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The role of green HRM practices in promoting environmental sustainability: A PLS-SEM approach

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Abstract

This study investigates the impact of Green Human Resource Management (GHRM) practices on environmental behavior within the educational sector, specifically focusing on private universities in the Punjab region. Employing a structured questionnaire, data was collected from 300 employees, analysed through Structural Equation Modelling (SEM) to determine the relationships between various GHRM practices and their effects on environmental sustainability. The core GHRM practices examined include Green Recruitment and Selection (GRS), Green Performance Management and Appraisal (GPMA), and Green Training and Development (GTD). The findings highlight a significant direct relationship between GHRM practices and environmental sustainability, underscoring the pivotal role of HRM in fostering an environmentally sustainable workplace. Additionally, the study reveals an indirect relationship between Green Training and Development (GTD) and environmental sustainability, mediated by pro-environmental behaviour. This underlines the importance of embedding ecological consciousness and empowerment among employees to achieve sustainable environmental outcomes.

Keywords: Green human resource management (GHRM), green recruitment and selection (GRS), green performance management and appraisal (GPMA), green training and development (GTD), environmental sustainability (ES), structural equation modelling (SEM), pro-environmental behaviour

Introduction

Green HRM adopts an ecological perspective and seeks to establish a green workplace that motivates employees to carry out their duties in the most ecologically conscious way possible. According to current green HRM guidelines and procedures, hiring, satisfying, motivating self-improvement, and mentoring people in line with the institution's goals is one way that top management encourages employee responsibility toward the environment and team spirit in this region.

In recent times the importance of Environmental issues and Sustainable development has increased both in the developed and developing nations. Growing concern for global environment and the development of international standards for Environmental Management has created a need for businesses to adopt 'Green practices. With these concerns organizations today have become more conscious about the growing importance of the integration of Environmental Management and Human Resource Management i.e. 'Green HRM' Practices. Green HRM is the use of HRM policies to promote the sustainable use of resources within business organizations and more generally, promotes the cause of environmental sustainability.

Green HRM Practices: Employees in any firm may enhance environmental conditions by implementing pro-environmental activities, as is now widely acknowledged (Lülfes and Hahn, 2013) [22]. Organizations are taking more and more environmental activities because of the circumstances brought on by the irreversible change in the climate, environmental degradation, and resource shortages (Zibarras and Coan, 2015) [32]. Globally, environmental protection is currently a growing trend. Environmental protection is a social responsibility that forces many organizations to develop regulations (Mcguire and Germain, 2015) [24]. GHR practices are when a company implements various strategies, plans, policies, and procedures for environment.

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Literature Review

Dias-Sardinha & Reijnders, (2001) ^[33] analyzed the conceptual framework of environmental sustainability in organizations through a literature review and case studies. The study sought to define the stages of sustainability development within companies. It concluded that a progressive approach, starting from compliance to proactive sustainability practices, is crucial for long-term environmental stewardship.

Jabbour & Santos, (2008) ^[20] employed a qualitative analysis of companies recognized for their environmental management practices. The study aimed to explore the implementation of green performance appraisal systems. Findings suggest that feedback and recognition related to environmental goals are vital for enhancing green performance.

Jabbour, (2013) ^[19] implemented a case study methodology in a Brazilian manufacturing company to assess the effectiveness of environmental training programs. The objective was to examine the role of training in promoting sustainable practices. The study concluded that comprehensive and continuous training programs are essential for embedding sustainability into organizational culture.

Paillé & Boiral, (2013) ^[25] utilized a survey to investigate factors influencing pro-environmental behavior in the workplace. The study aimed to identify key drivers of environmental behavior among employees. Results highlighted the importance of organizational support and personal values in promoting sustainable actions.

Zibarras & Coan, (2015) ^[32] conducted an exploratory study using interviews and surveys in UK-based companies to examine green reward and compensation strategies. The objective was to assess how such incentives influence environmental performance. Results indicated that both monetary and non-monetary rewards play a significant role in motivating employees towards achieving sustainability objectives.

Tariq *et al.*, (2016) ^[31] conducted interviews and surveys within several organizations to examine the influence of employer branding on attracting environmentally conscious candidates. Findings indicated that green employer branding is crucial for attracting talent aligned with sustainability goals.

Siyambalapitiya *et al.*, (2018) ^[29] explored the impact of green practices on employee motivation and competence using a questionnaire distributed among employees in the hospitality industry. Results suggested that GHRM practices not only enhance environmental performance but also boost employee morale and skill development.

Saeed *et al.*, (2018) ^[26] used a structural equation modeling (SEM) approach to explore the relationship between GHRM practices and pro-environmental behavior among employees in the manufacturing sector. The study aimed to understand how GHRM can foster a culture of sustainability. It was found that green training and awareness significantly impact employees' environmental behaviors.

Rizvi & Garg, (2021) ^[34] used a survey methodology to explore the impact of GHRM on organizational sustainability in the manufacturing sector. The study aimed to understand how GHRM practices could be integrated into broader sustainability strategies. The results indicated a positive relationship between GHRM practices and

sustainability performance, emphasizing the role of leadership in driving green initiatives.

Gul *et al.*, (2021a) ^[35] conducted a case study analysis in the service industry, focusing on the role of GHRM in enhancing environmental and economic performance. By examining several firms, the study sought to identify specific GHRM practices that contribute to sustainable outcomes. Findings highlighted the importance of green training and employee engagement in achieving sustainability goals.

Jamil *et al.*, (2021a) ^[36] utilized a mixed-methods approach to investigate how green recruitment and selection influence environmental sustainability in the tech industry. The objective was to link GHRM practices with corporate environmental responsibility. Results showed that organizations with strong environmental values in their recruitment processes achieved better sustainability outcomes.

Hameed *et al.*, (2021) ^[37] employed a quantitative survey among companies in the energy sector to assess the effect of GHRM on economic and environmental performance. The study found that comprehensive GHRM practices were significantly associated with improvements in both areas, underlining the dual benefit of GHRM for organizations.

Anjali Gupta *et al.* (2022) ^[11] delve into the intricacies of implementing GHRM practices, addressing the challenges and strategies crucial for successful integration. Their findings, suggest a comprehensive approach to embedding green principles within HRM is essential for achieving desirable environmental outcomes. The study underscores HR's instrumental role in championing the adoption of sustainable practices across organizational levels, thus ensuring a holistic approach to environmental stewardship.

Ahmed Ibrahim and M. Kilase (2023) ^[2] offer an insightful analysis through their investigation into the GHRM practices at Ma'aden Company, revealing a substantial positive correlation with sustainable development. Their work emphasizes the imperative of integrating GHRM practices to safeguard environmental sustainability and promote safety. The authors advocate for the strategic role of HR departments in leading initiatives that not only propel the organization forward but also align with broader global sustainability objectives.

P. B. *et al.* (2023), which delves into GHRM as a strategic organizational approach. Their research sheds light on key activities such as minimizing paper use, enhancing recycling efforts, and advocating for teleconferencing to mitigate travel-related environmental impacts. These practices are identified as crucial for cultivating a corporate culture that not only values but actively contributes to environmental sustainability. This study is instrumental in highlighting the practical aspects of GHRM in fostering an eco-conscious work environment

Research Methodology

This section outlines the research design, sampling design, data collection method, and the theoretical framework employed in the study to examine the impact of Green Human Resource Management (GHRM) practices on environmental sustainability, mediated by pro-environmental behavior.

Research Design

The study adopts a causal research design to explore the relationships between the independent variable (Green HR functions), the dependent variable (Environmental Sustainability), and the mediating variable (Pro-environmental Behavior).

Sampling Design

A proportionate stratified random sampling method is utilized for sample selection from the target population within the northern India Punjab region. This approach involves identifying distinct strata or segments within the study population that are expected to exhibit variations in specific characteristics. The sample comprises 300 employees, with 60 employees from each of the five private sector universities in Punjab being selected to ensure representation across different strata.

Data Collection Method

Data is collected using a pre-established questionnaire by Saeed *et al.* (2018) [26], focusing on Green HR functions and their impact on environmental sustainability. The questionnaire employs a 5-point Likert scale, providing a spectrum from "strongly agree" to "strongly disagree" for participants to express their perceptions or attitudes towards the statements related to GHRM and environmental sustainability.

Theoretical Framework

The study is anchored in two main theoretical perspectives: the Resource-Based View (RBV) and Institutional Theory.

RBV, as discussed by Jackson *et al.* (2011) [38], suggests that GHRM practices can foster unique organizational capabilities and competitive advantages. Institutional Theory emphasizes the influence of external pressures, including regulatory mandates and stakeholder expectations, on the adoption of green HR practices.

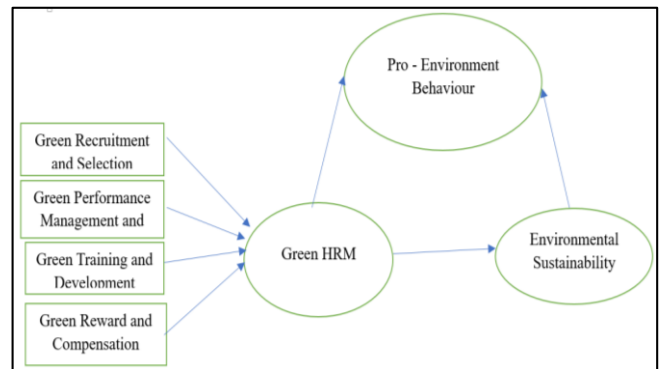


Fig 1: Green HRM Practices in Promoting Environmental Sustainability and Mediation role of Pro - Environment Behaviour

Given its foundational role in guiding the study's hypotheses and providing a lens for interpreting findings, the theoretical framework is more appropriately discussed in the literature review and theoretical underpinnings section rather than within the research methodology or data analysis sections. It sets the stage for understanding the rationale behind the study and interpreting its outcomes within established theoretical contexts.

Table 1: Research Methodology Matrix

Component	Description
Research Design	Causal design to explore relationships between GHRM practices, environmental sustainability, and pro-environmental behavior.
Sampling Design	Proportionate stratified random sampling from 5 private universities in Punjab, totalling 300 employees.
Data Collection Method	Questionnaire by Saeed <i>et al.</i> (2018) [26] with a 5-point Likert scale, focusing on Green HR functions and environmental sustainability.
Theoretical Framework	Resource-Based View (RBV) and Institutional Theory to analyze GHRM's impact on creating unique capabilities and responding to external pressures.

Reliability and Validity

Reliability and Validity Analysis To measure the scale reliability Cronbach's alpha was used which is also called as reliability coefficient. The Cronbach's alpha for each variable was greater than the acceptable value of 0.7. Cronbach's alpha of each variable is acceptable.

Composite Reliability (CR)

Composite reliability (CR) is a measure of the internal consistency of a set of items within a construct, ensuring that they reliably represent the concept being measured. It gauges the overall reliability of the composite scores generated from observed variables that signify a latent construct. A CR value above 0.7 is commonly accepted as indicating a satisfactory level of internal consistency among the items within a construct. This threshold is based on the premise that higher CR values demonstrate a stronger, more reliable measure of the underlying construct, thereby confirming the internal consistency of the measurement scale.

Convergent Validity

Convergent validity is a component of construct validity that

assesses how well a construct is represented by its indicators. It involves evaluating the degree to which two measures of the same concept are correlated. The Average Variance Extracted (AVE) is a primary measure used to assess convergent validity, with AVE values greater than 0.50 considered acceptable. This indicates that more than half of the variance observed in the items is attributable to the construct they are intended to measure. Convergent validity ensures that constructs are adequately represented by their indicators, reflecting their true association with the concept being investigated.

Both composite reliability and convergent validity are critical in ensuring the accuracy and reliability of constructs in a study, with each playing a distinct role in the validation process of measurement scales. Table 2 presents the results of the convergent reliability analysis, illustrating the composite reliability and AVE values for each construct examined in the study. The table indicates that all constructs meet the minimum criteria for both composite reliability and average variance extracted, thus affirming the reliability and convergent validity of the measurement scale employed.

Table 2: Reliability and Validity analysis

Dimensions	Cronbach alpha	CR	AVE
Environmental Sustainability	0.829	0.772	0.582
Green Performance Appraisal	0.951	0.825	0.864
Green Training and Development	0.853	0.829	0.754
Green Reward and Compensation	0.805	0.802	0.803
Green Recruitment and Selection	0.836	0.814	0.812
Pro environmental Behavior	0.805	0.754	0.656

Discriminant validity

Discriminant validity is the level to which each LV is different in the model for other constructs (Hair *et al.*, 2014) [13, 14]. To construct discriminant validity, the AVE’s square

root should be greater for each construct than all the inter correlations among the constructs in the model for Fornell-Larcker criterion (Chin 2010; Hair *et al.*, 2014) [7, 13, 14].

Table 3: Discriminant Validity Analysis of Scale

	Environmental Sustainability	Green Performance Appraisal	Green Training and Development	Green Reward and Compensation	Green Recruitment and Selection	Pro environmental Behaviors
Environmental Sustainability	0.763					
Green Performance Appraisal	0.489	0.930				
Green Training and Development	0.584	0.627	0.868			
Green Reward and Compensation	0.600	0.443	0.627	0.896		
Green Recruitment and Selection	0.638	0.432	0.480	0.500	0.901	
Pro environmental Behaviour	0.485	0.629	0.593	0.434	0.393	0.810

Table 4: Highlight the direct effect of Green HRM and Environmental Sustainability

Hypothesis	Relationships	Std B	T-Stat	Significance	5%	95%
H1	GPMA>ES	0.23	2.87	***	0.09	0.368
H1a	GPMA>PEB	0.27	2.15	**	0.07	0.453
H2	GRC>ES	0.14	1.70	*	0.00	0.279
H2a	GRC>PEB	-0.21	1.79	*	-0.39	-0.013
H3	GTD>ES	0.29	3.44	***	0.16	0.430
H3a	GTD>PEB	0.02	0.10		-0.15	0.190
H4	GRS>ES	-0.01	0.15		-0.12	0.101
H4a	GRS>PEB	0.04	0.49		-0.13	0.213
H5	PEB>ES	0.13	1.96	**	1.95	0.020

The asterisks represent the significance levels, with "*" indicating p<0.001, "**" indicating p<0.05, and "*" indicating p<0.10.

The table presents the results of a statistical analysis testing various hypotheses related to different relationships between variables. Here’s a breakdown of what each column represents:

- **Hypothesis:** Label for each hypothesis being tested (e.g., H1, H1a, etc.).
- **Relationships:** Indicates the direction of the relationship between two variables (e.g., GPMA>ES implies a hypothesis that GPMA has a positive effect on ES).
- **Std B (Standardized Beta):** This is the standardized coefficient which measures the strength and direction of the relationship between variables. A positive value suggests a positive relationship, while a negative value suggests an inverse relationship.
- **T-Stat (T-Statistic):** This value is used to determine if the coefficient is significantly different from zero. A higher absolute value of the T-Statistic indicates a stronger evidence against the null hypothesis (which usually states there is no effect or no difference).
- **Significance:** The asterisks represent the significance level of the results. More asterisks denote higher statistical significance, which means there is stronger

evidence that the relationship observed is not due to random chance. Specifically, "*" denotes p<0.001, "**" p<0.05, and "*" p<0.10.

- **5% and 95%:** These are the bounds of the 90% confidence interval for the standardized beta coefficient. If the interval does not contain zero, it suggests that there is a statistically significant relationship at the 10% significance level (corresponding to the "*" in the Significance column).

From the table, you can deduce which hypotheses were supported by the data. For example, H1 (GPMA>ES) has a Std B of 0.23 and is highly significant (p<0.001), suggesting a strong and positive relationship between GPMA and ES. Conversely, H2a (GRC>PEB) has a negative Std B (-0.21), and its significance level indicates that this negative relationship is also statistically significant (p<0.10).

Direct Effect of GHRM and ES

R2 values: R2 values are measures of the explanatory power of the model. They indicate the proportion of variance in the dependent variables that can be explained by the independent variables. For the internal constructs in the model: Environmental: R2 = 0.52, Green Performance

Management and Appraisal: $R^2 = 0.66$, Green Recruitment and Selection: $R^2 = 0.56$, Green Training and Development: $R^2 = 0.79$, Pro-Environmental Behavior: $R^2 = 0.13$, R^2 values above 0.2 are considered relatively great and satisfactory according to behavioral research standards.

SRMR Values: SRMR (Standardized Root Mean Square Residual) is a measure of model fit in PLS-SEM. Lower values indicate better fit., For PLS-SEM, a SRMR value below 0.08 is considered acceptable, The results show SRMR values of 0.065 for the Saturated model and 0.08 for the Estimated model, indicating acceptable model fit.

Analysis and Interpretation: Hypothesis Testing

Path Coefficients Analysis: The application of the non-parametric approach through conventional PLS-SEM has provided insights into the relationships between variables by analyzing path coefficients. The SEM analysis demonstrates that the model offers satisfactory explanatory power across most constructs, with Green Training and Development (GTD) showing particularly high explanatory power.

Hypothesis 1 (GPMA and Environmental Sustainability)

- **GPMA's Impact on ES:** The analysis reveals that Green Performance Management and Appraisal (GPMA) exerts a significant and positive effect on Environmental Sustainability (ES), with a path coefficient (β) of 0.23 and a T-statistic of 2.87. This confirms the support for Hypothesis 1.

- **GPMA's Impact on PEB:** It is also found that GPMA has a significant influence on Pro-environmental Behavior (PEB) with a β of 0.27 and a T-statistic of 2.15, supporting the sub-hypothesis related to GPMA's effect on PEB.

Hypothesis 2 (GRC and Environmental Sustainability):

- **GRC's Impact on ES:** Green Recruitment and Selection (GRC) is positively correlated with ES, indicated by a β of 0.14 and a T-statistic of 1.70, thus supporting Hypothesis 2.
- **GRC's Impact on PEB:** However, the anticipated direct and significant impact of GRC on PEB is not supported by the data, which shows a negative yet significant impact (β of -0.21 and T-statistic of 1.79).

Hypothesis 3 (GTD and Environmental Sustainability):

- **GTD's Impact on ES:** There is a substantial positive relationship between Green Training and Development (GTD) and ES, evidenced by a high β of 0.29 and a T-statistic of 3.44, leading to the acceptance of Hypothesis 3.
- **GTD's Impact on PEB:** The hypothesis asserting a positive relationship between GTD and PEB is not supported due to an insignificant T-statistic of 0.10.

Hypothesis 4 (GRS and Environmental Sustainability):

The hypothesis proposing a positive impact of Green Recruitment and Selection (GRS) on ES does not find support in the data.

Table 5: Summary of Hypothesis Testing Outcomes on Green HRM Impacts

Hypothesis	Variable Relationship	Std Beta (β)	T-Statistic	Supported
H1	GPMA and ES	0.23	2.87	Yes
H1a	GPMA and PEB	0.27	2.15	Yes
H2	GRC and ES	0.14	1.70	Yes
H2a	GRC and PEB	-0.21	1.79	No
H3	GTD and ES	0.29	3.44	Yes
H3a	GTD and PEB	0.02	0.10	No
H4	GRS and ES	-	-	No

This table clearly indicates which hypotheses were supported by the data according to the path coefficient analysis from the SEM. Hypotheses H1, H1a, H2, and H3 were supported, indicating a positive and significant impact on Environmental Sustainability (ES) and Pro-environmental Behavior (PEB) for some Green HRM practices. However, hypotheses H2a, H3a, and H4 were not supported, as the effects were not significant or the data did not support the positive impact on PEB.

Indirect Effects of Green HRM on Environmental Sustainability via Pro-environmental Behavior

- Green Performance Management and Appraisal (GPMA) to Environmental Sustainability (ES) through Pro-environmental Behavior (PEB)

GPMA > PEB > ES:

- Path Coefficient (β): 0.04
- Significance (P): 0.15
- Interpretation: The indirect effect of Green Performance Management and Appraisal (GPMA) on Environmental Sustainability (ES) through PEB is positive but not statistically significant.

Green Recruitment and Selection (GRS) to ES through PEB

GRS > PEB > ES

- Path Coefficient (β): 0.00
- Significance (P): 0.66
- Interpretation: The indirect effect of Green Recruitment and Selection (GRS) on ES through PEB is not statistically significant.

Table 6: Mediation Effects of Pro-environmental Behaviour on Green HRM Practices and Environmental Sustainability

Relationship	Std Beta (β)	T-Statistic	P-Values
GPMA>PEB>ES	0.04	1.42	0.15
GRS>PEB>ES	0.00	0.44	0.66
GRC>PEB>ES	-0.02	1.33	0.18
GTD>PEB>ES	0.00	0.09	0.93

The table displays the relationships tested, the standardized beta coefficients (Std Beta β), the T-statistics, and the P-values for each hypothesis. It appears that none of the relationships are significant at the common alpha levels (0.05, 0.01), as all P-values are above these thresholds.

Green Recruitment and Selection (GRC) to ES through PEB

GRC > PEB > ES

- Path Coefficient (β): -0.02
- Significance (P): 0.18
- Interpretation: The indirect effect of Green Recruitment and Selection (GRC) on ES through PEB is negative and not statistically significant.

- Significance (P): 0.93
- Interpretation: The indirect effect of Green Training and Development (GTD) on ES through PEB is not statistically significant.

Green Training and Development (GTD) to ES through PEB

GTD > PEB > ES

- Path Coefficient (β): 0.00

In summary, the results suggest that when considering Pro-Environmental Behavior as a mediator, none of the relationships between the independent variables (GPMA, GRS, GRC, GTD) and Environmental Sustainability (ES) show significant mediation through PEB. This indicates that in this analysis, PEB does not significantly mediate the relationships between the independent variables and ES.

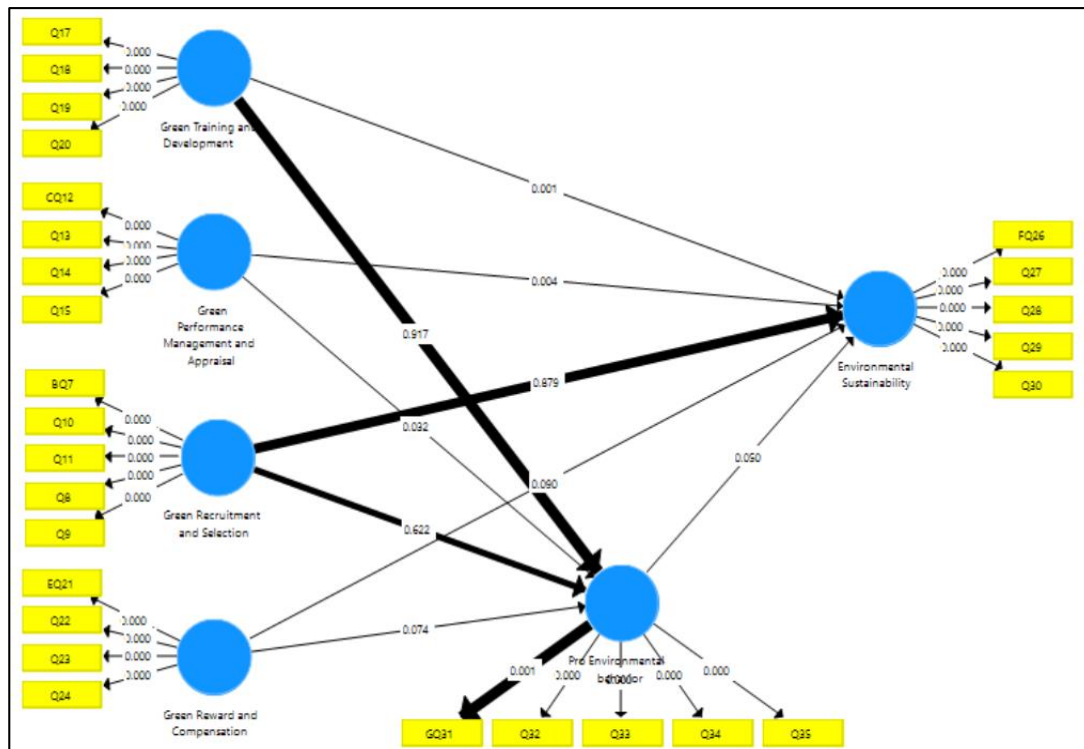


Fig 1: PLS SEM Model of Green HRM and Pro environmental Behavior and Environmental Sustainability

Factor	Associated Items	Path Coefficient to Pro Environmental Behavior	Path Coefficient to Environmental Sustainability
Green Training and Development	Q17, Q18, Q19, Q20	-	0.001
Green Performance Management and Appraisal	Q12, Q13, Q14, Q15	-	0.004
Green Recruitment and Selection	Q7, Q10, Q11, Q8, Q9	0.622	0.050
Green Reward and Compensation	EQ21, Q22, Q23, Q24	0.074	-
Pro Environmental Behavior	GQ21, Q22, Q23, Q24, Q25	-	0.000

And the endogenous variable

Outcome Variable	Associated Items
Environmental Sustainability	FQ26, Q27, Q28, Q29, Q30

Discussion

Based on the comprehensive analysis and findings presented in the research on "The Role of Green HRM Practices in Promoting Environmental Sustainability: A PLS-SEM Approach," this discussion section aims to contextualize these findings within the broader academic dialogue on Green Human Resource Management (GHRM) and its impact on environmental sustainability, particularly within the educational sector. Our study revealed a significant direct relationship between GHRM practices—specifically Green

Recruitment and Selection (GRS), Green Performance Management and Appraisal (GPMA), and Green Training and Development (GTD)—and environmental sustainability. These findings corroborate previous research (e.g., Siyambalapatiya *et al.*, 2018; Tariq *et al.*, 2016) [29, 31] which highlighted the positive impact of green HR practices on organizational performance and environmental outcomes. Moreover, the indirect relationship between GTD and environmental sustainability, mediated by pro-environmental behavior, emphasizes the critical role of

empowering and educating employees towards environmental consciousness—a theme echoed in studies by Jabbour (2013)^[19] and Dias-Sardinha & Reijnders (2001). However, unlike some earlier studies that suggested a more pronounced direct effect of pro-environmental behavior on environmental sustainability (e.g., Saeed *et al.*, 2018)^[26], our findings indicate that the mediation effect of pro-environmental behavior between GTD and environmental sustainability is not statistically significant. This divergence suggests that while GTD directly contributes to sustainable environmental outcomes, its influence through modifying individual behaviors may not be as impactful as previously thought. This underscores the complexity of influencing pro-environmental behavior within organizational contexts and suggests that direct green HR practices might have a more immediate and measurable impact on sustainability outcomes. Furthermore, our research highlights the essential role of strategic HRM in embedding sustainability into the core operations of organizations, particularly in the educational sector. By aligning HR practices with environmental goals, organizations can not only enhance their sustainability performance but also foster a culture that values and practices ecological stewardship. This dual focus on operational and behavioural change is crucial for achieving long-term environmental sustainability. The study contributes to the evolving discourse on GHRM by providing empirical evidence of the direct and mediated relationships between green HR practices and environmental sustainability within the educational sector. It invites further investigation into the nuanced mechanisms through which GHRM influences sustainability outcomes and emphasizes the need for organizations to adopt a holistic approach to sustainability, integrating both strategic HRM practices and individual behavioural change.

Conclusion and Recommendations

This research explored the intricate dynamics between Green Human Resource Management (GHRM) practices and environmental sustainability within the educational sector, specifically focusing on private universities in the Punjab region. By employing a Structural Equation Modelling (SEM) approach, we meticulously examined the relationships between key GHRM practices—namely Green Recruitment and Selection (GRS), Green Performance Management and Appraisal (GPMA), and Green Training and Development (GTD)—and their collective impact on fostering an environmentally sustainable workplace. Our findings illuminate the significant, direct influence of these practices on environmental sustainability, underscoring the pivotal role that human resource management plays in nurturing an ecological consciousness and promoting sustainable environmental outcomes within organizations. Furthermore, the research revealed an intriguing indirect relationship between Green Training and Development (GTD) and environmental sustainability, mediated through pro-environmental behavior, albeit not statistically significant. This suggests that while GTD is crucial in promoting sustainability, its effectiveness may not primarily hinge on altering individual behaviors but rather on institutionalizing sustainable practices and policies. Based on the findings and insights derived from this study, the following recommendations are proposed to enhance the implementation of GHRM practices and further promote

environmental sustainability within the educational sector and beyond:

- **Integrate GHRM Practices into Strategic Planning:** Organizations should embed green HRM practices into their strategic planning and operational frameworks. This integration can serve as a catalyst for driving organizational change towards sustainability, ensuring that green practices are not peripheral but central to the organization's mission and operations.
- **Enhance Green Training and Development:** While GTD directly impacts sustainability, efforts should be made to enrich these programs with content that not only educates but also actively engages employees in sustainability initiatives. This could involve hands-on projects, sustainability challenges, and incorporating sustainability into personal development plans.
- **Foster a Culture of Environmental Stewardship:** Organizations should work towards creating a culture that values and practices environmental stewardship. This involves recognizing and rewarding pro-environmental behaviors, creating platforms for sharing best practices, and encouraging dialogue and innovation around sustainability.
- **Implement Comprehensive Green Performance Management Systems:** Green performance metrics should be integrated into performance appraisal systems. This integration can help in tracking and encouraging the contribution of individuals and teams towards environmental sustainability goals.
- **Leverage Technology for Green HR Practices:** Organizations should explore the use of technology to facilitate green HRM practices. For instance, digital platforms can be used for delivering training, virtual meetings can reduce the carbon footprint associated with travel, and HR information systems can be optimized to include sustainability metrics.
- **Research and Collaboration:** There is a need for ongoing research to explore the dynamic relationship between GHRM practices and environmental sustainability further. Collaborations between academia, industry, and governmental bodies can foster innovation and the sharing of best practices in this domain.

In conclusion, our study emphasizes the critical role of GHRM in advancing environmental sustainability within the educational sector. By adopting a strategic and integrated approach to GHRM, organizations can not only enhance their sustainability performance but also contribute significantly to the broader goal of achieving a sustainable future for all.

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Appendix

Green Human Resource Management and Environmental Sustainability Questionnaire

No.	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Q1	Our institute regularly provides training that includes environmental management practices for educators.					
Q2	The training I have received has equipped me to teach students about reducing waste and conserving resources.					
Q3	I am well-informed about the institute's environmental policies due to our training modules.					
Q4	Educators who engage in environmental sustainability training are recognized or rewarded by the institute.					
Q5	Environmental sustainability metrics are incorporated into my teaching performance evaluations.					
Q6	The institute sets clear environmental sustainability goals for educators' performance.					
Q7	I receive regular feedback on my educational practices related to environmental initiatives.					
Q8	My contributions to the institute's environmental practices influence my professional development and career advancement.					
Q9	During recruitment of new educators, a candidate's knowledge of environmental sustainability is prioritized.					
Q10	Job postings for our institute emphasize the importance of environmental responsibility in education.					
Q11	Environmental awareness is a key assessment criterion during interviews for teaching positions.					
Q12	The institute values eco-friendly practices when selecting new teaching staff.					
Q13	Recruiters communicate the institute's commitment to sustainability to potential teaching candidates.					
Q14	Suggestions for effective sustainability initiatives in the educational curriculum are financially rewarded.					
Q15	Bonuses are offered for contributing to reducing the institute's environmental impact.					
Q16	Eco-friendly practices are acknowledged through non-monetary benefits such as recognition or additional professional development opportunities.					
Q17	The compensation system for educators reflects the institute's environmental values.					
Q18	There are recognition programs for exemplary environmental performance by educators.					
Q19	I actively attempt to reduce my carbon footprint in the educational environment.					
Q20	I participate in recycling programs within our institute.					
Q21	I suggest energy conservation methods at the institute to my colleagues.					
Q22	I take part in the institute-organized environmental events and initiatives.					
Q23	My daily teaching habits show a commitment to environmental sustainability.					
Q24	Our institute effectively reduces its environmental impact through its policies.					
Q25	Our institute's dedication to sustainability enhances its reputation among educational communities.					
Q26	The institute's environmental initiatives benefit the local community and environment.					
Q27	The sustainability efforts are noticeable within the institute's operations and campus.					
Q28	The commitment to environmental sustainability positively affects my job satisfaction as an educator.					
Q29	I would recommend our institute as an environmentally responsible employer to other teaching professionals.					
Q30	I rate the success of our institute in achieving environmental sustainability goals highly.					