and reward systems alone may not be sufficient to generate sustainability outcomes unless they are complemented by innovation-oriented practices (Berrone & Gomez-Mejia, 2009; Rawashdeh, 2018). This underscores the need for managers to move beyond compliance-based environmental controls and foster an organizational climate that supports learning, creativity, and green innovation. The mediating role of green innovation carries important strategic implications. Consistent with the study's findings, green innovation strengthens the relationship between most GHRM practices and sustainable performance, reinforcing the argument that sustainability is achieved through the transformation of green human capital into innovative green products and processes (Singh et al., 2020; Ullah et al., 2022). Managers in manufacturing firms are therefore encouraged to integrate green hiring policies, targeted environmental training, and motivation systems that explicitly support innovation. Such integration can improve resource efficiency, reduce environmental impact, and enhance long-term competitiveness, in line with the resource-based view (Xu et al., 2022).

From a policy perspective, the findings provide empirical support for policymakers and regulatory authorities in designing sustainability-oriented labor and industrial policies. The results suggest that policies promoting green innovation and human capital development may be more effective than those focusing solely on environmental monitoring or regulatory compliance (Saudi et al., 2019; Hu et al., 2021). Encouraging organizations to invest in green skills, environmental training, and innovation incentives can help address pressing environmental challenges faced by Pakistan, such as pollution, resource scarcity, and climate change (Rawashdeh, 2018). These implications directly align with the United Nations Sustainable Development Goals emphasized in the introduction, particularly SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action).

6.2 Limitations and Future Suggestions

While this study provides meaningful insights into the relationship between green human resource management practices, green innovation, and sustainable performance, several limitations should be acknowledged, which also open avenues for future research. First, the study relies on a cross-sectional research design, which limits the ability to establish causal relationships among the examined variables. Although the proposed relationships are grounded in strong theoretical foundations and supported by structural equation modeling, future studies may adopt longitudinal or time-lagged designs to better capture the dynamic nature of GHRM practices, green innovation, and sustainable performance over time. Second, the study focuses exclusively on managerial-level respondents from Pakistan's manufacturing sector. While managers are appropriate key informants due to their involvement in strategic decision-making and policy implementation, the exclusion of non-managerial employees may limit the comprehensiveness of the findings. Future research could incorporate multiple organizational levels, including operational employees and supervisors, to provide a more holistic understanding of how green HRM practices are perceived and enacted across the organization. Such multi-level approaches may also help explain potential differences between intended HR practices and actual employee behaviors.

Third, the geographical and sectoral focus of the study represents another limitation. As the research was conducted solely within Pakistan, the findings may not be fully generalizable to other developing or developed economies with different institutional, regulatory, and cultural contexts. Future studies are encouraged to replicate this model in other countries or conduct cross-country comparative analyses to examine how national culture, environmental regulations, and institutional pressures influence the effectiveness of GHRM practices and green innovation. Similarly, extending this research to other sectors—such as hospitality, healthcare, construction, or services—would enhance the external validity of the proposed framework. Fourth, although green innovation was examined as a mechanism mediating, the study treated it as a unidimensional construct. Future research could disaggregate green innovation into green product innovation and green process innovation to explore whether different types of innovation exert distinct effects on sustainable performance. Additionally, future studies may examine other potential mediators, such as green creativity, environmental management accounting systems, green knowledge sharing, or green organizational learning, to further unpack the mechanisms through which GHRM practices influence sustainability outcomes.

Moreover, the study did not incorporate moderate variables that could condition the strength of the examined relationships. Future research may explore the moderating roles of variables such as green leadership, organizational culture, technological capability, top management commitment, environmental regulation stringency, or organizational slack. For example, the insignificant direct effect of green performance management observed in this study suggests that contextual factors may influence how performance systems translate into sustainability outcomes. Including moderators could provide deeper insights into why certain GHRM practices are more effective under specific organizational or institutional conditions. Finally, future studies could expand the scope of sustainable performance beyond the current measures by incorporating social sustainability indicators, such as employee well-being, community engagement, or decent work conditions, in line with the broader Sustainable Development Goals (SDGs). Integrating environmental, economic, and social dimensions more explicitly would allow researchers to develop a more comprehensive sustainability framework and better capture the multidimensional nature of sustainable development.

REFERENCES

Al-Aomar, R. & Hussain, M. (2017), "An assessment of green practices in a hotel supply chain: A study of UAE hotels", *Journal of Hospitality and Tourism Management*, Vol. 32 No. 02, pp. 71-81.

Ali, A. & Haseeb, M. (2019), "Radio frequency identification (RFID) technology as a strategic tool towards higher performance of supply chain operations in textile and apparel industry of Malaysia", *Uncertain Supply Chain Management*, Vol. 7 No. 2, pp. 215-226.

Amir, M., Iqbal, N. & Tahir, S. (2021), "Impact of corporate environmental responsibility on firm's financial performance: Moderating role of organizational slack and industry competition", *Sukkur IBA Journal of Management and Business*, Vol. 8 No. 2, pp. 76-92.

Amir, M., Rehman, S.A. & Khan, M.I. (2020), "Mediating role of environmental management accounting and control system between top management commitment and environmental performance: A legitimacy theory", *Journal of Management and Research*, Vol. 7 No. 1, pp. 132-160.

Amir, M., Siddique, M., Ali, K., Bukhari, A.A.A. & Kausar, N. (2022), "Asymmetric relationship of environmental degradation and economic growth with tourism demand in Pakistan: Evidence from non-linear ARDL and causality estimation", *Environmental Science and Pollution Research*, Vol. 29 No. 4, pp. 5891-5901.

Berrone, P. & Gomez-Mejia, L.R. (2009), "Environmental performance and executive compensation: An integrated agency-institutional perspective", *Academy of Management Journal*, Vol. 52 No. 1, pp. 103-126.

Bon, A.T., Zaid, A.A. & Jaaron, A. (2018), "Green human resource management, green supply chain management practices and sustainable performance", *Proceedings of the 8th International Conference on Industrial Engineering and Operations Management (IEOM)*, Bandung, Indonesia, pp. 0-0.

Chaudhary, M.A., Chaudhary, N.I. & Ali, A.Z. (2020), "Enhancing university's brand performance during the COVID-19 outbreak: The role of ICT orientation, perceived service quality, trust, and student's satisfaction", *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, Vol. 14 No. 3, pp. 629-651.

Chaudhry, N.I., Asad, H., Amir, M. & Hussain, R.I. (2020), "Environmental innovation and financial performance: Mediating role of environmental management accounting and firm's environmental strategy", *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, Vol. 14 No. 3, pp. 715-737.

Chaudhry, N.I. & Chaudhry, M.A. (2022), "Green intellectual capital and corporate economic sustainability: The mediating role of financial condition", *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, Vol. 16 No. 2, pp. 257-278.

Cumming, D.J., Wood, G. & Zahra, S.A. (2020), "Human resource management practices in the context of rising right-wing populism", *Human Resource Management Journal*, Vol. 30 No. 4, pp. 525-536.

Daily, B.F., Bishop, J.W. & Massoud, J.A. (2012), "The role of training and empowerment in environmental performance: A study of the Mexican maquiladora industry", *International Journal of Operations & Production Management*, Vol. 32 No. 5, pp. 631-647.

Drucker, P. (2012), *The Practice of Management*, Routledge, pp. 0-0.

El-Kassar, A.-N. & Singh, S.K. (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*, Vol. 144 No. 0, pp. 483-498.

Garavan, T., Ullah, I., O'Brien, F., Darcy, C., Wisetsri, W., Afshan, G. & Mughal, Y.H. (2023), "Employee perceptions of individual green HRM practices and voluntary green work behaviour: A signalling theory perspective", *Asia Pacific Journal of Human Resources*, Vol. 61 No. 1, pp. 32-56.

Government of Pakistan. (2024), "Textile industry in Pakistan: Contribution to GDP and employment", Ministry of Commerce, Government of Pakistan, Islamabad, Pakistan, available at: https://www.commerce.gov.pk (accessed 15 March 2025).

Guerci, M., Longoni, A. & Luzzini, D. (2016), "Translating stakeholder pressures into environmental performance: The mediating role of green HRM practices", *The International Journal of Human Resource Management*, Vol. 27 No. 2, pp. 262-289.

Guo, H., Yang, J. & Han, J. (2019), "The fit between value proposition innovation and technological innovation in the digital environment: Implications for the performance of startups", *IEEE Transactions on Engineering Management*, Vol. 68 No. 3, pp. 797-809.

Hu, D., Qiu, L., She, M. & Wang, Y. (2021), "Sustaining the sustainable development: How do firms turn government green subsidies into financial performance through green innovation?", *Business Strategy and the Environment*, Vol. 30 No. 5, pp. 2271-2292.

Kanan, M., Taha, B., Saleh, Y., Alsayed, M., Assaf, R., Ben Hassen, M. & Tunsi, W. (2023), "Green innovation as a mediator between green human resource management practices and sustainable performance in Palestinian manufacturing industries", *Sustainability*, Vol. 15 No. 2, pp. 1077-1077.

Khalil Bagy, H.M., Ibtesam, B.F., Abou-Zaid, E.A., Sabah, B.M. & Nashwa, S.M. (2020), "Control of green mold disease using chitosan and its effect on orange properties during cold storage", *Archives of Phytopathology and Plant Protection*, Vol. 54 No. 11-12, pp. 570-585.

Khan, Z., Wood, G., Tarba, S.Y., Rao-Nicholson, R. & He, S. (2019), "Human resource management in Chinese multinationals in the United Kingdom: The interplay of institutions, culture, and strategic choice", *Human Resource Management*, Vol. 58 No. 5, pp. 473-487.

Khanra, S., Kaur, P., Joseph, R.P., Malik, A. & Dhir, A. (2022), "A resource-based view of green innovation as a strategic firm resource: Present status and future directions", *Business Strategy and the Environment*, Vol. 31 No. 4, pp. 1395-1413.

Kostopoulos, K.C., Spanos, Y.E. & Prastacos, G.P. (2002), "The resource-based view of the firm and innovation: Identification of critical linkages", *Proceedings of the 2nd European Academy of Management Conference*, pp. 0-0.

Kramar, R. (2022), "Sustainable human resource management: Six defining characteristics", *Asia Pacific Journal of Human Resources*, Vol. 60 No. 1, pp. 146-170.

Lasrado, F. & Zakaria, N. (2020), "Go green! Exploring the organizational factors that influence self-initiated green behavior in the United Arab Emirates", *Asia Pacific Journal of Management*, Vol. 37 No. 3, pp. 823-850.

Ling, Y.H. (2019), "Examining green policy and sustainable development from the perspective of differentiation and strategic alignment", *Business Strategy and the Environment*, Vol. 28 No. 6, pp. 1096-1106.

Mahmood, A., Sandhu, M.A., Kanwal, S. & Iqbal, J. (2016), "The effect of green HRM practices on sustainability: Evidence from manufacturing companies in Pakistan", *Pakistan Journal of Social Sciences (PJSS)*, Vol. 36 No. 1, pp. 0-0.

Malik, M.S., Ali, K., Kausar, N. & Chaudhry, M.A. (2021), "Enhancing environmental performance through green HRM and green innovation: Examining the mediating role of green creativity and moderating role of green shared vision", *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, Vol. 15 No. 2, pp. 265-285.

Masri, H.A. & Jaaron, A.A. (2017), "Assessing green human resources management practices in Palestinian manufacturing context: An empirical study", *Journal of Cleaner Production*, Vol. 143 No. 0, pp. 474-489.

Mehta, K. & Chugan, P.K. (2015), "Green HRM in pursuit of environmentally sustainable business", *Universal Journal of Industrial and Business Management*, Vol. 3 No. 3, pp. 74-81.

Nagahi, M., Hossain, N.U.I., El Amrani, S., Jaradat, R., Khademibami, L., Goerger, S.R. & Buchanan, R. (2022), "Investigating the influence of demographics and personality types on practitioners' level of systems thinking skills", *IEEE Transactions on Engineering Management*, Vol. 69 No. 6, pp. 3923-3937.

Nielsen, C. (2015), "The sustainability imperative: New insights on consumer expectations", *Nielsen Company Report*, Vol. 0 No. 0, pp. 0-0.

Ong, T.S., Lee, A.S., Teh, B.H. & Magsi, H.B. (2019), "Environmental innovation, environmental performance and financial performance: Evidence from Malaysian environmental proactive firms", *Sustainability*, Vol. 11 No. 12, pp. 3494-3494.

Paulet, R., Holland, P. & Morgan, D. (2021), "A meta-review of 10 years of green human resource management: Is green HRM headed towards a roadblock or a revitalisation?", *Asia Pacific Journal of Human Resources*, Vol. 59 No. 2, pp. 159-183.

Pham, N.T., Thanh, T.V., Tučková, Z. & Thuy, V.T.N. (2020), "The role of green human resource management in driving hotel's environmental performance: Interaction and mediation analysis", *International Journal of Hospitality Management*, Vol. 88 No. 0, pp. 102392-102392.

Phan, L.T., Nguyen, T.V., Luong, Q.C., Nguyen, T.V., Nguyen, H.T., Le, H.Q. & Pham, Q.D. (2020), "Importation and human-to-human transmission of a novel coronavirus in Vietnam", *New England Journal of Medicine*, Vol. 382 No. 9, pp. 872-874.

Rawashdeh, A. (2018a), "Examining the effect of green management on firm efficiency: Evidence from Jordanian oil and gas industry", *Management Science Letters*, Vol. 8 No. 12, pp. 1283-1290.

Rawashdeh, A. (2018b), "The impact of green human resource management on organizational environmental performance in Jordanian health service organizations", *Management Science Letters*, Vol. 8 No. 10, pp. 1049-1058.

Renwick, D.W., Redman, T. & Maguire, S. (2013), "Green human resource management: A review and research agenda", *International Journal of Management Reviews*, Vol. 15 No. 1, pp. 1-14.

Salem, M.A., Shawtari, F., Shamsudin, M.F. & Hussain, H.B.I. (2018), "The consequences of integrating stakeholder engagement in sustainable development (environmental perspectives)", *Sustainable Development*, Vol. 26 No. 3, pp. 255-268.

Saudi, M.H.M., Obsatar Sinaga, G. & Zainudin, Z. (2019), "The effect of green innovation in influencing sustainable performance: Moderating role of managerial environmental concern", *International Journal of Supply Chain Management*, Vol. 8 No. 1, pp. 303-310.

Saunila, M., Ukko, J. & Rantala, T. (2018), "Sustainability as a driver of green innovation investment and exploitation", *Journal of Cleaner Production*, Vol. 179 No. 0, pp. 631-641.

Schmidheiny, S. & Timberlake, L. (1992), *Changing Course: A Global Business Perspective on Development and the Environment*, MIT Press, Vol. 1 No. 0, pp. 0-0.

Serrano-García, J., Bikfalvi, A., Llach, J. & Arbeláez-Toro, J.J. (2022), "Capabilities and organisational dimensions conducive to green product innovation: Evidence from Croatian and Spanish manufacturing firms", *Business Strategy and the Environment*, Vol. 31 No. 7, pp. 2767-2785.

Shahriari, B., Hassanpoor, A., Navehebrahim, A. & Jafar, S. (2020), "Designing a green human resource management model at university environments: Case of universities in Tehran", *Evergreen*, Vol. 7 No. 3, pp. 336-350.

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*, Vol. 150 No. 0, pp. 119762-119762.

Tang, G., Chen, Y., Jiang, Y., Paille, P. & Jia, J. (2018), "Green human resource management practices: Scale development and validity", *Asia Pacific Journal of Human Resources*, Vol. 56 No. 1, pp. 31-55.

Ullah, S., Mehmood, T. & Ahmad, T. (2022), "Green intellectual capital and green HRM enabling organizations go green: Mediating role of green innovation", *International Journal of Innovation Science*, Vol. ahead-of-print No. ahead-of-print, pp. 0-0.

Xiu, L., Liang, X., Chen, Z. & Xu, W. (2017), "Strategic flexibility, innovative HR practices, and firm performance: A moderated mediation model", *Personnel Review*, Vol. 46 No. 7, pp. 1335-1357.

Xu, J., Li, X. & Choe, S. (2022), "The effect of green innovation on corporate ESG performance: Evidence from Chinese listed enterprises", *Asia-Pacific Journal of Business*, Vol. 13 No. 1, pp. 1-17.

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*, Vol. 204 No. 0, pp. 965-979.

Zaid, S.M., Perisamy, E., Hussein, H., Myeda, N.E. & Zainon, N. (2018), "Vertical greenery system in urban tropical climate and its carbon sequestration potential: A review", *Ecological Indicators*, Vol. 91 No. 0, pp. 57-70.

Zaraket, W., Garios, R. & Malek, L.A. (2018), "The impact of employee empowerment on the organizational commitment", *International Journal of Human Resource Studies*, Vol. 8 No. 3, pp. 284-299.

This article is published by ResearchApt in Sustainable Trends and Business Research under the Creative Commons Attribution 4.0 International License (CC BY 4.0). This license permits unrestricted use, distribution, and reproduction in any medium, provided the original author(s) and source are properly cited.