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Let's Start!

Bridging gap in Green HRM and Green Innovation in Pakistani Manufacturing Industry: Mediating role of Competitive Advantage

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Bridging gap in Green HRM and Green Innovation in Pakistani Manufacturing Industry: Mediating Role of Competitive Advantage

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Abstract

GHRM and green innovation utilization in the Pakistani industrial sector were the subjects of this research. Furthermore, the current study investigates the influential role that Competitive Advantage plays in the process. Within Lahore city, 510 workers from manufacturing companies were surveyed using a quantitative methodology. In the study, the bootstrapping method was used to figure out path coefficients in reflecting PLS-SEM. The analysis reveals that GHRM significantly enhances both GI and CA, underscoring the strategic value of sustainable HR practices in driving innovation and competitiveness. In addition, it also sees competitive advantage as a mediator that links GHRM and GI. These findings contribute by elucidating mechanisms that GHRM influences innovation outcomes and also establishing a competitive advantage mediating role. Even, practical implications highlight the necessity for manufacturing firms to integrate GHRM practices to not only meet ethical and environmental responsibilities but also to leverage them as a strategic resource for competitive positioning. Furthermore, the research presents discoveries regarding GHRM practice & green innovation, including the competitive advantage.

Keywords: Green Innovation, Manufacturing Industry, Competitive Advantage, Green HRM. Employees' Performance

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INTRODUCTION

Manufacturing is a major industry in Pakistan, contributing significantly to the GDP and employment. However, this sector faces substantial environmental challenges, including pollution, resource depletion, and inefficient waste management. Due to these difficulties, industrial enterprises must adopt sustainable methods to survive and compete (Ninduwezuor-Ehiobu et al., 2023). Jamil et al. (2023) suggested human resource management has the potential to measure and impact employees' sustainability-related actions, perspectives, knowledge, and drive. Accordingly, HRM may also be a useful tool for businesses in pursuing environmentally responsible policy-making. Moreover, GHRM emerges a pivotal approach that encourages adopting sustainably within their human resource policies and practices.

In the past few years, numerous manufacturing industries around the world have tried to foster a culture of sustainability among employees, including recruitment of environmentally conscious personnel, training programs focused on green initiatives, and performance appraisals that emphasize environmental contributions (Sharma et al., 2021; Jamil et al., 2023). Corporations have adopted initiatives to diminish energy usage, advocate for renewable energy sources, and create sustainable products. These practices not only help preserve natural resources and reduce waste but also enhance a company's brand reputation and drive innovation. Green HRM aligns the workforce with sustainability goals to foster Green Innovation (Mittal & Kaur, 2023).

Consequently, the overarching concept that examine link among GHRM and GI in Pakistani manufacturing firms. The study investigates the potential influence of GHRM on GI. The study also investigated mediating role that competitive advantage plays in the association among Green HRM & green innovation. However, provide manufacturers with a better understanding of how-market positioning enhance while simultaneously promoting environmental sustainability, this research investigates role of competitive advantage in connection. However, more understanding the relationship that essential for firms looking to navigate sustainability complexities and innovation in a rapidly changing economic landscape. Likewise, problems exist in little manufacturing industries support in existing situation, the manufacturing sector in Pakistan faces several pressing issues related to sustainability, which have hindered its ability to adopt environmentally responsible practices. One of the most significant challenges is the industry's contribution to environmental degradation, including air and water pollution, waste generation, and the over-exploitation of natural resources (Ninduwezuor-Ehiobu et al., 2023). Many firms operate with inefficient resource management, resulting in high energy and material consumption, which exacerbates operational costs and environmental harm (Sharma et al., 2021). Additionally, the sector has been slow to integrate

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sustainable manufacturing practices, partly low awareness and green technologies investment, as well perception that sustainability initiatives are costly and complex (Jamil et al., 2023). Traditional HR practices are also misaligned with sustainability objectives, preventing organizations from cultivating a culture of environmental stewardship among employees (Mittal & Kaur, 2023). Furthermore, barriers to Green Innovation, including limited funding, expertise, and governmental support, have restricted the industry's capacity to develop new environment-sustainable products (Khan et al., 2021). Without a strategic focus on sustainability and innovation, Pakistani manufacturers risk falling behind global competitors who are increasingly prioritizing green practices to meet market demands.

This study empirically examines the relationship among GHRM, GI, and CA mediating roles. The existing study examines GHRM, and GI, focusing on its direct and indirect consequences to contribute to existing literature on firms in Pakistan. Hence, the study aims to resolve many challenges to rectify theoretical deficiencies and examine the fundamental mechanisms linking GHRM, green innovation, and competitive advantage.

1. Does GHRM have potential to enhance green innovation?
2. Does GHRM have potential to enhance a firm competitive advantage?
3. Is competitive advantage having a mediating association between GHRM and GI?

Through these questions, research helps in understanding GHRM's strategic value in Pakistani manufacturing firms' business, including green innovation and mediating the impact of competitive advantage.

This research enhances prior literature on GHRM, GI, and CA in the Pakistani manufacturing sector by examining GHRM methods for attaining green innovation. Utilizing Resource-Based View (RBV) paradigm, the study elucidates the contributions of GHRM and GI in augmenting an organization's ability to optimize its competitiveness. RBV theory elucidates businesses human resource aspect, emphasizing that strategic management of internal resources can yield enduring competitive advantages (Barney, 1991). Attaining a successful green competitive advantage is a crucial measure of organizational success, and the research suggests that GHRM, alongside green innovation, acts as an essential conduit for organizations to improve their competitiveness. The study posits competitive advantage mediates relation among GHRM, and GI, providing insights for Pakistani manufacturing enterprises to effectively leverage GHRM and green innovation strategies and also enhance competitive strength.

THEORETICAL BACKGROUND

GHRM AND GI

Studies have shown that Global Human Resource Management (GHRM) is crucial for implementing sustainable organizational practices(Singh et al., 2020). Scholar argues that many

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VOL-2, NO-4, (FALL-2024)

manufacturing companies match GHRMandGI, therefore promoting an organizational environment fit for green innovation. Here, green innovation and its growing influence on GHRM (Fang et al., 2022) reflect both the hiring and selection procedures in companies. GHRM is also progressively improving sustainable green innovation creation in companies as the need for it rises (Munawar et al., 2022).

According to Aftab et al. (2023), many theoretical frameworks especially RBV-formulate green HRM and green innovation. This point of view holds that by properly using special resources and capabilities—especially their human capital—companies can develop a competitive edge. Utilizing GHRM practices including green innovation training programs, and management stressing sustainability. Moreover, companies can build a workforce not only knowledgeable about environmental challenges but also promotes a culture of sustainability and innovation, so guiding the company toward increased GI& competitive advantage (Fang et al., 2022).

Empirical research in several settings confirms the claim that GHRM enhances GI. For instance, a 2020 Song et al. (2020) study described companies that implementing GHRM projects typically report higher degrees of green innovation since these practices inspire staff members to embrace eco-friendly practices and support sustainable activities. The researcher also notes that employees who are urged to embrace environmentally friendly activities are more likely to create creative ideas that solve ecological problems (Sabir et al., 2024). In the manufacturing sector, Moreover, Iqbal et al. (2021) looked to see how GI and GHRM interacted. Literature makes clear the function of GHRM and how it affects GI. Therefore, it is suggested that:

Hypothesis 1 (H1): GHRM Positively Impacts GI in Pakistani Manufacturing Industry

GREEN HRM AND COMPETITIVE ADVANTAGE

Muisyo et al. (2022) and Mustafa et al. (2023) are two studies that look at Green HRM and competitive edge. The use of human resources is without a question an important part of gaining a competitive edge. According to Mustafa et al. (2023), people resources are the most important part of a company's competitive advantage and are seen as an important resource that is hard for competitors to copy. In a business world that is changing quickly, implementing Green HRM can help companies stay profitable and successful.

So that the company can stay ahead of the competition, managers have put environmental problems into groups like hiring and firing, performance reviews and rewards, job roles, and pay structures. Hiring policies that give priority to candidates who care about the environment and sustainable values shape corporate strategies that aim for a green competitive edge (Jatmika et al., 2021). Integrating sustainable ideas into different HR tasks,

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like hiring, training, managing performance, and paying employees, is often part of putting GHRM solutions into action. People who are strongly committed to caring for the environment may be given more attention during the hiring process. This can help the company reach its sustainability goals (Jatmika et al., 2021). By hiring people who care deeply about protecting the environment, businesses not only build a staff that supports long-term goals but also encourage a culture of creativity and responsibility that can lead to long-term profits. This means that the group can hire people who have the right skills and commitment to help it reach its sustainability goals. Sharing values makes the workplace a better place to be because people who share values are more likely to be driven and involved. By combining human resources with sustainable efforts, GHRM makes it easier for businesses to gain and keep a green competitive edge. By building a workforce that supports and prioritizes environmental goals, companies can set themselves apart from rivals and maintain long-term success in a business world that is becoming more eco-conscious. Companies need to improve their environmental performance to stay competitive. In this way, workers become valuable assets to the company. As a result, it is claimed that.

Hypothesis 2 (H2): GHRM Positively Impacts CA in Pakistani Manufacturing Industries.

COMPETITIVE ADVANTAGE, GREEN HRM, GREEN INNOVATION

The relationship between Green HRM and GI has been a subject of recent research by both scholars and practitioners due to the increasing emphasis on environmental sustainability (Banmairuroy et al., 2022). However, GHRM turns environmental management into human resource policies and encourage environmentally sustainable behavior among employees. On the other hand, Green Innovation focuses on developing and implementing new products, processes, or practices that minimize environmental harm. While the direct link between Green HRM and Green Innovation has been explored (Song et al., 2022), the mediating role of competitive advantage adds another layer of complexity to this relationship.

Iqbal et al. (2022) suggest that competitive advantage and its mediating role indicate that the influence of Green HRM on green innovation is not direct, but is facilitated through the firm's enhanced competitive position. In this model, Green HRM initially enhances the firm's internal capabilities, such as operational efficiency, employee engagement, and sustainability awareness, which collectively contribute to competitive advantage. Subsequently, this competitive advantage enables the firm to invest in and implement green innovations (Din et al., 2024).

Therefore, competitive advantage acts as a bridge that connects Green HRM and Green Innovation, indicating that without the mediating role of competitive advantage, the full potential of Green HRM in driving innovation may not be realized. This highlights the

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VOL-2, NO-4, (FALL-2024)

importance of not only adopting Green HRM practices but also strategically leveraging them to enhance competitive positioning, which can subsequently foster innovation in sustainability practices. Similarly, Parida & Brown (2021) describe the Resource-Based View (RBV) theory and explain how a sustainable competitive edge might be obtained through GHRM and GI. The RBV theory posits that a firm's resources and capabilities are key to achieving and sustaining competitive advantage. Likewise, researchers hypothesize that:

Hypothesis 3 (H3): CA Mediates the Association Between GHRM and GI.

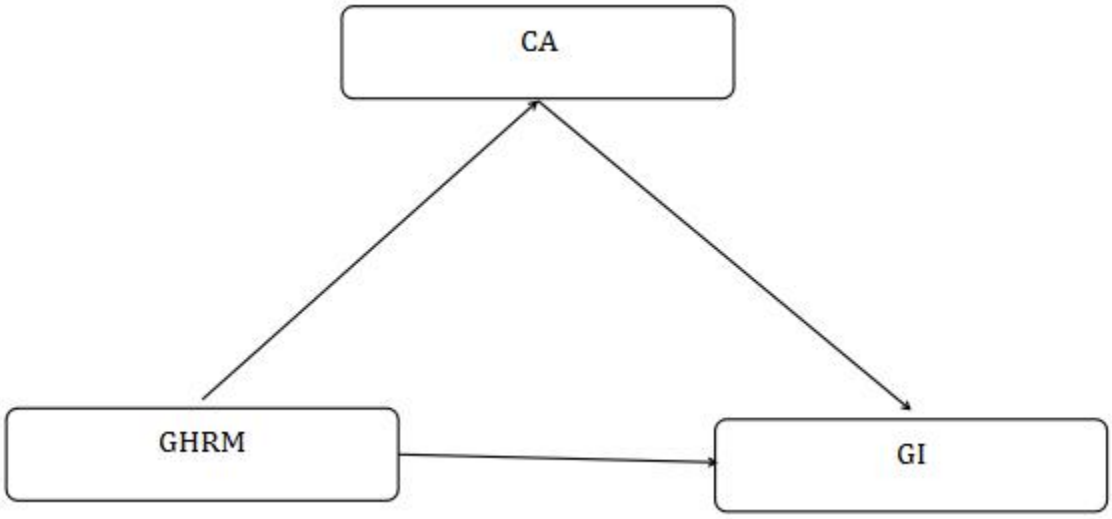

Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

A cohesive conceptual framework has been established through an extensive review of the literature and theoretical foundations, including social learning theory. As shown in Figure 1, this study has formulated hypotheses. The survey focused on permanent employees within the manufacturing sector, specifically those in the Lahore plastic, chemical, and textile industries. The company's performance and esteem in Pakistan for environmental and sustainable human resource strategies made this study appropriate. Choosing manufacturing companies as the setting for this study was primarily motivated by the management of hazardous chemicals and the industry's commitment to environmental sustainability through the implementation of green initiatives. To obtain formal agreement and approval for participation in the study, letter was drafted explaining the aims of the research and delivered to management. Email addresses of employees were collected from designated management officials within the industry who consented to take part in the survey after getting an initial approval letter from the institution. The questionnaire was distributed to employees who had agreed to participate in the survey. This ensured that no personal information would be disclosed to third parties for any reason,

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VOL-2, NO-4, (FALL-2024)

either during or after the course of the research project. The names of the organizations and persons were safeguarded.

To determine the appropriate sample size for the study, a recent comparable investigation was conducted to confirm the adequacy of the sample (Rahim & Zainuddin, 2019). A total of seven hundred individuals were contacted, with five hundred forty agreeing to participate in a voluntary online survey. Questionnaires were disseminated through email and social media platforms. The official language of the survey was English, as participation was limited to individuals who have the necessary education and proficiency in English. The survey began in November 2023, and by January 2024, the authors had collected 540 completed questionnaires. A variety of follow-ups and reminders were implemented during this time to improve response rates. After the preliminary assessment, 30 responses were eliminated because they were either incomplete or lacked engagement, as observed by the study investigators. A total of 510 responses were collected, with 72.86% of the participants indicating they are active. The analytical approach began with demographic parameters, subsequently utilizing PLS software to assess the proposed relationships. Each element of the GHRM, GI, and Competitive Advantage was assessed using a five-point Likert scale, ranging from strongly disagree to strongly agree.

MEASUREMENT SCALE

GHRM

According to Singh et al (2020), we evaluated GHRM using a scale consisting of ten items. The ten elements include topics such as how to handle performance appraisals, how to train and develop employees, and how to attract and select candidates. The statement "Great effort goes into selecting the right person" is an example of an item that can be found on this scale. Cronbach alpha value was 0.868, and the AVE value was 0.909. Both of these values were recorded.

GREEN INNOVATION

We used a 6-item scale from Nigatu et al. (2024) to assess GI.GI sample items include "choosing materials that consume less energy in product development". The Cronbach alpha and AVE values were observed as 0.7707 &0.726.

CA

Eight-point scale (Chen & Chang, 2013) was used to assess green competitiveness. Furthermore, CA is characterized as "the quality of the green products or services that the company offers is better than that of its major competitors."Cronbach alpha & AVE values were recorded at 0.701 and 0.705 respectively.

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VOL-2, NO-4, (FALL-2024)

Table 1 CR, AVE & Cronbach Alpha

Construct	Cronbach Alpha	AVE	CR	AVE2
GHRM	0.868	0.909	0.903	0.652
GI	0.707	0.726	0.836	0.630
GCA	0.701	0.705	0.834	0.626

CONTROL VARIABLES

A diverse array of control variables was incorporated into our investigation to guarantee the validity and reliability of our findings. Four control variables were incorporated into the research model to account for potential impacts. The variables encompass gender, age, current position, and educational attainment. These variables were accounted for in this investigation due to the influence of prior research on organizations.

STATISTICAL TECHNIQUES AND ANALYSIS

A structural equation modeling (SEM) approach was employed to test the hypothesized relationships. The statistical analysis was conducted using SmartPLS 4 software. As suggested by Hair et al. (2019), PLS-SEM is particularly suitable for evaluating both basic and complex models, offering flexibility in its application. The development of PLS-SEM as a versatile analytical tool is well-documented (Sarstedt et al., 2017). Similarly, Henseler et al. (2009) proposed a two-step analytical process. The first phase involved assessing the measurement model through confirmatory factor analysis (CFA), ensuring the validity and reliability of the constructs by evaluating discriminant and convergent validity. The second phase focused on estimating structural models through path and mediation analyses (Henseler et al., 2009).

DATA ANALYSES

DEMOGRAPHIC ANALYSIS

Participants were given instructions to fill out specific demographic information in the questionnaire, as was demonstrated in the section that came before this one. Individuals were assured that any data collected would be used solely for the purposes of the study as a whole and that their names would not be used or disclosed in any way. As a result, the query about personal identity was not carried out. Gender, age in years, educational credentials, and current roles were some of the essential demographic information that was acquired from the participants. Table 1 provides a concise summary of the demographic information that was collected.

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ISSN (Print): 3006-4627
https://journalofsocialsciencereview.com/index.php/PJSSR
VOL-2, NO-4, (FALL-2024)

Among the participants, 59.4% were male and 40.6% were female, according to the gender distribution of the participants. Participants who were between the ages of 31 and 45 made up the majority of the group. About the educational credentials of the participants, 23.7% of them had a degree that was lower than a Bachelor's degree, 30.9% had received a Bachelor's degree, 23.7% had a Master's degree, and 21.6% had gotten a PhD. After classifying the employees' existing positions, it was determined that 28.1% of them were classified as Middle Managers, which was the portion that represented the greatest section. This summary provides an overview of the demographic characteristics related to the individuals who participated in the study.

Table 2: Demographics

	Frequency	**Percentage%**
Gender-Male	165	59.35
Female	113	40.65
Age		
20–25 Years	50	17.99
26–30 Years	50	17.99
31–45 Years	78	28.06
46–50 Years	58	20.86
51 and above	42	15.11
Education		
Lower than Bachelors	69	24.82
Bachelor Degree	70	25.18
Master’s Degree	78	28.06
Doctoral Degree	61	21.94

CORRELATION COEFFICIENT

Means, standard deviations, and correlations are broken down and presented in Table 3. GHRM, GI, and GCA were found to have a robust and favorable connection with one another. This confirms that the estimated construct does not have any discriminant validity, as shown by the fact that all of the HTML values were lower than the recommended value.

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VOL-2, NO-4, (FALL-2024)

Table 3 Discriminant Validity

Construct	Mean	S.D	1	2	3
GHRM	*3.78*	*1.23*	(0.797)		
GI	3.24	1.08	0.763	(0.804)	
GCA	3.58	1.24	0.676	0.505	(0.818)

SEM—HYPOTHESES TESTING

The coefficients, t-qualities, and significance values (p) of the suggested model were computed and consisted of 5000-retests (Sarstedt et al., 2021). This stage of the analysis involves examining and determining the causal linkages that exist between the constructs that are being studied.

DIRECT EFFECT

Table 4 results indicate that GHRM positively and significantly influences GI and Green GCA. The beta values show that for every unit increase in GHRM, GI increases by 0.263 and GCA by 0.274. The high T-values (4.616 and 4.908, respectively) and the significance levels of 0.000 confirm the strong statistical significance of these relationships. Overall, GHRM plays a critical driving role in both innovation and competitive advantage in green practices.

Table 4 Direct Effect

	Beta	T-value	F^2	P-value
GHRM-GI	0.263	4.616		0.000
GHRM-CA	0.274	4.908		0.000
	R^2		Q^2	
GI	0.140		0.066	
CA	0.389		0.139	

INDIRECT EFFECT (MEDIATING IMPACT)

Using the variance account for (VAF) approach, the mediating effect was examined. According to Hair et al. (2014), a VAF value that is lower than 20 percent indicates that there is no mediation effect. A VAF value that is higher than 80 percent indicates that full mediation has occurred. On the other hand, partial mediation occurs when the VAF value is higher than 20 percent but lower than 80 percent. In this case, the VAF was calculated by dividing the indirect

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https://journalofsocialsciencereview.com/index.php/PJSSR
VOL-2, NO-4, (FALL-2024)

effect by the total effect factor. According to the calculated number, which was 32%, partial mediation was taking place.

Table 5

Mediating Effect	Indirect effect	Total effect	VAF	Results
GHRM-GI-GCA	0.156	0.489	32%	Supported

DISCUSSION

The findings of this research offer significant insights into the connections that exist between Green Human Resource Management (GHRM), Green Innovation (GI), and Competitive Advantage (CA) in the context of the manufacturing sector in Pakistan. As a result of the enormous positive effects that GHRM has had on both GI and CA, it appears that sustainable HR practices are not only an ethical priority but also a strategic requirement. This is consistent with the Resource-Based View (RBV), which asserts that efficient management of human resources can result in benefits that are sustained over time in terms of competitiveness. According to the findings, businesses that make investments in GHRM practices can cultivate a culture of environmental responsibility, which in turn serves to encourage employees to innovate and contribute to the implementation of sustainable practices. As an additional point of interest, the fact that CA plays a partial mediating function brings to light the significance of competitive positioning in terms of amplifying the influence of GHRM on GI. This shows that just implementing GHRM principles is not sufficient; rather, businesses need to strategically use these practices to optimize their innovation potential.

PRACTICAL IMPLICATION

Manufacturing firms in Pakistan should first adopt and integrate Green Human Resource Management (GHRM) practices into their HR frameworks, focusing on eco-friendly recruitment, comprehensive sustainability training, and performance appraisals that highlight environmental contributions. Second, organizations need to foster a culture that prioritizes environmental responsibility through employee engagement initiatives, sustainability workshops, and recognition programs for innovative eco-friendly practices. Third, companies should recognize the importance of competitive advantage as a mediator between GHRM and green innovation, enhancing their competitive positioning to create an environment conducive to sustainability. Finally, manufacturers should collaborate with governmental bodies, NGOs, and other stakeholders to strengthen their sustainability initiatives and access valuable resources and expertise for green innovation.

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https://journalofsocialsciencereview.com/index.php/PJSSR
VOL-2, NO-4, (FALL-2024)

THEORETICAL IMPLICATIONS

First, this study enhances the existing literature by clarifying the relationships between Green Human Resource Management (GHRM), green innovation (GI), and competitive advantage (CA) within the Resource-Based View (RBV) framework. Second, it emphasizes that human resources can serve as a distinct source of competitive advantage when aligned with sustainability objectives. Third, the identification of competitive advantage as a mediating factor deepens our understanding of how GHRM impacts innovation processes. Finally, this research suggests new avenues for future studies to investigate the dynamics of these relationships across various contexts and industries, enriching the theoretical discourse on sustainability in organizational settings.

LIMITATIONS AND FUTURE DIRECTIONS

First, the study's sample size and scope were limited to a specific region (Lahore) and sector (manufacturing), which might impact the generalizability of the findings; future research should aim to include a broader geographical scope and additional sectors. Second, the use of a cross-sectional design captured data at a single point in time, limiting the ability to conclude causality or the long-term effects of GHRM practices on green innovation (GI) and competitive advantage (CA); thus, adopting a longitudinal approach in future studies could provide insights into the sustainability of these practices over time. Third, reliance on self-reported data may introduce bias, as respondents might exaggerate their organizations' sustainability efforts; future research could seek to incorporate objective measures to enhance validity. Finally, while the study acknowledged cultural factors, it did not thoroughly explore their influence on the adoption and effectiveness of GHRM practices; future investigations should examine how cultural contexts affect these relationships, alongside exploring the impact of external factors such as governmental policies and market conditions to provide a more comprehensive understanding of the dynamics influencing GHRM and GI.

REFERENCES

Aftab, J., Abid, N., Cucari, N., & Savastano, M. (2023). Green human resource management and environmental performance: The role of green innovation and environmental strategy in a developing country. Business Strategy and the Environment, 32(4), 1782-1798.

Al-Swidi, A. K., Gelaidan, H. M., & Saleh, R. M. (2021). The joint impact of green human resource management, leadership, and organizational culture on employees' green behavior and organizational environmental performance. Journal of cleaner production, 316, 128112.

Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of

Policy Journal of Social Science Review
ISSN (Online): 3006-4635
ISSN (Print): 3006-4627
https://journalofsocialsciencereview.com/index.php/PJSSR
VOL-2, NO-4, (FALL-2024)

Management, 17(1), 99-120.

Chen, Y. S., & Chang, C. H. (2013). Enhance environmental commitments and green intangible assets toward green competitive advantages: an analysis of structural equation modeling (SEM). Quality & Quantity, 47, 529-543.

Fang, L., Shi, S., Gao, J., & Li, X. (2022). The mediating role of green innovation and green culture in the relationship between green human resource management and environmental performance. Plos one, 17(9), e0274820.

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.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. Advances in International Marketing, 20, 277-319.

Huo, X., Azhar, A., Rehman, N., & Majeed, N. (2022). The role of green human resource management practices in driving green performance in the context of manufacturing SMEs. Sustainability, 14(24), 16776.

Iqbal, S., Akhtar, S., Anwar, F., Kayani, A. J., Sohu, J. M., & Khan, A. S. (2021). Linking green innovation performance and green innovative human resource practices in SMEs; a moderation and mediation analysis using PLS-SEM. Current Psychology, 1-18.

Jamil, S., Arif, M., & Abbas, Z. (2023). The role of human resource management in fostering sustainability: Evidence from manufacturing industries. Journal of Environmental Management and Sustainability, 12(2), 123-140.

Jamil, S., Zaman, S. I., Kayikci, Y., & Khan, S. A. (2023). The role of green recruitment on organizational sustainability performance: A study within the context of green human resource management. Sustainability, 15(21), 15567.

Jatmika, A., Entang, M., & Purba, J. H. V. (2021). THE STRATEGY OF HUMAN RESOURCES DEVELOPMENT IN IMPROVING THE COMPETITIVE ADVANTAGE (Case Study at Madinatul Qur'an Islamic Boarding School, Depok). Jhss (Journal of Humanities and Social Studies), 5(1), 91-98.

Khan, M. I., Khalid, R., & Yaseen, M. (2021). Policy challenges in promoting sustainable industrial development in Pakistan. Pakistan Journal of Environmental Policy and Planning, 28(1), 45-60.

Mittal, S., & Kaur, H. (2023). Green HRM and green innovation: Fostering environmental performance through strategic alignment. Journal of Sustainable Business Practices, 17(1), 89-102.

Muisyo, P., Su, Q., Ho, T. H., Julius, M. M., & Usmani, M. S. (2022). Implications of green HRM on the firm's green competitive advantage: the mediating role of enablers of green

Policy Journal of Social Science Review
ISSN (Online): 3006-4635
ISSN (Print): 3006-4627
https://journalofsocialsciencereview.com/index.php/PJSSR
VOL-2, NO-4, (FALL-2024)

culture. Journal of Manufacturing Technology Management, 33(2), 308-333.

Munawar, S., Yousaf, H. Q., Ahmed, M., & Rehman, S. (2022). Effects of green human resource management on green innovation through green human capital, environmental knowledge, and managerial environmental concern. Journal of Hospitality and Tourism Management, 52, 141-150.

Ninduwezuor-Ehiobu, I., Olayemi, J., & Balogun, R. (2023). Environmental challenges in the manufacturing sector: A global perspective. Sustainability and Industrial Development Journal, 15(4), 311-328.

Ninduwezuor-Ehiobu, N., Tula, O. A., Daraojimba, C., Ofonagoro, K. A., Ogunjobi, O. A., Gidiagba, J. O., ... & Banso, A. A. (2023). Exploring innovative material integration in modern manufacturing for advancing our competitiveness in the sustainable global economy. Engineering Science & Technology Journal, 4(3), 140-168.

Parida, S., & Brown, K. (2021). Green human resource management and green innovation. Responsible Management in Emerging Markets: A Multisectoral Focus, 159-183.

Rahim, F. B. T., & Zainuddin, Y. B. (2019, January). The impact of technological innovation capabilities on competitive advantage and firm performance in the automotive industry in Malaysia. In AIP conference proceedings (Vol. 2059, No. 1). AIP Publishing.

Sabir, S., Hussain, J., Sattar, I., & Faheem, M. (2024). Sustainable Development Dilemma: Unraveling the Environmental Impacts of Green Technology and Economic Growth in Pakistan. Pakistan Journal of Humanities and Social Sciences, 12(3), 2345-2357.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial least squares structural equation modeling. In Handbook of market research (pp. 1-40). Springer.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In Handbook of market research (pp. 587-632). Cham: Springer International Publishing.

Sharma, R., Verma, P., & Singh, S. (2021). Resource efficiency in manufacturing: An analysis of sustainable practices in the global context. International Journal of Manufacturing and Environmental Sustainability, 10(3), 167-182.

Sharma, S., Prakash, G., Kumar, A., Mussada, E. K., Antony, J., & Luthra, S. (2021). Analyzing the relationship of adaption of green culture, innovation, green performance for achieving sustainability: Mediating role of employee commitment. Journal of Cleaner Production, 303, 127039.

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.

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Song, W., Yu, H., & Xu, H. (2021). Effects of green human resource management and managerial environmental concern on green innovation. European journal of innovation management, 24(3), 951-967.

Wang, J., Usman, M., Saqib, N., Shahbaz, M., & Hossain, M. R. (2023). Asymmetric environmental performance under economic complexity, globalization, and energy consumption: Evidence from the World's largest economically complex economy. Energy, 279, 128050.

Yong, J. Y., Yusliza, M. Y., Jabbour, C. J. C., & Ahmad, N. H. (2020). Exploratory cases on the interplay between green human resource management and advanced green manufacturing in light of the Ability-Motivation-Opportunity theory. Journal of Management Development, 39(1), 31-49.

Zappalà, S., Radassao, L., & Toscano, F. (2023). Greening Organizations: The Relationship between Employee Environmental Concern, Perception of Advantages of Eco-Innovations, and Support for Innovation. Sustainability, 15(24), 16718.