The role of green HRM practices in promoting environmental sustainability within MSMEs

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Abstract: This study explores the how Micro, Small and Medium Enterprises (MSMEs) can incorporate Green Human Resource Management (GHRM) practices into their businesses and measure the effect of these practices on achieving sustainable business outcomes. Growing concerns about the environment (e.g. climate change, air pollution, depleting natural resources) and the pressure on organisations to respond to these issues by using sustainable methods has led to GHRM being seen as an important way for organisations to develop environmentally conscious processes as part of the way they operate within their businesses to promote environmentally friendly activities, improve environmental performance and promote the long-term success of the business. This paper also discusses the relationship between GHRM and some of the other factors that influence GHRM implementation. Specifically, these factors are Sustainable Work Culture (SWC), Green Innovative Business (IGB) and Environmental Innovative Business (EEI). The methodology employed by the authors involved the collection of survey data and the use of Smart PLS 4.0 to analyse the survey results. Hypotheses regarding the relationship between these factors and GHRM implementation were examined. The results of the analysis showed that SWC, IGB, and EEI all had strong and positive influences on GHRM while other factors, including Workplace Culture (WPC) and energy efficient buildings, displayed moderate but still substantial influence. The results of the study highlight the necessity for organisations to incorporate HR procedures into their business operations to achieve GHRM and to comply with environmental goals and legislation. Solutions aimed at improving business operations include technological solutions; however, the authors believe that creating a workplace culture that is environmentally conscious is also essential for organisations to achieve environmentally responsible outcomes. The result suggests that, embedding sustainable development practices in MSMEs through GHRM practices can be an important factor for improving an MSMEs sustainability performance and to have the greatest potential for long-term environmental benefit is to foster a level of green innovation not only for MSMEs but for all. The future of research will need to identify the sector size differences within to have a better understanding of the long-term impacts of GHRM on the organizational and environmental performance of each sector.

Keywords: Green HRM, Sustainability, Sustainable work culture, Smart PLS, Climate change

1. Introduction

In the 21st century, there are many environmental problems, which change the old ways of doing things and create challenges for economic growth. Now, problems such as climate

change, wildlife loss, lack of availability of resources and pollution have become world-wide. They cause harm to nature as well as man (Leddin, 2024). The requirement for cooling China from the Intergovernmental Panel on Climate Change is that it takes urgent steps. It means that we must change the entire industrial system and the very use of energy in business too. As a result, from merely making money, management is changing to also taking care of sustainability. This includes environmental protection, social welfare and economic goals. Sustainability is a more serious problem in fast-developing economies where industrial growth is putting vulnerable people and ecosystems at risk (Zhang et al., 2024). Environmental damage is a serious problem in India. Air pollution causes more than one million premature deaths each year, water pollution affects about 600 million people, and changes in the climate endanger farming on which 1.4 billion depend for their livelihoods (Zhang et al., 2024). We must seek new pathways to economic growth that do not harm the environment, ensuring good living standards for all. Derived from the UN Global Environment Outlook, environmental problems are relatively new to the world, clashing with traditional right living and sustainable growth (De Corato et al., 2024). Even though the liabilities are enormous, environmentally sound development can make for a bright future (De Corato et al., 2024). Technology for Sustainable Development Meanwhile, business is both the major creator of environmental problems and a key factor in their solution as enterprises consider their impact on all aspects of society. Business activities in the private sector account for about 70% of the emissions of global greenhouse gases while they use large quantities of water, energy and materials which create resource exhaustion or an unchanging landscape (Al Mubarak et al., 2024). Its capabilities for innovation, its investment strengths and its operational scale mean that business is a very powerful driving force for environmental solutions, from clean technology through resource efficiency to circular economy practices and sustainable supply chains (Al Mubarak et al., 2024; Yin et al., 2023).

As environmental risks increasingly affect competitive advantage, operational continuity, and stakeholder value creation, the business case for environmental sustainability has strengthened dramatically. In business valuation, access to capital, and supply chain resilience are at risk from climate-related physical and transition risks environmental capabilities create competitive advantages through cost reduction. Other important factors are innovation and stakeholder value enhancement (Guo & Li, 2025). Institutional investors managing over US$30 trillion in assets have agreed to include environmental criteria in their investment decisions, creating a powerful market force that rewards corporate environmental performance (Bindeeba et al., 2025).

However, turning sustainability commitments into actual operations requires systematic capability building. This means aligning people, processes, and resources with the environment. For one, technology, such as renewable energy technologies and efficient debris disposal systems, merely provide the foundation for sustainable operations They are a necessary step but not enough to achieve real sustainability. Sustainable organizational outcomes emerge from complex socio-technical systems in which human factors the knowledge, skills, motivation, and participation of those involved in environmental intervention determine success or failure (Smuts & van der Merwe, 2025). This realization has spurred interest in human resource management as a strategic lever for sustainability,

leading to the emergence of Green Human Resource Management (GHRM) as a comprehensive approach embedding ecological awareness into the DNA of an organization. Green Human Resource Management is the logical embodiment of environmental goals within human resource policies, practices, and strategies (see Figures 1 and 2). It represents an approach to developing demographic capabilities for environmental performance and sustainability (Ahmad et al., 2025). From recruitment and selection to training and development, through performance management and employee relations – the full range of managerial activities HR is reimagined to support goals for environmental protection and sustainability.

2. Literature Review

The study, "Green HRM: People Management Commitment to Environmental Sustainability" by Gill Mandip provides complete framework for understanding how to align human resource management with environmental goals. In spite of the ever increasing importance of sustainability on the part of stakeholders such as management, staff, and customers there is still a significant gap left outside HRM systems in integrating environmental management (Mandip, 2012). Green HRM is seen as human resource management activists using human resource policies to promote renewable resources management and environmental responsibility as a key part of corporate social responsibility (CSR) (Malik et al., 2021). The author suggests a process model that goes from the input of HRM functions to employee exit, and demonstrates how different stages can contribute to environmental goals.

Recruitment is proposed as a starting point for environmental integration, with job descriptions also reflecting environmental responsibilities and interview processes set so that a candidate's environmental values can be discerned. In the U.K., surveys find that a corporate environment reputation has significant impact on the job seeking intentions of people. This reveals green employer branding to intake fresh blood through attraction and retention of talent is more substantial than mere window dressing. Performance management systems are discussed as tools for measuring environmental contributions with firms like Tata supporting corporate wide standards. Appraisals may include green metrics such as carbon emission reduction and environmental incident reporting so that a learning culture of accountability begins to germinate.

The foundation of developing environmental capacity at all levels across the organization is training. The use of successful industry practices, including the sponsored victory tour and the Green Card Lottery, was derived from successful firms such as Allied Signal and Feizi. The need for green teams and the necessity for conducting training needs analysis to provide grassroots environmental education is advocated. As demonstrated by case studies from American Airlines and Dow Chemical, employee involvement and employee participation are strong enablers of eco-innovation and produce benefits every day. Ideas and actions such as suggestion schemes and problem-solving circles empower employees to contribute to sustainability efforts.

The article also looks at compensation and reward systems as motivating factors for exhibiting green behavior. Companies like DuPont and 3M incentivize their employees who contribute to an environmental initiative through monetary and/or non-monetary (e.g., sabbaticals and eco-gifting) awards. It also discusses the role of grievance and disciplinary

procedures in enforcing compliance with environmental standards, although it recommends that individuals who are caught violating those standards be dealt with as if they had broken a contract. The article introduces the concept of green jobs, pointing out that certain sectors will be growing as society transitions to sustainable energy systems and as waste disposal practices become more acceptable at homes and businesses.

2.1 Research objectives

1. To explore the various innovative of green HRM practices being used by MSME.
2. To investigate the effect of green HRM practices towards sustainability.

2.2 Hypotheses

The following hypotheses are expected to be validated during the analysis in the context of the stated objectives:

Ha1: Sustainable Work Culture positively influences the adoption and implementation of Green HRM practices within MSME.

Ha2: Incentives for green behavior have a positive and significant impact on green human resource management (HRM) practices.

Ha3: A paperless work culture has a significant positive impact on the adoption and effectiveness of green HRM practices within MSME.

Ha4: There is a significant positive relationship between energy-efficient infrastructure and the implementation of green HRM practices in MSME.

Ha5: Green HR policies positively influence the implementation of green HRM practices in MSME.

Ha6: Aligning HR practices with the legal environment positively influences the adoption and implementation of green HRM practices within MSME.

3. Methodology

The survey questions responses were collected using a five-point Likert scale from Strongly disagree, coded as 1 in the analysis, to Strongly agree, coded as 5 in the analysis. Here are the components, dependent and independent variables: the independent ones EEI, GHP, GHRM, IGB, PWC, SWC and the dependent one AHRP. For the survey answers collection, we used a convenience sample method as it is more flexible. In sustainable management, convenience sampling is used frequently, e.g. related to sustainability, it is applied in management, social and market research. The use of convenience sampling for the analysis is relevant as well as it has been previously used in studies of business and social sciences in developing countries (Jum'a & Bushnaq, 2024; Varshney & Rajwanshi, 2019).

3.1 Data analysis, result and discussion

We utilized Smart PLS 4.0 entirely in the partial least square (PLS) data analysis. This paper begins with two fundamental steps in data analysis. First, examine the measurement model to ensure that the constructs demonstrate sufficient reliability and validity. Finally, the formulated hypotheses were tested by appraisal of the structural model. In addition, a bootstrap resampling technique was used to estimate the coefficients of the analysis. Specially, the replicates of the sample data set are generated from an estimated sampling distribution and used for statistical testing.

3.2 Measurement model analysis

Next, the measures were further tested from three perspectives: construct reliability, indicator convergent validity and discriminant validity (Sarstedt et al., 2019). To evaluate the measurement model, we first justified internal consistency using the Cronbach's alpha and composite reliability indicators these criteria facilitate the measurement of assigned indicators. All the α and composite reliabilities were found to be above 0.7, so internal consistency and reliability was achieved (Table 1). We checked the convergent validity using the outer loading and average variance extracted (AVE). An internal consistency test was proposed based on Cronbach's alpha. Afterwards, composite reliability was also tested, it was found that on the whole all outer loadings were greater than 0.708, as revealed in the (Table 2). Although the items in question had significant effect on the reliability or validity of the constructs, on covering this point itself truly not is so clear (Sarstedt et al., 2020) Finally, the discriminant validity (Table 3) was checked using HTMT and Fornell–Larcker criterion (Fornell & Larcker, 1981). All the HTMT values were lower than the minimum threshold of 0.85 and the Fornell–Larcker is also appropriate, so discriminant validity is met here.

To check for Common Method Bias, we employed Harman's single factor test it is shown in our results that the first factor explains exactly 50% of variance, indicating that there isn't a major problem with common method bias in our data set. In addition, the Chi-square test of the single-factor model was significant, suggesting that the single-factor model was not a good fit for the data. For the structural model analysis, we report the detailed path coefficients and their significance levels.
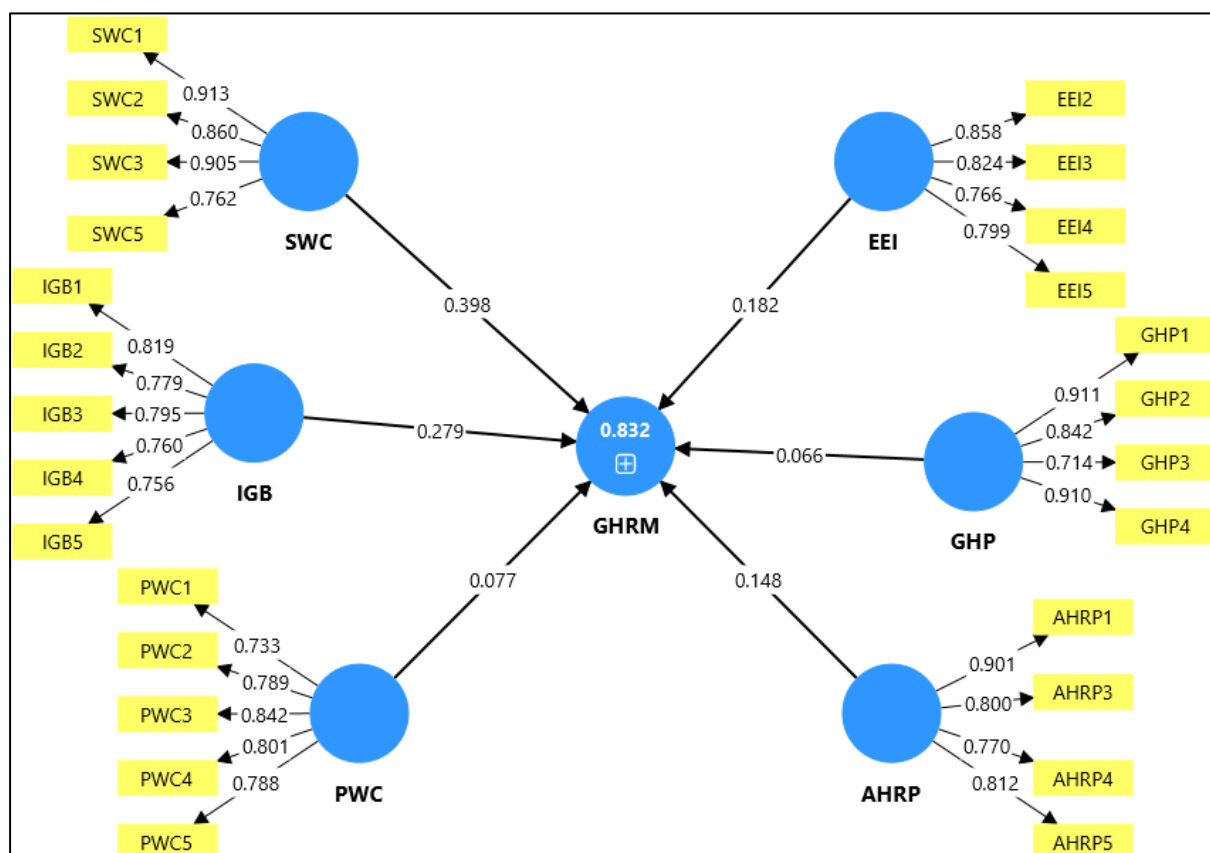
Figure 1: Measurement Model
Source: Authors Complied using the Smart pls 4.0

Table 1: Result of measurement model

	AHRP	EEI	GHP	GHRM	IGB	PWC	SWC
AHRP1	0.901	-	-	-	-	-	-
AHRP3	0.800	-	-	-	-	-	-
AHRP4	0.770	-	-	-	-	-	-
AHRP5	0.812	-	-	-	-	-	-
EEI2	-	0.858	-	-	-	-	-
EEI3	-	0.824	-	-	-	-	-
EEI4	-	0.766	-	-	-	-	-
EEI5	-	0.799	-	-	-	-	-
GHP1	-	-	0.911	-	-	-	-
GHP2	-	-	0.842	-	-	-	-
GHP3	-	-	0.714	-	-	-	-
GHP4	-	-	0.910	-	-	-	-
GHRM1	-	-	-	0.881	-	-	-
GHRM2	-	-	-	0.905	-	-	-
GHRM3	-	-	-	0.898	-	-	-
GHRM4	-	-	-	0.915	-	-	-
GHRM5	-	-	-	0.816	-	-	-
IGB1	-	-	-	-	0.819	-	-
IGB2	-	-	-	-	0.779	-	-
IGB3	-	-	-	-	0.795	-	-
IGB4	-	-	-	-	0.760	-	-
IGB5	-	-	-	-	0.756	-	-
PWC1	-	-	-	-	-	0.733	-
PWC2	-	-	-	-	-	0.789	-
PWC3	-	-	-	-	-	0.842	-
PWC4	-	-	-	-	-	0.801	-
PWC5	-	-	-	-	-	0.788	-
SWC1	-	-	-	-	-	-	0.913
SWC2	-	-	-	-	-	-	0.860
SWC3	-	-	-	-	-	-	0.905
SWC5	-	-	-	-	-	-	0.762

Table 2: Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AHRP	0.840	0.851	0.893	0.676
EEI	0.828	0.839	0.886	0.660
GHP	0.869	0.908	0.910	0.719
GHRM	0.929	0.931	0.947	0.781
IGB	0.841	0.843	0.887	0.612
PWC	0.855	0.876	0.893	0.626
SWC	0.883	0.893	0.920	0.743

Table 3: Discriminant Validity (HTMT Ratio)

	AHRP	EEI	GHP	GHRM	IGB	PWC	SWC
AHRP	-	-	-	-	-	-	-
EEI	0.043	-	-	-	-	-	-
GHP	0.173	0.572	-	-	-	-	-
GHRM	0.236	0.887	0.555	-	-	-	-
IGB	0.111	0.046	0.451	0.061	-	-	-
PWC	0.066	0.706	0.331	0.695	0.787	-	-
SWC	0.077	0.887	0.556	0.566	0.466	0.666	-

Table 4: Discriminant Validity (Fornell and Larcker)

	AHRP	EEI	GHP	GHRM	IGB	PWC	SWC
AHRP	0.822	-	-	-	-	-	-
EEI	0.035	0.812	-	-	-	-	-
GHP	0.157	0.495	0.848	-	-	-	-
GHRM	0.217	0.786	0.516	0.884	-	-	-
IGB	0.071	0.761	0.403	0.833	0.816	-	-
PWC	0.049	0.637	0.334	0.662	0.697	0.791	-
SWC	0.073	0.767	0.498	0.856	0.782	0.618	0.862

Table 5: Hypothesis Testing Result

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
AHRP -> GHRM	0.148	0.147	0.023	6.514	0.000
EEI -> GHRM	0.182	0.179	0.046	3.978	0.000
GHP -> GHRM	0.066	0.065	0.024	2.722	0.007
IGB -> GHRM	0.279	0.279	0.052	5.362	0.000
PWC -> GHRM	0.077	0.078	0.033	2.350	0.019
SWC -> GHRM	0.398	0.397	0.051	7.745	0.000

Both the HTMT Ratio and the Fornell-Larcker criterion provide consistent evidence of good discriminant validity for each of the measured constructs (in Tables 4 & 5). The HTMT ratio shows a clear distinction between all constructs, as its values are all considerably below a threshold of 0.85, without a significant level of correlation between them. Furthermore, the Fornell-Larcker analysis supports this conclusion, because the square root of the average variance extracted (AVE) for each of the constructs is greater than the correlation of those constructs with any of the other constructs. Therefore, it can be concluded that the constructs are sufficiently distinct from the other constructs, and only a few of the constructs share a low level of correlation, such as EEI and GHRM, and EEI and SWC. Thus, it is evident that both the HTMT and Fornell-Larcker methods provide adequate support for the conclusion that the constructs are sufficiently distinct from one.

4. Structural Model

The findings recognize several strong associations between different variables and GHRM. AHRP displays a Standard Blast Difference with standard deviation of 0.023 T = 6.514 P=0,

indicating strong positive statistical significant effect on GHRM DMU Result GHRM Min Mean. Furthermore, EEI has a mean difference of 0.179 and standard deviation 0.046, the T value is 3.978 with P-value 000 so it also has a significant positive effect on GHRM as well. GHP is significant but has less impact (mean difference=0.065, SD=0.024, T stat.=2.722; P=0.007). The correlation between IGB and GHRM is positive as shown by the mean difference of 0.279, standard deviation of 0.052, T value 5.362 with P value of 0.000 indicating a very significant relationship. PWC, as indicated by a T value of 2.350 and a P-value 0.019 between GHRM is also having mean difference of 0.078, R2 value is 0.035; (having lower effect) with SD as 0.033 moderate effect on GHRM for organizational component perception. Last, SWC shows the most salient effect (mean = 0.397; sd = 0.051; T = 7.745; p < 0), which reflect very strong and statistically relevant positive relationship with GHRM. In general, all variables except GHP present significant positive effects on the GHRM, where AHRP, IGB and SWC exert the most powerful influences.
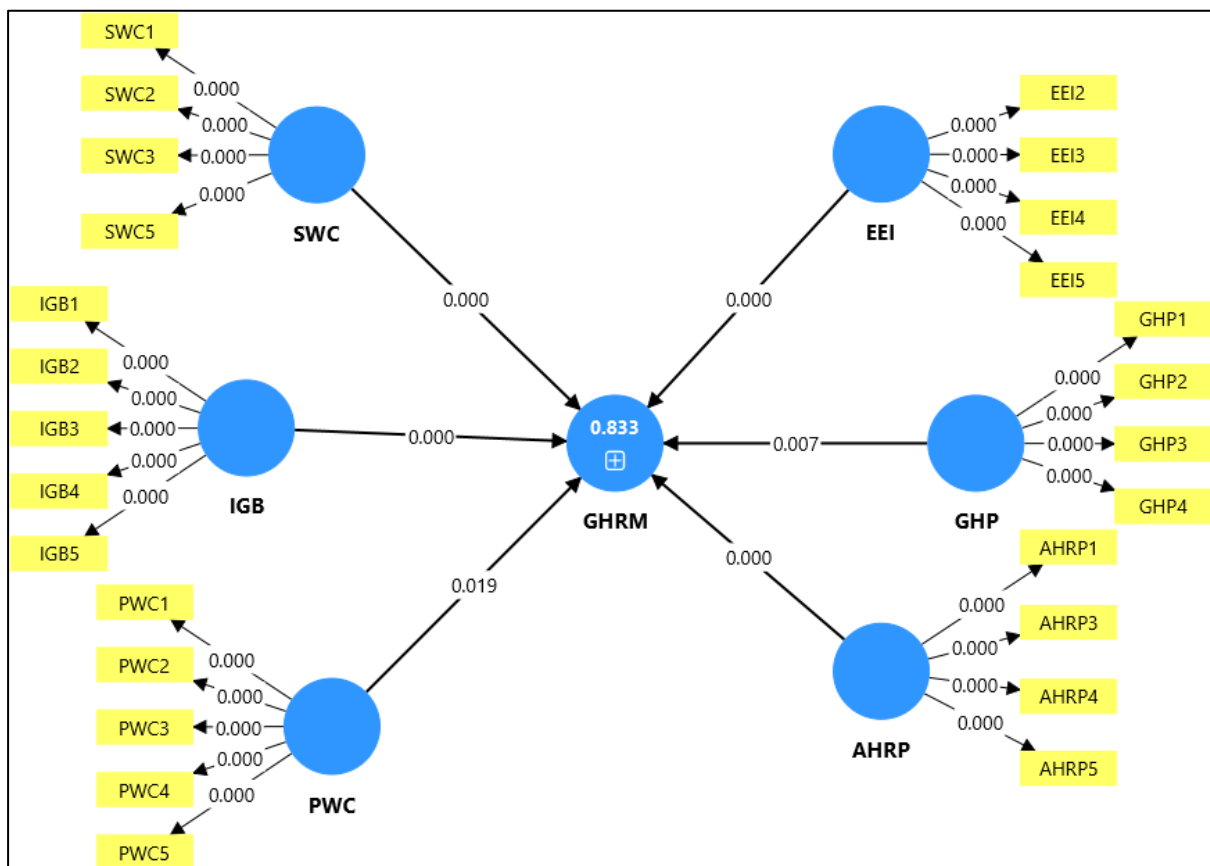
Figure 2: Structural Model
Source: Authors Complied using the Smart pls 4.0

5. Discussion

The study examines the adoption of the Green Human Resource Management (GHRM) in Micro, Small, and Medium Enterprises (MSMEs) and demonstrates the impact of such practices on sustainability performance. Test of the measurement model resulted in acceptable reliability and validity, providing good basis for hypothesis testing.

The hypothesis testing indicates that several predictors influence GHRM, with the most significant relationships observed for AHRP, IGB, and SWC. AHRP had a high T-statistic of 6.514, with a positive R influence on GHRM(P = 0.000). This means that the presence of the

SWC is an antecedent to the adoption of GHRM practices as predicted in the research. The SWC variable is significant at the value of 7.745 T-statistic, giving additional evidence that this construct will be able affect sustainable practices in MSMEs. EEI and IGB also have significant positive effects, at 3.978 (with a T statistic) and 5.362, with P values of less than.05, thereby verifying the view that environmental innovation and green practices are important factors for green human resource management. Prior research has shown a relationship between the organisation Dimension or district and the environmental value of business activities within a greener business world. PWC and GHP both share significantly lower, but still relevant, ties to GHRM. For example, there is moderate T-stat (T stat) for GHP (2.722) with P-Value (>0.05). The minor T-stat (2.350, P=0.019) of PWC indicates a moderate influence on GHRM resulting from workplace culture and energy-saving awareness in the adaptation of GHRM policies compared to the greater roles of working culture and green innovation. The research strongly supports a positive correlation between the integration of human resource management activities and the targets associated with environmental sustainability.The energy efficient technology solutions, including infrastructure development and paperless offices, will also play a role if they are not adopted – and become an important catalyst for this shift towards more sustainable behaviour within MSMEs lies in changing organisational culture, as well as getting people involved who can convert Green practices into daily practice. Furthermore, there is the HRM practice-environmental fit which increases effectiveness of GHRM.

6.   Conclusion

The findings of this research indicate that GHRM provides support for the implementation of GHRM through building a SWC and fostering GHRM practices. The relationship between GHRM factors and sustainable work cultures has significant effects. The T-statistic of 7.745 is the strongest indicator of the relationship between GHRM and sustainable work cultures and indicates a strong link between the SWC and GHRM practices. Additionally, this research demonstrates that green innovation and energy efficiency are integral to an organisation's human resources (HR) policies which promote the goals of sustainability. Although there may have been benefits of adhering to Environmental Legislation and creating healthy and green premises, the evidence presented within the results of this study support that for GHRM to be effective, businesses must align their objectives to meet both legal requirements as well as environmental requirements. The research provides some guidance on a path forward; in addition to implementing some technical aspects such as paperless offices and energy efficient facilities, creating an ecological spirit within the workplace, as well as engaging staff and supply chain partners in green initiatives will ultimately be the most effective way to embrace a sustainable mode of operation for the MSME sector. Green HRM (GHRM) strategies can significantly enhance MSMEs' sustainable performance through GHRM practices that help them reach their ecological objectives. This study highlights GHRM's increasing relevance and depicts the reasons why an organization's use of both technical and cultural/behavioural change methods are essential for achieving long-term sustainability goals. Additional studies may focus on the differences in GHRM adoption among sectors, as well as the medium- and long-term impacts upon institutionalized organizations regarding environmental protection in MSMEs.

References

Ahmad, S., Javed, U., Sharma, C., & Siddiqui, M. S. (2025). Green Human Resource Management: Analyzing sustainable practices and organizational impact through a Word2Vec approach. *Green Technologies and Sustainability*, *3*, 100224. https://doi.org/10.1016/j.grets.2025.100224

Al Mubarak, F., Rezaee, R., & Wood, D. A. (2024). Economic, Societal, and Environmental Impacts of Available Energy Sources: A Review. *Eng*, *5*, 1232–1265. https://doi.org/10.3390/eng5030067

Bindeeba, D. S., Tukamushaba, E. K., & Bakashaba, R. (2025). Toward a holistic model of sustainable investment decision-making in SMEs: a structural approach in a developing economy. *Future Business Journal*, *11*, 176. https://doi.org/10.1186/s43093-025-00598-4

De Corato, U., Viola, E., Keswani, C., & Minkina, T. (2024). Impact of the sustainable agricultural practices for governing soil health from the perspective of a rising agri-based circular bioeconomy. *Applied Soil Ecology*, *194*, 105199. https://doi.org/10.1016/j.apsoil.2023.105199

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*, 39–50. https://doi.org/10.2307/3151312

Guo, X., & Li, R. (2025). Climate physical risks and corporate supply chain resilience: How do investor sentiment and risk-taking behaviors influence supply chain operations? *Finance Research Letters*, *85*, 107903. https://doi.org/10.1016/j.frl.2025.107903

Jum'a, L., & Bushnaq, M. (2024). Investigating the role of flexibility as a moderator between supply chain integration and firm performance: the case of manufacturing sector. *Journal of Advances in Management Research*, *21*, 203–227. https://doi.org/10.1108/JAMR-07-2023-0188

Leddin, D. (2024). The Impact of Climate Change, Pollution, and Biodiversity Loss on Digestive Health and Disease. *Gastro Hep Advances*, *3*, 519–534. https://doi.org/10.1016/j.gastha.2024.01.018

Malik, S. Y., Mughal, Y. H., Azam, T., Cao, Y., Wan, Z., Zhu, H., & Thurasamy, R. (2021). Corporate social responsibility, green human resources management, and sustainable performance: Is organizational citizenship behavior towards environment the missing link?. *Sustainability*, *13*, 1044. https://doi.org/10.3390/su13031044

Mandip, G. (2012). Green HRM: People management commitment to environmental sustainability. *Research Journal of Recent Sciences*, *1*, 244–252.

Sarstedt, M., Hair, J. F., Cheah, J.-H., Becker, J.-M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order Constructs in PLS-SEM. *Australasian Marketing Journal*, *27*, 197-211. https://doi.org/10.1016/j.ausmj.2019.05.003

Sarstedt, M., Hair, J. F., Nitzl, C., Ringle, C. M., & Howard, M. C. (2020). Beyond a tandem analysis of SEM and PROCESS: Use PLS-SEM for mediation analyses! *International Journal of Market Research*, *62*, 288-299. https://doi.org/10.1177/1470785320915686

Smuts, H., & van der Merwe, A. (2025). Embedding Sustainability: Sociotechnical Knowledge Management Guidelines for Digital Decarbonization in the Society 5.0 Era. *Sustainability*, *17*, 953. https://doi.org/10.3390/su17030953

Varshney, T., & Rajwanshi, R. (2019). Examining social capital and participation in networking sites. *Journal of Advances in Management Research*, *16*, 645–658. https://doi.org/10.1108/JAMR-12-2018-0112

Yin, S., Jia, F., Chen, L., & Wang, Q. (2023). Circular economy practices and sustainable performance: A meta-analysis. *Resources, Conservation and Recycling*, *190*, 106838. https://doi.org/10.1016/j.resconrec.2022.106838

Zhang, S., Xu, G., Shu, Y., Zhu, J., & Cheng, W. (2024). Comparing developed and emerging nations' Economic development with environmental footprint for low-carbon competitiveness. *Heliyon*, *10*, e34039. https://doi.org/10.1016/j.heliyon.2024.e34039