Journal for Business Education and Management
ISSN (Print): 2790-7848, ISSN (Online): 2790-7856
Volume 3, Issue 2, Page 177-200, December 31, 2023

GREEN HRM IMPACT ON SUSTAINABILITY IN PAKISTANI UNIVERSITIES

Asma Irfan Ali
PhD Scholar
Department of Business Administration & Information Studies
Greenwich University, Karachi, Pakistan
asma.ali5209@gmail.com

Abstract

This study explores the intersection of Green Human Resource Management (GHRM) practices and employee behavior within higher education institutions (HEIs) in Pakistan, focusing on the unique challenges and opportunities in a developing country context. Three independent variables Green Reward, Training, and Recruitment—influence the dependent variables Green Work Engagement and Green Organizational Culture. The study also explores how Green Self-Efficacy moderates Green Reward and Green Work Engagement and analyses data HEIs (Private vs. Public). A quantitative was employed. Data collected from four hundred respondents was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The study focused on Pakistan-based HEIs to provide geographical specificity. This research may shed light on green HRM methods and their benefits to higher education sustainability. Four hundred (400) respondents' data was examined quantitatively using Partial Least Squares Structural Equation Modeling. Note that this study covers Karachi HEIs. To further understand higher education GHRM practices, future studies might examine other moderators or mediators. This study advances the theoretical knowledge of GHRM in higher education and offers actionable recommendations for global policymakers and educational leaders facing comparable difficulties with sustainability integration. The research emphasizes the importance of green HRM practices in Pakistani institutions to promote environmental stewardship, sustainability, and positive organizational results.

Keywords: Higher Education for a Sustainable Future, Green Human Resource Management Practices, Environmental and Social Performance.

Introduction

The significance of Green Human Resource Management (GHRM) practices in Pakistan's Higher Education Institutions (HEIs) is noteworthy, notwithstanding their limited exploration in a developing country grappling with the challenges posed by climate change (Rehan et al., 2023). There is a lack of documentation of GHRM practices in educational institutions, particularly in Pakistan, despite the increasing significance of sustainability activities, especially in corporate sectors (Khan et al., 2023). The existence of this research gap emphasizes the necessity for a thorough investigation into the ways in which GHRM activities enhance the environmental and social performance of universities (Rehan et al., 2023). This study investigates the impact of GHRM practices on the environmental and social performance of Pakistani Higher Education Institutions (HEIs) in order to address this disparity. The research also investigates the moderating role of Green Self-efficacy in the association between

This work is licensed under a Creative Commons Attribution 4.0 International License.

Green Reward and Green Work Engagement (Khan, Hyder, et al., 2023), providing insights into the optimal implementation of Green Human Resource Management (GHRM) practices in Pakistani institutions to foster sustainability and environmental stewardship.

The convergence of Green Human Resource Management (GHRM) techniques and higher education is poised to attract significant attention in the dynamic landscape of global concerns (Zhang et al., 2023). According to Fok et al. (2021), the article aligns with the prevailing trend and trajectory towards sustainability, climate action, and responsible consumption and production. Hence, the significance of sustainable practices in the field of education stems from their alignment with the worldwide dedication to the United Nations Sustainable Development Goals (SDGs), particularly SDG 4. Another vital aspect is the adoption of environmentally friendly techniques in the operations of universities under the guidance of Green Human Resource Management (GHRM) (Sherbaz et al. et al., 2022). It establishes a dynamic learning environment for students and staff by combining academic knowledge with hands-on experience via the implementation of sustainability concepts in daily operations (Zihan et al., 2024).

Based on the findings of the literature study conducted by Khan et al. (2022), it can be inferred that the implementation of GHRM techniques has the potential to enhance the environmental and social performance of universities in Pakistan. This encompasses a range of characteristics, encompassing employee involvement, curriculum creation, and the extent of leadership dedication to incorporating technology in employee training (Zhang et al., 2023). The utilization of these fundamental components has the potential to facilitate the transition of higher education towards a sustainable future (Aftab et al., 2023). This has the potential to improve sustainability and promote environmental consciousness within the higher education sector in Pakistan.

SDG 4 - Quality Education

The Fourth Sustainable Development Goal (SDG 4) aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. This paper will. Therefore, endeavor to explore how Green Human Resource Management (GHRM) practices at Pakistani universities lead towards ensuring that the said goal is achieved, focusing on furthering quality education through sustainability initiatives. By incorporating green HRM practices, universities can improve the quality of education by ensuring that faculty and staff are trained in sustainable practices. This, in turn, can lead to better learning experiences for students, incorporating sustainability into their education.

Lifelong Learning Opportunities

Green HRM practices can promote continuous professional development for university staff and faculty, ensuring they stay updated with the latest sustainable practices and knowledge. This aligns with the goal of promoting lifelong learning opportunities.

ISSN (Print): 2790-7848, ISSN (Online): 2790-7856
Volume 3, Issue 2, Page 177-195, December 31, 2023

Learning Environments

Green HRM can contribute to creating safe, non-toxic, and sustainable learning environments. By focusing on green organizational culture and green work engagement, universities can enhance the well-being of both students and staff.

Education for Sustainable Development

Implementing green HRM practices can encourage the integration of sustainability concepts into the curriculum. This helps students understand and engage with sustainability issues, fostering a generation of environmentally conscious individuals.

SDG 4: A Framework for Quality Education

SDG 4 points out quality education, where learners will go beyond academic knowledge and learn to embrace all practices that are sustainable and friendly to the environment. On this issue, UNESCO (2015) supports the idea that education should involve sustainable development so that learners can equip themselves to be promoters of sustainable societies (UNESCO, 2015).

Scope of the Study

This study examines the application and impact of green Human Resource Management (HRM) practices on sustainability in higher education institutions (HEIs), with a particular focus on universities in Pakistan (Zhang et al., 2023). The research includes a wide range of Pakistani institutions with different sizes, kinds, and geographical locations. This assures that the findings may be applied to the complex landscape of higher education in Pakistan. According to Shah et al. (2021), the focus of the inquiry is on distinct green human resource management (HRM) methods, such as green incentive systems, green training programs, and green recruiting tactics. This enables a comprehensive analysis of how these practices contribute to sustainable results.

Moreover, this study examines the impact of green human resource management (HRM) practices on green work engagement and green organizational culture at the chosen institutions (Zhang et al., 2020). Additionally, it analyzes the moderating effect of green self-efficacy on the relationship between green incentives and green work engagement. This sophisticated approach offers valuable insights into the specific aspects that might influence the effectiveness of green human resource management (HRM) approaches (Tandon et al., 2023). The research uses a quantitative technique to gather and analyze data in order to clarify the correlations between the variables.

In accordance with the Resource-Based View (RBV) philosophy, green human resource management (HRM) practices are regarded as essential assets inside organizations that have the potential to provide a competitive edge in terms of sustainability. Through the integration of green human resource management (HRM) techniques, universities have the opportunity to develop distinctive competencies and knowledge, therefore differentiating themselves from their peers. When successfully

incorporated, these practices transform into scarce and unique assets, enhancing the university's non-replaceable resources via the cultivation of a sustainable and environmentally conscious culture (Shah et al., 2023). The institution's culture, which is profoundly embedded in its ethos and processes, acts as a significant obstacle to replication, hence facilitating long-term success (Shakil et al., 2023).

This study aims to elucidate the role of green HRM practices as strategic internal resources that may drive sustainable results for Higher Education Institutions (HEIs). The objective of this study is to offer a comprehensive understanding of how colleges, specifically those situated in developing nations such as Pakistan, utilize green human resource techniques to improve their environmental and social outcomes (Papademetriou et al., 2023). In addition, the research aims to provide practical implications for Higher Education Institutions (HEIs) in Pakistan and worldwide to successfully integrate green HR practices for sustainable operations. This will be achieved by examining the moderating function of green self-efficacy (Rehan et al., 2023).

Research Gap

There may be limited studies exploring the impact of green HRM practices, specifically within the context of Pakistani universities. This research can fill this gap by providing region-specific insights. While there may be general research on green HRM and sustainability, there could be a gap in studies that focus on specific practices such as green reward systems, green training, and green recruitment, particularly in higher education settings. Existing research may not sufficiently explore the relationship between green HRM practices and sustainability outcomes such as green work engagement and green organizational culture. Your study can shed light on how these variables interact. The moderating role of green self-efficacy between green reward systems and green work engagement might be an under-explored area. Your research can offer new insights into how individual confidence in engaging in green practices influences the relationship between HRM practices and sustainability outcomes (Adnan, 2021). Your research may identify actionable strategies for universities to implement green HRM practices more effectively. This can fill a gap in providing practical recommendations for policymakers and university administrators. By addressing these gaps, your study contributes valuable insights to the existing body of knowledge on green HRM and sustainability in higher education, particularly within the Pakistani context. A research gap is identified when it realizes that Green Human Resource Management (GHRM) practices function as strategic resources within Higher Education Institutions (HEIs) of Pakistan in a limited manner towards enhancing environmental and social performance. Resource-Based View (RBV) is one of the wealthiest theoretical lenses, but its applicability to GHRM in HEIs has been poorly explored. (Khan, Qabool, et al., 2023).

The result of this study brings significance to the existing literature, which can be of much help and importance in the education sector for practical use. Finally, given the research gaps, it seems that there is insufficient clarity on how specific GHRM practices—namely, green recruitment, green training, and green rewarding—relate to Green work engagement and green organizational culture (Yang et al., 2023).

ISSN (Print): 2790-7848, ISSN (Online): 2790-7856
Volume 3, Issue 2, Page 177-195, December 31, 2023

Research Problem

The research problem arises from the under-researched area of the strategic influence of Green Human Resource Management (GHRM) practices in HEIs of Pakistan in enlarging the enhanced environmental and social performance. The growing importance of sustainability in higher education institutions necessitates the adoption of green practices across various organizational functions, including human resource management (HRM). However, there is a limited understanding of how specific green HRM practices, such as green reward systems, green training programs, and green recruitment strategies, impact sustainability outcomes in Pakistani universities. Despite the increasing awareness of the need for sustainable practices, there needs to be more literature regarding the relationship between green HRM practices and sustainability measures such as green work engagement and green organizational culture. Additionally, the moderating role of green self-efficacy between green reward systems and green work engagement remains underexplored, leaving a gap in our understanding of the factors that contribute to successful green HRM implementation.

Rationale of study

Academic institutions assume a crucial role in influencing a sustainable future through the integration of environmentally sensitive practices into their operational frameworks (Nisar et al., 2022). The investigation conducted in your paper about the influence of green Human Resource Management (HRM) practices on sustainability holds significant potential to provide vital insights for effectively tackling urgent environmental issues. The incorporation of green human resource management (HRM) methods inside universities has significant promise in fostering sustainable learning environments, thereby enhancing the overall quality of education (Niazi et al., 2023). The research presented exhibits the potential to provide insights into successful approaches for integrating these practices in Pakistani institutions, thereby making a valuable contribution towards the promotion of sustainable development objectives, namely SDG 4 (Quality Education) (Muhammad et al., 2023).

Moreover, your study fits with larger sustainability aims by examining the influence of green HRM practices on sustainability outcomes, such as green work engagement and green corporate culture (Liu et al., 2023). This study addresses a significant need in the existing body of research by examining how green self-efficacy influences the relationship between green incentive systems and green work engagement in Pakistani institutions. The use of this sophisticated approach holds the potential to augment our comprehension of the impact of individual confidence on sustainability projects (Li et al., 2023).

The research findings presented in this study have the potential to provide valuable practical advice for university administrators and policymakers. These recommendations give actionable insights that can be utilized to effectively integrate green HRM practices (Juhari et al. et al., 2024). Consequently, this can result in concrete enhancements in sustainability results, establishing universities as frontrunners in sustainable methodologies. Crucially, the results of your research extend beyond the confines of Pakistani universities and possess significance for

higher education institutions worldwide, highlighting its wider ramifications (Khan & Mukhtar, 2023).

Through the pursuit of this research endeavor, the objective is to make a valuable contribution toward enhancing comprehension of the complex interplay between green human resource management (HRM) practices and sustainability within the context of higher education institutions. These contributions possess the capacity to initiate significant effects on the future of sustainability, encompassing not just the field of education but also extending beyond it (Khan & Mukhtar, 2023).

Research Questions

1. How do specific green HRM practices (such as green reward systems, green training programs, and green recruitment strategies) impact sustainability outcomes, including green work engagement and green organizational culture, within Pakistani universities?

2. What is the moderating role of green self-efficacy in the relationship between green reward systems and green work engagement in Pakistani universities?

3. What effective green HRM strategies and practices can be identified and recommended for integration into the higher education sector in Pakistan to enhance overall sustainability and achieve sustainable development goals within universities?

Research Objectives

1. To investigate the impact of specific green HRM practices (such as green reward systems, green training programs, and green recruitment strategies) on sustainability outcomes, including green work engagement and green organizational culture, within Pakistani universities.

2. To explore the moderating role of green self-efficacy in the relationship between green reward systems and green work engagement in Pakistani universities, providing insight into how individual confidence in engaging in green practices may influence outcomes.

3. To identify and recommend effective green HRM strategies and practices that can be integrated into the higher education sector in Pakistan to enhance overall sustainability and achieve sustainable development goals within universities.

Theoretical Foundation

Resource-Based View (RBV)

According to RBV, organizations gain a competitive advantage by possessing unique, valuable, and non-substitutable resources. In the context of Pakistani universities, green HRM practices (such as green reward systems, green training, and green recruitment) can be considered strategic resources that differentiate universities in terms of their approach to sustainability. RBV emphasizes the development of capabilities and competencies through effective resource management. Green HRM

practices help universities build a workforce that is skilled in sustainable practices and committed to green initiatives, thus creating a unique set of organizational capabilities (Shahriari et al., 2023).

By adopting green HRM practices, universities can gain a competitive advantage through enhanced sustainability outcomes such as green work engagement and green organizational culture. This differentiation can attract environmentally conscious students and staff, improve reputation, and lead to long-term success. RBV suggests that organizations achieve their goals by effectively integrating resources. In your study, the integration of green HRM practices into university operations can lead to holistic sustainability outcomes, supporting the university's mission and goals. The moderating role of green self-efficacy aligns with RBV's focus on individual capabilities. Employees' belief in their ability to engage in green practices can influence the effectiveness of green HRM initiatives and their impact on sustainability outcomes. RBV highlights the importance of aligning HRM practices with the organization's strategic goals. In the context of your study, this means aligning green HRM practices with the university's sustainability objectives to create a cohesive and practical approach to sustainable development (Rana & Arya, 2023).

Stakeholder Theory

The stakeholder theory postulates that an organization has responsibilities to several groups of persons. These people are affected by the behavior and actions of an organization or who can affect the actions of an organization. In the latter effort, the stakeholders include the shareholders and employees, the customers, suppliers, the community, and the environment (Mahajan et al., 2023). Green HRM practices such as green reward systems, green training programs, and green recruitment strategies directly impact employees, who are critical stakeholders in universities. By implementing these practices, universities can create a positive work environment that supports employee well-being and aligns with their values. Sustainable practices fostered by green HRM can create a better learning environment for students. This can enhance their educational experience and align with their expectations for sustainability-focused institutions.

Green HRM practices contribute to the sustainability of universities and, by extension, the community and society at large. Universities that adopt sustainable practices can play a role in addressing environmental challenges and serving as models of good practice. Stakeholder theory emphasizes the importance of maintaining good relationships with all parties involved. Green HRM practices can improve the reputation of universities and strengthen relationships with various stakeholders, such as government agencies and environmental groups. A university that prioritizes sustainability through green HRM can attract favorable attention from donors, government agencies, and industry partners interested in supporting sustainable initiatives. By focusing on sustainability and incorporating green HRM practices, universities can meet the expectations of stakeholders who prioritize environmental and social responsibility. Incorporating stakeholder perspectives through green HRM practices can lead to more balanced and sustainable decision-making that takes into account the interests of various parties. By incorporating stakeholder theory into your study, you emphasize the broader impact of green HRM practices on different groups

connected to Pakistani universities. This perspective underscores the importance of aligning HRM practices with the expectations and needs of stakeholders, ultimately contributing to sustainability within the higher education sector.

Conceptual Framework

The conceptual framework explores the relationships between various Green Human Resource Management (GHRM) practices and their effects on organizational outcomes, particularly Green Organizational Culture and Green Work Engagement. It examines how recruitment, reward, self-efficacy, and training influence employees' engagement with green initiatives. The framework suggests that effective recruitment practices may lead to a green organizational culture and increased work engagement. Training programs could also contribute to a green culture but affect work engagement due to increased workloads. The framework also considers the interaction between employees' self-efficacy and reward systems in influencing work engagement. Through this exploration, the framework provides insights into strategies for promoting sustainability within Higher Education Institutions.

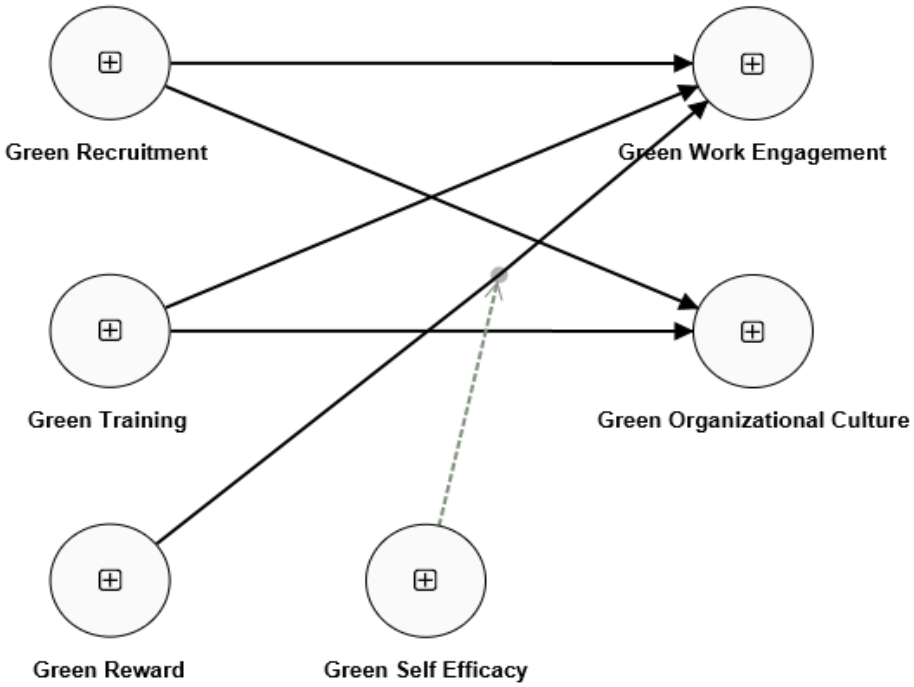


Figure 1: Conceptual Framework without Items

Literature Review

Green Recruitment and Green Work Engagement

Another critical area is Green Human Resource Management (HRM), wherein the relationship between Green Recruitment and Green Work Engagement is enormous. Green HRM is one of the ways to make an organization's HR functions friendly to the environment via its policies, practices, and systems. He has quoted a study that finds Green HRM practices' cheerful and significant impact on work

engagement that further positively influences employee retention (Al- 2020). This finding is necessary because it establishes a direct relation between human-resource-based environmentally oriented practices and employee engagement towards the work. Further, eye engagement has also been found to be a mediator with a green HRM practice related to individual green behavior (Khan & Sajjad, 2013).

Further, it is also found that green HRM practices have a mediator role to play in increasing organizational culture. This involves instilling environmental vs. HR practices to develop a culture of organizational setup. With the increasing awareness of environmental sustainability worldwide, Green HRM will play an exceedingly important role in enhancing work engagement.

H1: Green Recruitment positively influences Green Work Engagement

Green Recruitment and Green Organizational Cure relationship

The relationship between Green Recruitment and Green Organizational cure is an exciting line of investigation within sustainable business practices. The relationship of Green Recruitment to Green Organizational Culture is dynamic and mutually reinforcing. The green recruitment approach thus lays down the appropriate ground for developing a green organizational culture by having the right workforce already oriented towards being environmentally sustainable. Such a culture nurtures and strengthens green values and practices among the staff, leading to various positive outcomes for better environmental performance, competitive advantages, organizational commitment, and employee satisfaction (Kishnani & Dutta, n.d.). This study is relevant to organizations aspiring to be genuinely sustainable. It shall reflect that integrating green in recruitment strategies and efforts to develop a green organizational culture is not a value-added initiative but a necessary one.

H_2: Green Recruitment positively influences Green Organizational Culture

Green Training and Green Work Engagement

Sustainability has assumed more significance with the current sense of urgency, and thus, more and more organizations are seen imbibing practices that speak of taking responsibility toward the environment. This literature review paper seeks to find an interconnect between the two Green Training (GT) and Green Work Engagement (GWE), and that too in a rather complex way, to illuminate the rationale for which one stands interconnected with the other.

Khan, Zjsonmez, et al. (2023) discovered the logical and empirical relationship between Green Training and Green Work Engagement. The GT acts as a catalyst in enhancing GWE by equipping the employees with knowledge, skills, motivation, and a sense of purpose regarding sustainability. Organizational commitment, support, feedback, and recognition play supportive and strengthened roles between the two. This finding indicates that Green Training should be taken seriously as a strategic tool in promoting a green work environment and Green Work Engagement, which may result in an organization's workforce being more aware and engaged in being environmentally friendly.

H_3: Green Training positively influences Green Work Engagement.

Green Training and Green Organizational Culture

Indeed, a hallmark characteristic on the pursuit of sustainability in modern enterprises is one of their hallmark characteristics. This further yields a trend of shifting paradigms toward environmental responsibility (Smith & Lewis, 2017). This literature review seeks to delve into the gory details of the relationship between Green Training (GT) and Green Organizational Culture (GOC), leaving no stone unturned to justify the cause of the two interconnections. In turn, GT is the pin to mediate knowledge, values, and behavior of the cultivation of GOC (Pham et al., 2018). It gives the employees the toolkit that enables them and gives them impetus for active participation in the culture of environmental sustainability. The GT will form the underpinning of a GOC, transcending all rhetoric, enabling effective communication, and developing champions with a sense of purpose in ensuring congruence between individual and organizational values and becoming one with organizational identity. Further, this synergy supports and complements organizational sustainability objectives, contributing to an even more eco-conscious and responsible ethos.

H_4: Green Training positively influences Green Organizational Culture.

Green Rewarding and Green Work Engagement

Two critical areas of study in Green Human Resource Management (GHRM) that will help develop sustainability in business practice are green rewards and green work engagement. Green Rewarding is an incentive and recognition to stimulate the participation of employees in their environmentally sustainable practices. Such incentives, like bonuses, could be monetary if the green targets are met. They could also be non-monetary, like public acknowledgment of employees' actions towards becoming greener. Green rewarding mainly reinforces behaviors supporting the organization's environmental sustainability goals.

Green Rewarding is directly and broadly related to Green Work Engagement. This calls for a Green Rewarding system that becomes an impetus for employee engagement, a catalyst that shall result in heightened job satisfaction and proactive environmental behaviors. These, in turn, would eventually translate into organizational returns (Saeed et al., 2019). Influence in raising the motivation among the employees for active participation in sustainability initiatives raises the commitment towards the environmental goals in each organization. The research will illustrate that organizations must enforce strategic green reward systems to engage their workforce in sustainability initiatives.

H_5: Green Rewarding positively influences Green Work Engagement.

Role of Green Self-Efficacy on Green Work Engagement

Self-efficacy is essential for green efficacy because of the high reflective value of a person's capability in the performance of EFB. This is a significant factor in showing how the idea of "green" influences ecologically and socially sustainable performance. The higher the Green Self-Efficacy, the more employees will translate

their involvement into practical environmental actions that will produce better sustainability outcomes. (Norton et al., 2015). On the other hand, the social scope of Green Work Engagement may be further amplified by Green Self-Efficacy due to the factors contributing to employees' feeling of empowerment and responsibility within taking social initiatives (Bandura, 1997). This idea is presently called Green Human Resource Management (Green HRM). It has gained importance as a strategy that can be used to ensure the rapidly degrading environmental sustainability within organizations. Among many dimensions of Green HRM, green Reward and green work engagement have become essential components to initiate an environmentally responsible culture for employees. Green rewards include employee incentives and recognition for contributing to environmental sustainability. In contrast, green work engagement is the level of excitement and commitment of the employees toward green initiatives taking place at the workplace. Green rewards are related to the level of work engagement in that rewards and recognition could motivate the workforce to participate actively in support extensions to organizational environmental activities.

However, individual factors may moderate the strength of this relationship, of which green self-efficacy is one. Green self-efficacy may be defined as the belief in one's ability to perform green behaviors effectively. Social Cognitive Theory shows that self-efficacy will influence an individual's approach to tasks and challenges related to environmental sustainability (Bandura, 1997). The present study postulates that green self-efficacy moderates the link between green reward and green work engagement.

Putting this into a closer look, employees with high green self-efficacy are most likely to, in return, respond positively to green rewards, thus eventually increasing green work engagement. While green self-efficacy perceptions are high, employees with low green self-efficacy may not feel motivated by the green rewards to the same extent and, therefore, will have a weak or low level of feeling connected between the green reward and green work engagement.

H_6: Green Self-Efficacy significantly moderated the relationship between Green Reward and Green Work Engagement.

Methodology

The methodology for this research involves a quantitative approach to assess the impact of green HRM practices on sustainability outcomes in Pakistani universities. A survey instrument will be developed to measure specific variables, including green reward systems, green training programs, green recruitment strategies, green work engagement, and green organizational culture. The moderating role of green self-efficacy will also be examined (Fawehinmi et al., 2022). The survey will be distributed to a representative sample of university staff and faculty across various institutions in Pakistan. The collected data will be analyzed using statistical methods such as regression analysis and correlation analysis to determine the relationships and impact of green HRM practices on the dependent variables (Aftab & Veneziani, 2023). The quantitative approach allows for the testing of hypotheses and the quantification of the relationships between variables. Ethical considerations, such as informed consent and confidentiality, will be observed throughout the research process to ensure the integrity and credibility of the study (Shahriari et al., 2023).

Research Design

Population and Sampling

The research study aims to examine the faculty and administrative workforce from Higher Education Institutions (HEIs) recognized through the Higher Education Commission (HEC) of Pakistan, focusing on universities in the provinces of Sindh and Punjab. A general of four hundred individuals has been selected to ensure a balanced illustration, emphasizing both public and private universities.

Sampling Method

A stratified random sampling method was used to get a representative sampling of the selected strata of Sindh and Punjab Higher Education Institutions (HEIs). This allowed for a detailed understanding of the educational situation in the two represented provinces.

Demographic Profile

The research participants' demographic profile provides vital insights into the features of the sample population. The demographic attributes of the individuals involved encompass gender, age, educational attainment, and job situation.

Table 01: Demography

Variables	Numbers	Percentage (%)
Gender		
Male	250	62.5
Female	150	37.5
Age		
20-30 years	120	30
31-40 years	160	40
41-50 years	80	20
>50 years	40	10
Marital status		
Single	180	45
Married	220	55
Education		
Undergraduate	60	15
Graduate	100	25
Master	120	30
PhD	80	20
Diploma	40	10
Occupation		
Public sector	140	35
Private sector	200	50
Self-employed	60	15
Monthly income		
Rs25,000-50,000	100	25
Rs51,000-75,000	120	30
Rs76,000-100,000	80	20
Rs>100,000	100	25

The demographic profile serves to illustrate the prevalence of participants among different demographic groups, so offering valuable insights into the composition of the sample (Esthi & Setiawan, 2023). The inclusion of this information is crucial in order to comprehend the extent to which the sample accurately represents the larger community and to interpret the results of the study within the specific context of the target group (Faisal, 2023).

Dimensions of Research

The research follows an explanatory design where the variables' cause-and-effect relationship is studied. The effect of the independent variables on the dependent variable is studied.

Survey Instruments

The data was collected using a questionnaire borrowed from existing research papers.

Analysis and Interpretation

The collected data was analysed using the smart PLS 4 (registered) software through the PLS-SEM technique. The PLS-SEM technique was robust due to its stronger resistance to data volatility. It allowed us to study the complex relationship between the variables, including moderation.

Table 02: Reliability and Validity of the Study

Factors	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Green Organizational Culture	0.801	0.853	0.715
Green Recruitment	0.780	0.784	0.696
Green Reward	0.760	0.771	0.676
Green Self Efficacy	0.881	0.889	0.808
Green Training	0.854	0.866	0.774
Green Work Engagement	0.759	0.814	0.676

The provided table outlines the psychometric properties of constructs within Green Human Resource Management (HRM). This quantifies internal consistency through Cronbach's alpha for constructs such as Green Organizational Culture, Green Recruitment, Green Reward, Green Self-Efficacy, Green Training, and Green Work Engagement. All items and constructs used appear above the acceptability of 0.7, implying that items used under each construct relate reliably. In addition to that, composite reliability is presented for these constructs. Just like alpha, the composite reliability measures consistency among the constructs. All the values are within the acceptable limit, indicating that all the measures are reliable. The Average Variance Extracted (AVE) values above the benchmark of 0.5 showed good validity in convergent terms; hence, the constructs account for a high portion of the variance in the observations. Notably, the Green Self-Efficacy scores have specific high reliability

and validity, proving that the items administered under this construct are reliable and reflect significance in the underlying construct.

Table 03: Fornell-Larcker Criterion

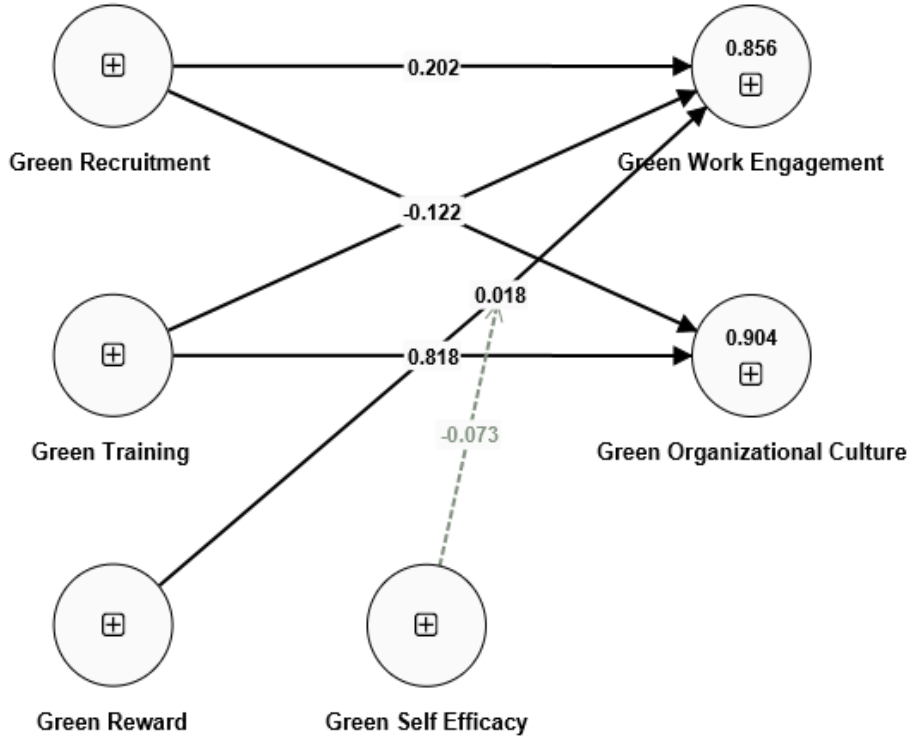
Factors	Green Organizational Culture	Green Recruitment	Green Reward	Green Self Efficacy	Green Training	Green Work Engagement
Green Organizational Culture	0.846					
Green Recruitment	0.837	0.834				
Green Reward	0.703	0.774	0.822			
Green Self Efficacy	0.686	0.697	0.751	0.899		
Green Training	0.947	0.834	0.710	0.702	0.880	
Green Work Engagement	0.649	0.702	0.729	0.913	0.645	0.822

The Fornell-Larcker criterion dictates that for adequate discriminant validity, the square root of the AVE for any given construct should be greater than the correlations between that construct and all other constructs. The AVEs for each construct were Green Organizational Culture (0.715), Green Recruitment (0.696), Green Reward (0.676), Green Self Efficacy (0.808), Green Training (0.774), and Green Work Engagement (0.676). Calculating the square root of each AVE, we compare these values to the corresponding correlations presented in the matrix: For Green Organizational Culture, the square root of AVE is approximately 0.846, which is greater than all its correlation coefficients with other constructs, satisfying the criterion.

Similarly, for the remaining constructs, their square root of AVE is greater than the correlations with other constructs (e.g., Green Self Efficacy's square root of AVE is 0.899, and all its correlations are less than this). Based on this assessment, the constructs meet the Fornell-Larcker criterion for discriminant validity, indicating that they are distinct and measure different dimensions of green HRM practices.

ISSN (Print): 2790-7848, ISSN (Online): 2790-7856
Volume 3, Issue 2, Page 177-195, December 31, 2023

Path Model



The beta values in the table reflect the strength and direction of relationships in a path model of Green HRM factors. Green Recruitment has a positive but weak effect on Green Organizational Culture and Green Work Engagement, so that it may contribute to this, but it is not a prevailing power. Green Reward reveals a feeble positive effect on Green Work Engagement. On the other hand, Green Self-Efficacy holds a strong positive influence on Green Work Engagement, hence expressing its very high importance toward the engagement of employees in green activities. Green Training has a positive relationship with Green Organizational Culture to a considerable extent but maintains a weak negative relationship with Green Work Engagement. While Green Self Efficacy will negatively impact the Green Reward, the interaction will only have a small negative effect on Green Work Engagement, meaning that combined, it may reduce the level of engagement a little bit.

Table 03: Path Model – Hypotheses Testing

Path Model	Beta	SD	T statistics	P values
Green Recruitment -> Green Organizational Culture	0.155	0.031	4.984	0.000
Green Recruitment -> Green Work Engagement	0.202	0.041	4.874	0.000
Green Reward -> Green Work Engagement	0.018	0.035	0.516	0.606
Green Self-Efficacy -> Green Work Engagement	0.801	0.033	24.527	0.000
Green Training -> Green Organizational Culture	0.818	0.026	31.483	0.000
Green Training -> Green Work Engagement	-0.122	0.035	3.502	0.000
Green Self-Efficacy X Green Reward -> Green Work Engagement	-0.073	0.015	5.000	0.000

The table presents the results of hypothesis testing in the path model for Green Human Resource Management (HRM). It indicates the results in the 'T statistics' and 'P values' columns, statistical proof of relevance for every path in the model. Allowing for paths from Green Organizational Culture to Green Work Engagement shows strong positive influences with extremely low p-values (0.000) and high t-statistics (above 4.8), showing convincing evidence for the relationships. Unnecessarily, the p-value of Green Reward (0.606) and the low t-statistic (0.516) for Green Reward on Green Work Engagement failed to show statistical significance, which is also an indication that Green Reward may not be a good predictor of Green Work Engagement in this setup. On the other hand, green self-efficacy has a robust positive effect on green work engagement. Hence, it supports this relationship. Green Self Efficacy supports a highly significant and robust positive effect on Green Work Engagement, whereby it has an extremely high t-statistic (24.527) and a p-value of 0.000, therefore highly supporting this relationship. From the above, the impact of Green Training on Green Organizational Culture is significantly positive and quite strong, as indicated by the highest t-statistic (31.483) and p-value (0.000). Green Training, however, relates negatively significantly to Green Work Engagement, with a p-value of 0.000 and a t-t-t-statistic of 3.502; it would lead to lower Green Work Engagement, with all probability held constant. Last, Green Self-Efficacy and Green Reward have a statistically significant interaction effect on Green Work Engagement (p-value 0.000) at a moderate t-statistic (5.000). It can be said that a complex interplay between self-efficacy and reward mechanisms on engagement can be said to hold when these two are considered.

Discussion

According to the results of this study, Great Britain's Green Human Resource Management (GHRM) practices significantly enhance the environmental and social performance of Pakistan's Higher Education Institutions (HEIs). The study postulates that, through the Resource-Based View (RBV) perspective, GHRM practices are significant strategic resources that contribute significantly to the sustainability outcomes of the HEIs. This is in line with the theoretical underpinnings of RBV, wherein it is emphasized that the accomplishment of competitive advantage and superior performance must rest upon internal resources.

The relationship above between Green Recruitment with both Green Work Engagement and Green Organizational Culture suggests that effective green recruitment strategies play a larger-than-life role in developing a culture for sustainability and sharpening the workforce's engagement in the green activity. This is in concurrence with prior literature that underscores the alignment of HR practices with environmental goals to create a sustainability culture within the organization's tenets.

Furthermore, the study highlights the mediating effect of green organizational culture on GHRM practices and performance outcomes. This may highlight the importance of forming a culture that supports and encourages sustainability initiatives, which are likely to positively impact HEIs' environmental and social performances.

In this case, the realizations are found in the effects of dynamic, sustainable capabilities and management commitment to sustainability toward the effectiveness of GHRM regarding their dynamic practices. From this point, it is one of the prime factors

to state that the institutions committed to leadership and dynamic ability are expected to be well-positioned in using the GHRM practices for sustainability outcomes (Zhang et al., 2020). This is related to the assertion by RBV that intangible resources, including dynamic capability and management commitment, help achieve the success of competitive advantage under rapid environmental changes.

This substantial positive effect of Green Self-Efficacy on Green Work Engagement underlines the beliefs held by people regarding the ability to conduct eco-friendly behaviors, which in turn indicates the rising effectiveness of GHRM practices (Faraz et al., 2021). This explains that the impact of GHRM practices on environmental and social performance is not bound by the nature of institutions—whether public or private with a minor significance in institutional moderation.

Conclusion

Finally, it will add significant insight to the literature regarding the strategic role that Green Human Resource Management (GHRM) practices can play within Pakistan's higher education institutes (HEIs). This reflects that GHRM practices function like strategic resources to help positively influence HEIs concerning environmental and social performance. The results have shown that the roles of a green organizational culture in this relationship are emphasized, and there is a need for HEIs to develop a culture that supports efforts toward sustainability. This study also discusses the significance of dynamic, sustainable capabilities and the management commitment to enhancing the effectiveness of GHRM practices. In addition, the research showed that green self-efficacy was a crucial mediator in the relationship between GHRM practices and performance outcomes, emphasizing the need to empower employees with the confidence to participate in sustainable behaviors. This adds to the existing GHRM literature, and the current study holds practical implications for HEIs within and beyond Pakistan. A culture supported by GHRM practices can help higher educational institutes enhance their sustainability-linked performance and improve their contribution toward environmental and social responsibilities.

Limitations and Recommendation

The study contains limitations that should be considered considering the findings. This study has some limitations since it is explicitly conducted on HEIs in Pakistan, so the findings are limited to other contexts or regions. Future research could extend this study to other countries or sectors to validate the findings. Second, the research utilized self-report data, which bears the risk of response bias. Overcoming this limitation in future research would be appropriate using objective social and environmental performance measures that could supplement the self-report data collection. Third, the findings do not account for a comprehensive set of GHRM practices. Future research should consider other GHRM practices and how each practice is concerned with sustainability outcomes. Based on the findings and limitations of this study, the following recommendations are proposed: Success and an increase in performance about the environment and society through successful application of GHRM practices in the strategic plans for HEIs. HEIs should focus on cultivating a green organizational culture that supports and enhances sustainability efforts. HEIs should develop dynamic, sustainable capabilities and ensure strong management commitment to sustainability. They also argue that HEIs should offer their

employees training and support that increases green self-efficacy to enable them to engage in sustainable behavior. Future research should assess the strength of the impact of GHRM practices in totally different contexts and sectors to validate or support the findings presented in this study.

Acknowledgment

This paper is part of the thesis written by Ms. Asma Irfan Ali, fulfilling the requirements for his Ph.D. Degree.

Reference

Ababneh, O. M. A. (2021). How do green HRM practices affect employees' green behaviors? The role of employee engagement and personality attributes. *Journal of Environmental Planning and Management,* 64(7), 1204-1226.

Aboramadan, M. (2022). The effect of green HRM on employee green behaviors in higher education: the mediating mechanism of green work engagement. *International Journal of Organizational Analysis*, 30(1), 7-23.

Adnan, M. (2021). Employee green behavior as a consequence of green HRM practices and ethical leadership: the mediating role of green self-efficacy. *Journal of Business and Social Review in Emerging Economies,* 7(3), 599–612.

Aftab, J. and Veneziani, M. (2023). How does green human resource management contribute to saving the environment? Evidence of emerging market manufacturing firms. *Business Strategy and The Environment*. Doi:https://doi.org/10.1002/bse.3508.

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.

Afzal, C. M., Khan, S. N., Baig, F. J., & Ashraf, M. U. (2023). Impact of Green Human Resource Management on Environmental Performance: The Mediating Role of Green Innovation and Environmental Strategy in Pakistan. *Review of Applied Management and Social Sciences,* 6(2), 227-242.

Aggarwal, M., Dutta, M., Madaan, V., Pham, L. T., & Lourens, M. (2023). Impact of Green Human Resource Management on Sustainable Performance. *E3S Web of Conferences*,

Aggarwal, P., & Agarwala, T. (2021). Green organizational culture: an exploration of dimensions. *Global Business Review*, 09721509211049890.

Aggarwal, P., & Agarwala, T. (2023). Relationship of green human resource management with environmental performance: the mediating effect of green organizational culture. Benchmarking: *An International Journal*, 30(7), 2351–2376.

Ahmad, A. (2023). Environmental Sustainability Through Green Human Resource Management Practices: An Analyses of Industries Of Lahore, *Pakistan. Journal of Positive School Psychology,* 7(2).

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.

Aukhoon, M. A., Iqbal, J., & Parray, Z. A. Impact Of Corporate Social Responsibility On Employee Green Behavior: Role of green human resource management practices and employee green culture. *Corporate Social Responsibility and Environmental Management*.

Begum, V., & Arshi, T. A. (2020). An Impact-Based Model of Green Human Resource Management: Evidence From UAE. *Journal of Security & Sustainability Issues, 10(2)*.

Carballo-Penela, A., Ruzo-Sanmartín, E., Álvarez-González, P., & Paillé, P. (2023). How do GHRM practices influence firms' economic performance? A meta-analytic investigation of the role of GSCM and environmental performance. *Journal of Business Research*, 165, 113984.

Chen, G., Gully, S. M., & Eden, D. (2004). *Academy of Management Review*, 29(3), 407–425.

Chen, Y. S. (2011). Green organizational identity: *sources and consequence*.

Esthi, R.B. and Setiawan, I. (2023). Green human resources management of small and micro-enterprises in Indonesia. Enrichment: *Journal of Management*, [online]12(6), p.48774885.https://doi.org/10.35335/enrichment.v12i6.1018.

Faisal, S. (2023). Green human resource management—a synthesis. *Sustainability*, 15(3), 2259.

Faisal, S. (2023). Green Human Resource Management—A Synthesis. *Sustainability*, [online] 15(3), p.2259. doi:https://doi.org/10.3390/su15032259.

Faraz, N. A., Ahmed, F., Ying, M., & Mehmood, S. A. (2021). The interplay of green servant leadership, self-efficacy, and intrinsic motivation in predicting employees' pro-environmental behavior. *Corporate Social Responsibility and Environmental Management, 28*(4), 1171–1184.

Fawehinmi, O., Yusliza, M.-Y. and Farooq, K. (2022). Green human resource management and employee green behavior: trends, issues, challenges and the way forward. Sustainable *Development Goals Series,* pp.167–201. doi:https://doi.org/10.1007/978-3-031-06558-3_8.

Fok, L. Y., Morgan, Y.-C., & Zee, S. (2021). The linkages between commitment to sustainability, organizational culture, quality management, and organizational

performance. *International Journal of Applied Management and Technology*, 20(1), 6.

Frare, A. B., Colombo, V. L. B., & Beuren, I. M. (2022). Performance measurement systems, environmental satisfaction, and green work engagement. *Revista Contabilidade & Finanças,* 33.

Gomes, J. F., Sabino, A., & Antunes, V. (2023). The effect of green human resources management practices on employees' affective commitment and work engagement: The moderating role of employees' biospheric value. *Sustainability*, 15(3), 2190.

Islam, M. A., Jantan, A. H., Yusoff, Y. M., Chong, C. W., & Hossain, M. S. (2023). Green human resource management (GHRM) practices and millennial employees' turnover intentions in the tourism industry in Malaysia: the moderating role of the work environment. *Global Business Review, 24*(4), 642–662.

Ismail, J., Bibi, M., & Fatima, N. (2023). Sustainable HRM practices and psychological well-being of employees: a case of private sector banks in Pakistan. *Sarhad Journal of Management Sciences, 9*(2).

Jamil, S., Khan, S., & Seraj, S. S. (2023). A sem-based study on intrinsic motivation in the education sector: the role of hrm practices. *Voyage Journal of Educational Studies,* 3(2), 305-325.

Jamil, S., Shah, F., Khan, S., & Imran, I. (2023). The influence of potential outcome on entrepreneurs' decisions to participate in crowdfunding in Pakistan (Karachi). *International journal of social science & entrepreneurship*, 3(1), 1–24.

Juhari Noor Faezah, Mohd Yusoff Yusliza, T. Ramayah, Chiappetta, J. and Kot, S. (2024). Green human resource management and employee ecological behavior: Testing green culture and green satisfaction as parallel mediators in Malaysian higher education. *Corporate social responsibility and environmental management. Doi* https://doi.org/10.1002/csr.2800.

Kanan, M., Taha, B., Saleh, Y., Alsayed, M., Assaf, R., Ben Hassen, M., Alshaibani, E., Bakir, A., & Tunsi, W. (2023). Green innovation as a mediator between green human resource management practices and sustainable performance in Palestinian manufacturing industries. *Sustainability*, 15(2), 1077.

Khan, M.H. and Muktar, S.N. (2023). Green employee empowerment: the missing linchpin between green HRM and sustainable organizational performance. *Journal of Cleaner Production*, [online] p.139812. doi:https://doi.org/10.1016/j.jclepro.2023.139812.

Khan, S. A. R., Godil, D. I., Jabbour, C. J. C., Shujaat, S., Razzaq, A., & Yu, Z. (2021). Green data analytics, blockchain technology for sustainable development, and sustainable supply chain practices: evidence from small and medium enterprises. *Annals of Operations Research*, 1–25.

Khan, S., & Ali, M. (2023). Green human resource management in higher education: a study of Pakistani universities. *Journal of Sustainable Higher Education,* 15(2), 123-145.

Khan, S., & Sajjad, S. (2013). Factors for better selection of business universities in Karachi: perspective of students. *Journal of Business Strategies,* 7(1), 55.

Khan, S., Ali, A., Bibi, T., & Wadood, F. (2023). Mechanical investigations of the durability performance of sustainable self-compacting and anti-spalling composite mortars. *Journal of Building Engineering*, 108319.

Khan, S., Bibi, C., & Awan, M. A. Educational innovation, Information repository and the role of libraries and information science (LIS) in the *Future of Asian Education*.

Khan, S., Hyder, M., & Rasheed, R. (2023). An in-depth exploration of the societal impact of athletic events in a developing country–a study of university students. *Propel journal of academic research*, 3(1), 119–143.

Khan, S., Jamil, S., & Khan, U. R. (2022). How green psychological capital and HRM can lead to long-term sustainability in organizations. *International Journal of Management Research and Emerging Sciences,* 12(4).

Khan, S., Khan, M. I., & Sultan, S. R. (2022). *Journal of Research in Social Development and Sustainability*, 1(2), 57-73.

Khan, S., Khan, M., Rais, M., & Aziz, T. (2022). Critical analysis of the impact of employee motivation on organizational productivity. *Reviews of management sciences*, 5(1), 13-37.

Khan, S., Qabool, S., & Javed, H. (2023). Elevating Consumer Purchase Intentions in Pakistan: The power of Digital Marketing. *South Asian Journal of Management Sciences*, 17(2).

Khan, S., Rasheed, R., & Hyder, M. (2022). The impact of working remotely on employee job satisfaction: an sem-pls study of university workers. *Voyage Journal of Educational Studies,* 2(2), 84–102.

Khan, S., Zaman, S. I., Shah, A., & Anwar, A. (2023). A historical comparison of social media influencer's effect on purchase intention of health-related products: A longitudinal pre-post Covid 19 study using an Artificial Neural Network (ANN) and Structural Equation Modeling (SEM).

Kishnani, S. R. M. S., & Dutta, M. S. Eco-Friendly HR for Sustainable Futures: A comprehensive bibliometric exploration of green human resource management Practices. *Editorial Advisory Board,* 38.

Li, W., Abdalla, A.A., Mohammad, T., Khassawneh, O. and Parveen, M. (2023). Towards examining the link between green HRM practices and employee green in-role behavior: spiritual leadership as a moderator. *Psychology Research and Management,* 16, 383–396.

Liu, R., Yue, Z., Ijaz, A., Lutfi, A. and Mao, J. (2023). Sustainable business performance: Examining the role of green HRM practices, green innovation, and responsible leadership through the lens of pro-environmental behavior. *Sustainability*, 15(9), p.7317. doi:https://doi.org/10.3390/su15097317.

Liying, H., & Ismail, K. (2023). Identifying the contribution of technology innovation in driving sustainability in higher educational institutions through political influence, performance-based budgeting, and organizational culture. *Economic Research-Ekonomska Istraživanja*, 36(2), 2142265.

Mahajan, R., Lim, W. M., Sareen, M., Kumar, S., & Panwar, R. (2023). Stakeholder theory. *Journal of Business Research,* 166, 114104.

Niazi, U.I., Nisar, Q.A., Nasir, N., Naz, S., Haider, S. and Khan, W. (2023). Green HRM, green innovation and environmental performance: the role of green transformational leadership and green corporate social responsibility. Environmental Science and Pollution Research. Doi:https://doi.org/10.1007/s11356-023-25442-6.

Nisar, Q.A., Haider, S., Ali, F., Gill, S.S. & Waqas, A. (2022). The Role of Green HRM on Environmental Performance of Hotels: Mediating Effect of Green Self-Efficacy & Employee Green Behaviors. Journal of Quality Assurance in Hospitality & Tourism, pp.1–34. doi:https://doi.org/10.1080/1528008x.2022.2109235.

Papademetriou, C., Ragazou, K., Garefalakis, A. & Passas, I. (2023). Green Human Resource Management: Mapping the Research Trends for Sustainable and Agile Human Resources in SMEs. *Sustainability*, 15(7), 5636. doi https://doi.org/10.3390/su15075636.

Saeed, B. B., Afsar, B., Hafeez, S., Khan, I., Tahir, M., & Afridi, M. A. (2019). Promoting employee pro-environmental behavior through green human resource management practices. *Corporate Social Responsibility and Environmental Management,* 26(2), 424–438.

Shah, P., Richa Singh Dubey, Rai, S., Renwick, D. and Misra, S. (2023). Green human resource management: A comprehensive investigation using bibliometric analysis. *Corporate Social Responsibility and Environmental Management.* Doi:https://doi.org/10.1002/csr.2589.

Shah, S. M. A., Jiang, Y., Wu, H., Ahmed, Z., Ullah, I., & Adebayo, T. S. (2021). Linking green human resource practices and environmental economics performance: the role of green economic, organizational culture and green psychological climate. *International journal of environmental research and public health*, 18(20), 10953.

Shahriari, M., Tajmir Riahi, M., Azizan, O., & Rasti-Barzoki, M. (2023). The effect of green organizational culture on organizational commitment: The mediating role of job satisfaction. *Journal of Human Behavior in the Social Environment*, 33(2), 180-197.

Shahzad, M. A., Jianguo, D. & Junaid, M. (2023). Impact of green HRM practices on sustainable performance: mediating role of green innovation, green culture, and green employees' behavior. Doi: https://doi.org/10.1007/s11356-023-28498-6.

Shaikh, F., Afshan, G., & Channa, K. A. (2023). Organizational commitment to sustainability: considering the role of leadership, green HRM and green knowledge sharing. *Journal of Organizational Change Management.*

Suliman, M. A., Abdou, A. H., Ibrahim, M. F., Al-Khaldy, D. A. W., Anas, A. M., Alrefae, W. M. M., & Salama, W. (2023). Impact of green transformational leadership on employees' environmental performance in the hotel industry context: Does green work engagement matter? *Sustainability*, 15(3), 2690.

Tandon, A., Dhir, A., Madan, P., Srivastava, S. and Juan Luis Nicolau (2023). Green and non-green outcomes of green human resource management (GHRM) in the tourism context. *Tourism Management,* 98, pp.104765–104765. doi:https://doi.org/10.1016/j.tourman.2023.104765.

UNESCO. (2015). Rethinking Education: Towards a Global Common Good? Paris: *UNESCO*. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000232555.

United Nations. (n.d.). Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. *United Nations Sustainable Development*. Retrieved from https://sdgs.un.org/goals/goal4.

Xu, G., & Wang, T. (2023). Fewer false positives in electrocatalytic nitrogen reduction by synergizing theory and experiment. *Nature Computational Science*, 1-4.

Yang, J., Malik, S. Y., Mughal, Y. H., Azam, T., Khan, W., Chuadhry, M. A., Ilyas, M., & Cao, Y. (2023). Assessing the Impact of corporate social responsibility, green shared vision on voluntary green work behavior: mediating role of green human resource management. *Sustainability*, 15(23), 16398.

Yang, Q., Li, S., Cui, H., & Qiao, J. (2023). How does supplier relationship management affect supplier innovation contribution? Interorganizational learning and social exchange theory integrated perspectives. *Industrial Marketing Management*, 114, 165-180.

Zaheer, K., Khan, S., & Raees, M. (2023). The Role of GBK in Influencing Green Purchase Intention: A SEM Study of University Students. *Voyage Journal of Educational Studies,* 3(2), 243–259.

Zahoor, N., Khan, Z., & Shenkar, O. (2023). International vertical alliances within the international business field: A systematic literature review and future research agenda. *Journal of World Business*, 58(1), 101385.

Zhang, W., Sun, B. & Xu, F. (2020). Promoting Green Product Development Performance via Leader Green Transformational and Employee Green Self-

Efficacy: The Moderating Role of Environmental Regulation. International *Journal of Environmental Research and Public Health,* 17(18), 6678. doi:https://doi.org/10.3390/ijerph17186678.

Zhang, W., Sun, B., & Xu, F. (2020). Promoting green product development performance via leader green transformationality and employee green self-efficacy: The moderating role of environmental regulation. *International journal of environmental research and public health,* 17(18), 6678.

Zhang, W., Zhang, W. & Daim, T.U. (2023). The voluntary green behavior in green technology innovation: The dual effects of green human resource management system and leader green traits. *Journal of Business Research,* [online] 165, p.114049. doi https://doi.org/10.1016/j.jbusres.2023.114049.

Zihan, W., Makhbul, Z.K.M. and Alam, S.S. (2024). Green Human Resource Management in Practice: Assessing the Impact of Readiness and Corporate Social Responsibility on Organizational Change. *Sustainability*, [online] 16(3), p.1153. doi:https://doi.org/10.3390/su16031153