

Fostering corporate sustainability and environmental performance in IT industries of Pakistan

 Saqib Ilyas*¹

 Abdul Ghaffar²

 Amer Shakeel³

 Saroosh Tariq⁴

 Hiba Majid⁵

 Anam Tariq⁶

How to cite this article:

Ilyas, S., Ghaffar, A., Shakeel, A., Tariq, S., Majid, H., & Tariq A. (2024). Fostering corporate sustainability and environmental performance in IT industries of Pakistan. *Journal of Excellence in Management Sciences*, 3(3), 49–67

Received: 8 March 2024 / Accepted: 27 May 2024 / Published online: 20 June 2024

Abstract

In an era where the ecological consequences of corporate endeavors are becoming more evident, there is a mounting fascination with the potential impact of environmentally conscious HR practices on employee performance. The present study delves into the intricate connection between such green HR practices and the environmental performance of employees, specifically exploring the mediating influences of green motivation and PEMM. A comprehensive survey was conducted among individuals employed in the IT sector, ultimately revealing a noteworthy and positive correlation between green HR practices and intrinsic and extrinsic motivation for environmentally friendly actions and PEMM. This research contributes to the growing literature on environmentally conscious HR practices, providing empirical evidence of the positive relationship between such practices, motivation for sustainability, and the advancement of proactive environmental management within the IT industry. The findings of this study hold significant implications for organizations committed to environmental stewardship and long-term sustainability. By offering practical insights, this research aids IT companies in developing and implementing green HR strategies that align with their sustainability goals.

¹IVY College of Management Sciences, Lahore, Pakistan

Corresponding author: Saqib.ilyas.lhr@rootsivy.edu.pk

²Assistant Professor, Hasan Murad School of Management, University of Management and Technology, Lahore, Pakistan

³Assistant professor, University of Management and Technology, Lahore, Pakistan

⁴Office of Research, Innovation and Commercialization, University of Management and Technology, Lahore, Pakistan

⁵Student, Department of Business Administration, Kinnaird College for Women, Lahore, Pakistan

⁶Assistant Professor, Kinnaird College for Women, Lahore, Pakistan



Keywords: Green HR practices, green motivation, PEMM, Corporate sustainability, environmental performance

1 Introduction

In recent years, the imperative of addressing environmental sustainability has gained rapid recognition in the business world. Organizations across industries have been under mounting pressure to proactively reduce their environmental impact and promote sustainability (Sanchez-Sellero et al., [2022](#)). HR practices emerged as a pivotal factor in driving ecological sustainability within organizations, as they could shape employee behavior and promote adopting environmentally responsible practices (Huang et al., [2022](#)).

Green practices largely foster green organizational culture and promote environmental sustainability. These practices involve eco-friendly workplace policies, green recruitment, training programs, and encouraging employees to adopt environmentally conscious behaviors. The IT industry has been growing rapidly in Pakistan, significantly contributing to the national economy. MoITT said the IT sector was one of Pakistan's fastest-growing industries, contributing around 1% of the nation's GDP, or about 3.5 billion USD, annually. Research has shown that organizations that adopted environment-friendly practices were more likely to achieve sustainability goals, improve their environmental performance, and benefit from increased profitability (Agostino & Ruberto, [2021](#)). Hameed et al. ([2020](#)) found that green HRM practices positively impacted environmental management maturity in the hotel industry, which could be extended to other industries, including the IT sector.

Therefore, the rapid global growth of the IT sector has led to concerns about its potential environmental impact. The industry's high energy consumption and reliance on electronic devices have raised concerns about the potential for environmental degradation. Nevertheless, the IT sector also has the opportunity to lead efforts toward environmental sustainability by adopting green practices and reducing the ecological impact (Sanchez-Sellero et al., [2022](#)). Prior research has shown that applying Green HR practices in the IT sector can yield positive outcomes such as increased employee motivation, enhanced environmental management maturity, and improved financial performance. For example, a study by Davidescu et al. ([2020](#)) discovered that businesses using green HR methods saw improvements in work satisfaction and employee engagement, as well as lower energy and waste management expenses. By examining the effects of these practices on green motivation and PEMM within Pakistan's IT industry, a study by Yong et al. ([2020](#)) closes the research gap despite the potential benefits of green HR practices in the IT business. This study examines the correlations between the factors under inquiry to support environmental sustainability in the IT industry through green HR practices. The IT industry is a major contributor to global greenhouse gas emissions. Thus, it's critical to remember this to emphasize the need for green HR practices (Asif et al., [2021](#); Wang et al., [2023](#)).

According to a report published by the IEA, the global IT sector was responsible for 1.5% of greenhouse gas emissions worldwide in 2020; by 2025, that percentage is expected to rise to 3.5% (Scott & Gossling, [2021](#)). This emphasizes the importance of the IT sector embracing sustainable business practices and lessening its influence on the environment. Governments and regulatory agencies have been pushing for environmental sustainability (Khan et al., [2019](#)) and the adoption of green practices by businesses in recent years. For instance, the Pakistani government has implemented several laws and programs to encourage sustainable growth and lessen the nation's carbon footprint. By adopting green HR practices, organizations in the IT industry can not only comply with regulatory requirements but also position themselves as responsible corporate citizens and gain a competitive advantage. The adoption of green HR practices positively impacts hiring and staff retention. Today's Workers are more inclined to work for companies that value sustainability since they are more aware of environmental issues. Organizations may recruit and

retain talent and develop a more engaged and motivated workforce by implementing green HR principles (Arshad et al., [2022](#); ur Rehman et al., [2024](#)).

Remembering that smaller companies can use green HR practices is also critical. Small and medium-sized enterprises (SMEs) in the IT industry can benefit from implementing green HR practices. SMEs can adopt green practices faster and more effectively than larger enterprises because they are frequently more adaptable and agile. Furthermore, the IT industry is among the fastest-growing and largest global producers of carbon emissions, which emphasizes the importance of green HR practices in the field (Afzal et al., [2023](#); Khan et al., [2022](#); Mustafa et al., [2022](#); Rehman et al., [2023](#)). For this reason, businesses in this sector must act to lessen their environmental effect and promote sustainability. Adopting green HR practices can assist by encouraging employees to adopt eco-friendly behaviours that relate to their personal and professional lives and foster a culture of environmental responsibility. Furthermore, green HR practices have advantages beyond lessening an organization's environmental impact. These procedures can also help improve worker satisfaction, which can benefit recruitment, retention, and productivity. For example, a 2014 study by Pham et al. ([2020](#)) discovered that businesses using green HR practices had decreased absenteeism and turnover, which can save the business money.

Although green HR practices are becoming increasingly important, not enough studies have been done on how they affect employee engagement and corporate success in Pakistan. To close this knowledge gap, this research will examine the connections and contributing variables between green HR practices and employee engagement and the correlations between these practices and organizational success. Furthermore, this study has advanced knowledge of the advantages of green HR practices for businesses and workers alike. This study investigates the relationships among green HR practices, environmental performance, and company sustainability. Though green HR practices are becoming increasingly important, not enough studies have been done on how they affect employees. This research aims to understand better how green HRM practices influence environmental performance and corporate sustainability. It also investigates how green motivation and PEMM influence these interactions. Furthermore, the study examined how green motivation influenced the relationship between green HR practices, company sustainability, and environmental performance. The study also looked at the mediating function of PEMM in these connections, which will provide important insights into the mechanisms by which green HR practices affect business sustainability and environmental performance.

This study's findings have provided valuable insights into the challenges and opportunities for implementing green HR practices in Pakistani workplaces, as well as guiding the development of effective strategies for organizations, practitioners, and policymakers to implement green HR practices in the country. Furthermore, the study has added to the greater literature on green HR practices and sustainability by offering insights into their application in developing countries. The study's conclusions have far-reaching consequences for its environmental and financial performance because the IT industry is a major contributor to Pakistan's national economy. Overall, the findings of this study have major ramifications for Pakistani IT firms. This study emphasizes the potential benefits of green HR practices for firms that want to adopt sustainable business practices while reducing their environmental effect. By demonstrating the favorable benefits of these practices on staff engagement and ecological management maturity, this study provides a path for firms looking to improve their sustainability efforts. The study's findings can help policymakers and regulatory organizations design regulations and policies to promote sustainable development in the IT industry. In addition to contributing to the body of research on green HR practices, corporate sustainability, and environmental performance, the study aims to provide actionable guidance for firms interested in implementing sustainable HR practices. The outcomes of this study will be useful for both academics and practitioners.

2 Literature Review

HRM (HRM) policies significantly influence an organization's attempts to achieve environmental sustainability (Zhu et al., [2021](#)). Green HRM strategies are critical to developing environmentally responsible behaviour among employees and establishing a green business culture. These practices include green recruitment, training programs, performance evaluations, teamwork, rewards, engagement, culture, and empowerment. (Paille et al. [2020](#)). To ensure sustainability and promote environmentally conscious behaviors, organizations must implement green HRM practices that engage employees through policies and initiatives that priorities environmental awareness. Adopting green HR practices fosters a green culture by promoting employee green ability, awareness, and behavior (Hooi et al., [2022](#)). Based on empirical research, adopting green HRM practices has enhanced organisation's environmental and financial performance. For example, Ahmed et al. ([2020](#)) discovered a positive relationship between green HRM practices and ecological performance in Pakistan (Jabbar & Abid, [2015](#)). at the same time, Ojo et al. ([2022](#)) discovered a similar positive relationship between green HRM practice adoption and reduced energy consumption and waste generation, as well as increased pro-environmental behaviour among Jordanian employees. Furthermore, Green HRM Practices positively impact employee motivation for ecologically responsible conduct. Hameed et al. ([2020](#)) discovered that green HRM methods increased employee motivation to engage in pro-environmental activity in the Chinese context. Recent research has shown that green HRM can improve workplace environmental performance despite this topic being understudied in Pakistan (Ahmed et al., [2020](#)).

The current literature reveals that green HRM practices have the potential to significantly contribute to environmental sustainability in enterprises, particularly the IT industry. Adopting such strategies can help firms minimise their environmental footprint, encourage environmentally responsible behavior among employees, and improve their environmental and financial performance. Green HR practices incorporate environmental sustainability ideas into HR policies and procedures. These practices include lowering the carbon impact of HR processes, increasing employee eco-awareness and training, and supporting sustainable behavior in the workplace. On the other hand, corporate sustainability is defined as incorporating social, environmental, and economic factors into business strategy and operations. The goal is to produce long-term benefits for stakeholders while minimizing environmental impact. The premise that green HR practices improve business sustainability is widely supported by research. Green HR practices involve incorporating environmental sustainability principles into HR policies and procedures, which can help reduce the organization's carbon footprint, increase employee eco-awareness and responsible behavior, and align HR policies with the organization's sustainability goals. On the other hand, corporate sustainability refers to incorporating social, environmental, and economic issues into business strategy and operations to generate long-term value for stakeholders while reducing environmental impact. By implementing green HR practices, firms may improve their environmental performance, boost their reputation, raise employee engagement and satisfaction, and optimise.

Several studies have indicated that green HR practices improve organizational sustainability. For example, Liu et al. ([2019](#)) discovered that firms that implemented green HR strategies performed better regarding environmental performance, employee engagement and satisfaction, and resource efficiency. These results are critical to the organisation's profitability and sustainability, emphasising the need to include green HR practices in a larger corporate sustainability plan. To summaries, green HR practices are an important driver of business sustainability, and implementing them can help organizations decrease their environmental impact, encourage eco-awareness and responsible conduct, and link HR policies with sustainability goals. By incorporating green HR practices into their operations, firms can enhance their reputation and promote employee engagement.

H1: The implementation of green HR practices has a positive impact on enhancing corporate sustainability

Green HR Practices involve incorporating environmental sustainability principles into HR policies and procedures to reduce the organization's ecological organisation's impact and foster a sustainable culture. Environmental performance is an organization's ability to reduce its negative influence on the environment by utilising natural resources efficiently, decreasing waste and emissions, and implementing environmentally responsible practices. Green HR habits can help an organization's environmental performance by lowering its carbon footprint and fostering sustainable habits among employees. For example, initiatives promoting digitalisation and telecommuting can cut paper usage and transportation emissions. Additionally, recycling programs and eco-friendly products can reduce waste and encourage environmentally responsible practices. By integrating these practices into HR policies, firms can reduce their ecological footprint and foster a more sustainable future.

Furthermore, green HR practices can enhance employees' understanding of environmental issues and encourage them to engage in sustainable behaviour inside and outside the office. This can boost long-term environmental performance and foster a sustainable culture within the firm. According to recent studies, implementing green HR practices can have a positive ecological impact on firms. Wen et al. (2022) found that Pakistani enterprises that embraced green HR practices had lower carbon emissions and better environmental performance. Similarly, Khairuddin et al. (2019) discovered that small and medium-sized enterprises in Malaysia become more environmentally sensitive after implementing green HR practices (Chin et al., 2023; Junsheng et al., 2020). According to Chen et al. (2021), adopting green HR practices was positively associated with implementing sustainable supply chain management techniques, which in turn contributed to enhanced environmental performance in Chinese enterprises. In conclusion, new research supports the idea that green HR practices improve environmental performance. Organizations can reduce their ecological effect, foster a sustainable culture, and contribute to long-term environmental performance by incorporating ecological sustainability principles into HR policies and practices. Thus, the hypothesis is presented as follows:

H2: Green HR practices have a positive influence on environmental performance

Green HR practices improve organisational sustainability, and green motivation facilitates this relationship. Ghaderi et al. (2024) discovered that green HR practices increase employee engagement in sustainability, which is partially mediated by green motivation. To encourage ecologically responsible conduct among employees, the authors recommend that managers foster a supportive work environment and use incentives to reward those who demonstrate a strong commitment to sustainability. Kim et al. (2019) examined the connection between environmentally conscious OCB and green HR practices, green motivation, and green motivation. In another study, Chen et al. (2021) investigated how green HR practices affected organizational commitment, environmental performance, and employee job satisfaction. The authors demonstrated that green HR practices partially mediate the relationship between green motivation, work satisfaction, and organizational commitment. The authors recommend that managers use green HR practices to improve environmental performance, build a sustainable culture, and boost employee well-being. The findings of this study indicate that green HR practices have a favourable association with company sustainability, which is mediated by green motivation. This suggests that green HR practices can boost employee participation in sustainability programs and improve environmental performance, but only through the motivating aspect of green behaviour. The study's conclusions have important ramifications for businesses hoping to boost their environmental performance through effective HRM techniques. It emphasizes the significance of establishing a sustainability culture within the industry and giving staff members chances to engage in eco-friendly actions.

In reality, this study advises that firms should implement green HR practices such as sustainability training and promoting eco-friendly products and recycling programs. These approaches can foster a more environmentally conscious workplace and raise employee enthusiasm to participate in sustainability activities, resulting in improved company sustainability performance. This study gives insightful perspectives on the relationship between green HR practices, green motivation, and company sustainability (Tian et al., [2020](#)). It emphasises the significance of instilling a sustainable culture inside organizations and encouraging environmentally responsible conduct to achieve sustainable development goals.

H3: Green motivation can mediate the relationship between green HR practices & corporate sustainability

Green motivation's role as an intermediary factor influenced the relationship between green HR practices and environmental performance (Asad et al., [2024](#); Rehman et al., [2023](#)). This indicates that green motivation influenced the link between Green HR practices and environmental performance. Numerous researches investigated the relationship between environmental performance, green motivation, and green HR practices (you're Rehman et al., [2024](#)). Govindan et al. (2018) researched the Indian automobile industry to evaluate the relationship between environmentally friendly HR practices and performance. The study discovered that eco-design training and implementation were successful green HR practices positively impacting environmental performance. The authors claimed that green HR practices could be a useful strategy for increasing employee green motivation and improving ecological performance in the automobile industry. Similarly, Pham et al. ([2020](#)) researched the relationship between environmental performance, green inspiration, and green HR practices in Brazil. According to the study's findings, green HR practices positively impact green motivation, which improves environmental performance. The study indicated that integrating green HR practices could increase employee involvement in sustainability programs and improve environmental outcomes.

Furthermore, a study by Liu et al. ([2019](#)) investigated the relationship between environmental performance, green motivation, and HR practices in China. The authors discovered that green motivation, which favourably improved environmental performance, was positively influenced by green HR practices (Afzal et al., [2023](#)). According to the study, green HR practices could be used in China to boost employee involvement in sustainability projects and enhance environmental performance. In their conclusion, the authors wrote that “green HR practices could enhance the environmental performance of firms by promoting employee green motivation”.

Raza and Khan ([2022](#)), investigated the relationship between green employee motivation, green HR practices, and environmental performance in the hotel industry (Ying et al., [2020](#)). The study found that introducing green HR practices improved staff members' environmental motivation, resulting in better environmental performance. The study indicated that applying Green HR practices could effectively improve environmental performance within the hotel business by increasing employee green motivation (Elziny, [2019](#)). The findings of these recent studies strongly indicate that a person's desire to live sustainably mediates the relationship between green HR practices and environmental performance. Green HR strategies can foster the development of a sustainable business culture while also providing chances for employees to act ethically (Saleem et al., [2020](#); Wang et al., [2023](#)). Green HR strategies boost employee engagement to sustainability, improving environmental performance.

H4: Green Motivation mediates a relationship between Green HR Practices & Environmental Performance.

The ability of an organization to proactively manage its environmental effects and promote sustainable business practices is referred to as PEMM. Green HR practices, such as

environmental training programs and sustainable hiring and selection procedures, were more likely to be adopted by firms with higher levels of PEMM. According to this poll, firms looking to improve their sustainability performance should focus more on developing and enhancing their PEMM rather than simply implementing green HR practices. Organizations that successfully integrate sustainability into their operations will achieve better environmental outcomes (Adnan et al., [2023](#)). The evidence is consistent with the hypothesis that PEMM mediates the relationship between green HR practices and corporate sustainability and emphasizes the criticality of organizations putting equal emphasis on both of these elements to improve sustainability outcomes. This can involve implementing various initiatives, such as setting sustainability goals, developing a sustainability strategy, and monitoring and reporting on environmental performance. This concept has been designed to help organizations assess their current level of environmental management performance and to identify opportunities for improvement (Mustafa et al., [2022](#)). An organization's level of PEMM will affect the relationship between its green HR practices and its overall sustainability. A study published in the Journal of Cleaner Production found that organizations with higher levels of environmental management maturity had stronger relationships between their green HR practices and overall sustainability (Krause & Bronstein, [2024](#)).

H5: PEMM mediates the relationship between green HR practices and corporate sustainability.

Numerous studies have shown that Green HR practices can help companies achieve sustainability by encouraging eco-friendly policies, recruiting and selection procedures, and eco-focused training programs. However, the organization's environmental management maturity level may influence the effectiveness of green HR strategies (Zhu et al., [2021](#)). A mature approach to proactive environmental management refers to the strategies, procedures, and practices used by an organization to reduce its environmental impact and incorporate sustainability into its operations. According to studies, organizations with more proactive environmental management strategies are better able to implement green HR policies and achieve long-term results. These companies are more likely to have implemented environmentally friendly HR practices, such as environmental training programs, which can help reduce their negative environmental impact. As a result, firms seeking to improve their sustainability outcomes through Green HR practices must prioritize the creation and enhancement of PEMM. Green HR activities are linked to corporate sustainability through PEMM.

H6: PEMM mediates the relationship between green HR practices and corporate sustainability.

Figure 1 depicts the study's research model, which includes green HR practices as an independent variable and business sustainability and environmental performance as dependent variables. Furthermore, the study examines two mediators: green motivation and PEMM.

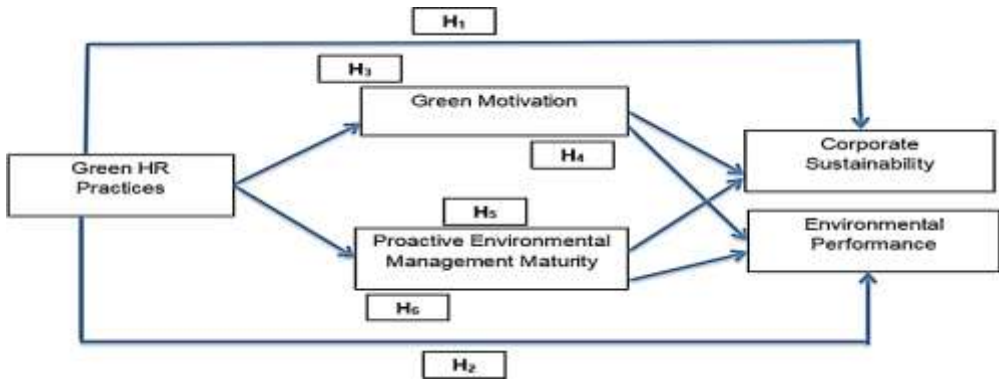


Figure 1: Research Model

3 Methodology

Numerous research studies have demonstrated the link between sustainable organisational practices and green HR practices. A few examples of green HR practices that have been discovered to impact corporate sustainability outcomes positively include adopting environmentally friendly policies, sustainable recruitment, and selection practices, and training programs focused on environmental sustainability. However, research has also indicated that the organization's level of environmental management maturity may have an impact on how effectively green HR practices promote sustainability. O'Donohue and Torugsa's (2016) study discovered that green HR practices enabled proactive environmental management, resulting in high-performance outcomes for organizations. They emphasized that academic literature has widely proven the beneficial association between green HR practices and company sustainability. Green HR practices can be utilized as a tool to boost employee participation in sustainability projects and enhance environmental performance.

The initial independent variable under investigation in the present study is Green HR Practices. Green HR practices include various actions that businesses can take to encourage their staff to engage in an environmentally responsible manner. By putting such practices into place, organizations want to encourage green behaviour, awareness, and skills in their staff, eventually resulting in a green culture within the business (Paille et al., 2020). This variable consists of three items and measures how much an organization incorporates eco-friendly behavior into its HR practices. Corporate sustainability is the main dependent variable in the current study, which encompasses a business approach that considers the effects of a company's operations on the environment, society, and the economy. By adopting sustainable practices, firms can mitigate their environmental impact, promote social welfare, and achieve long-term economic viability (Crossley et al., 2021). This variable includes seven items and measures the degree to which an organization considers sustainability as a critical component of its corporate culture. The study's second dependent variable is environmental performance. This characteristic addresses the organization's measurable environmental impact, including its carbon emissions, water use, waste creation, and resource utilization. The relationship between green HR practices and environmental performance was modified by the role of green motivation as an intermediary factor.

Green Motivation, one of the mediating factors in this study report, refers to how employees are driven to engage in ecologically sustainable workplace behaviours. This variable contains eight questions that assess employees' motivation and participation in environmental activities. The second mediating variable in this study is PEMM. PEMM describes an organization's ability to

create and maintain effective environmental management practices, policies, and procedures. This variable includes four items and measures how green HRM (HRM) practices improve an organization's energy efficiency.

Demographic variables, including gender, years of qualification, age, industry, and designation, were included in this study as control variables to isolate the effect of Green HR practices on Corporate Sustainability and Environmental Performance. We considered the demographic variables of the respondents' genders (male = 1, female = 2), years of qualification, age, industry, and designation to control for potential confounding factors that could influence the relationship between both the Y1 and Y2. For example, gender may be included as a control variable because men and women may have different attitudes and behaviours towards environmental sustainability. By controlling for gender, we can more accurately assess the impact of Green HR on corporate sustainability without the potential influence of gender biases. Similarly, years of qualification and age are included as control variables because they could influence employees' experience and knowledge about environmental sustainability, influencing their attitudes and behaviours towards sustainability in the workplace. Industry and designation may also be relevant control variables because different industries and job positions may have different levels of exposure to environmental sustainability issues, which could influence their attitudes and behaviours toward sustainability. Overall, by controlling for potential confounding variables that could affect the association between the variables, using these demographic data as control variables can help to isolate the impact of Green HR practices on corporate sustainability and environmental performance. This study aimed to investigate the relationships between the variables under consideration, as well as the mediating effects of green motivation and PEMM on the relationship between green HR practices, corporate sustainability, and environmental performance. The research design used in this study was quantitative, non-experimental, and correlational. The data was gathered from participants during their regular office hours in non-contrived situations, with minimal interference. Data collection went smoothly, and participants had enough time to complete the questionnaire. The participants were educated about the study's goal, which allowed them to understand the reasoning behind the survey and complete it appropriately.

Due to their critical role in the adoption of green HR practices and environmental management practices in the IT industry, the participants were mostly HR managers from various IT offices in Lahore. This research paper targets all the permanent and white-collar employees who work daily at IT Offices such as i2c, Educative, Hashlogics, and Triple Technologies. Lahore was selected as the target city for this study for several reasons. First, Lahore has a better average ratio of literacy and infrastructure improvement than other cities in Pakistan, which makes it easier to administer surveys and obtain more transparent responses. Additionally, Lahore is a central city with a large number of IT offices, making it an ideal location for researching GHP and its impact on Corporate Sustainability and Environmental Performance.

This research study is aligned with the theory proposed by Taherdoost (2021), which states that a larger sample size reduces the chances of bias and minimizes errors in the results. Therefore, a large sample size of employees from different IT offices in Lahore was selected to enable the study to provide more robust and reliable findings. The responses from the employees were gathered using a systematic questionnaire to ensure the validity and reliability of the data. Convenience sampling was utilized as the sampling technique to gather data from the target population of white-collar and designated employees working in IT offices in Lahore who met the inclusion criteria. A sample size of 270 participants was deemed adequate to examine the suggested model and generalize its findings because the survey employed in this study had 27 items. However, despite our best efforts, some respondents did not complete the questionnaire in full, resulting in a total of 250 valid responses. Even though the targeted sample size was not that large, the study could still provide reliable data for analysis.

4 Data Analysis and Findings

4.1 Descriptive Analysis

Participants were asked to indicate how much they agreed with a statement on a five-point Likert scale, from "strongly disagree" (five) to "strongly agree" (out of one). SPSS version 21 is used for statistical data analysis.

Table 1: Measurement of Study Variables

Variables	Reference	Items	Scale
Green HR Practices	(Ahmed, et al., 2020)	3 Items	5 Likert Scale
Green Motivation	(Ahmed, et al., 2020)	8 Items	5 Likert Scale
Corporate Sustainability	(Jamal, et al., 2021)	7 Items	5 Likert Scale
Environmental Performance	(Ahmed, et al., 2020)	6 Items	5 Likert Scale
PEMM	(Ahmed, et al., 2020)	4 Items	5 Likert Scale

The above table presents the descriptive analysis of the participant's characteristics in terms of gender, age, and education. The table shows that out of the total 250 participants, 160 (63.7%) were male, while 90 (35.9%) were female. In terms of age, the majority of participants (110 or 43.8%) were in the age group of 20-25, followed by 67 (26.7%) in the age group of 26-30, and 41 (16.3%) in the age group of 31-35. Only 15 (6.0%) participants were above the age of 41-45. When it comes to education, the majority of participants (142 or 56.6%) had completed their graduation, while 70 (27.9%) had pursued post-graduation. Only 38 (15.1%) participants were undergraduates.

**Correlation is significant at the 0.01 level (2-tailed).

Table 2: Demographic Variable Analysis

	Frequency	Percentage
Gender		
Male	160	63.7
Female	90	35.9
Age		
20-25	110	43.8
26-30	67	26.7
31-35	41	16.3
36-40	17	6.8
41-45	15	6.0
Education		
Graduate	142	56.6
Postgraduate	70	27.9
Undergraduate	38	15.1

According to the findings, there is a strong positive correlation between green HR practices and green motivation ($r=0.487$, $p0.01$), meaning that businesses that use environmentally friendly HR practices are more likely to have staff members driven to engage in sustainable environmental practices. Additionally, a substantial positive association exists between PEMM and green practices ($r=0.465$, $p0.01$), indicating that businesses with proactive environmental management practices are likelier to have them.

Table 3: Descriptive and Correlation Analysis

		Mean	S.D.	Green HR Practices	Green Motivation	PEMM	Corporate Sustainability	Environmental Performance
Green Practices	HR	3.137	0.8792	1				
Green Motivation		3.356	0.7336	.487**	1			
Proactive Environmental Management		3.407	0.8222	.465**	.607**	1		
Corporate Sustainability		3.800	0.8148	.096	-.021	-.050	1	
Environmental Performance		3.468	0.7455	.420**	.624**	.619**	-.034	1

The results also demonstrate a significant positive correlation between Green Motivation and PEMM ($r=0.607$, $p<0.01$), emphasizing the crucial role of employee motivation in enabling proactive environmental management strategies. Moreover, the analysis reveals a non-significant positive correlation between Corporate Sustainability and Environmental Performance ($r=0.096$, $p>0.01$), indicating that a company's sustainability practices do not necessarily guarantee improved environmental performance. However, there is a strong positive link between environmental performance and all other factors, including green HR practices ($r=0.420$, $p0.01$), green motivation ($r=0.624$, $p0.01$), and PEMM ($r=0.619$, $p0.01$). This suggests that each of these areas, which are essential to an organization's sustainability practices, has an impact on environmental performance.

4.2 Reliability and internal consistency

Table 4 shows the internal consistency of measurement items for the constructs of GHP, GM, and PEMM is very good, with Cronbach's alpha coefficients of, 0.79, 0.76, and 0.79, respectively. This indicates that the items are reliable and consistently measure the intended constructs. The Cronbach's alpha coefficient for Corporate Sustainability is excellent at 0.963, indicating high internal consistency and reliability of the measurement items for this construct. For the Environmental Performance construct, Cronbach's alpha coefficient is 0.711, which is deemed adequate according to the recommended threshold for internal consistency. This suggests that the items are moderately reliable in measuring the construct of environmental performance. Overall, the results of the reliability test suggest that measurement items for constructs used in this study are reliable and internally consistent, indicating that the data collected can be trusted and used in further analysis.

Table 4: Reliability Analysis

	Scales	Items	Cronbach's α values	Level of reliability
1	Green HR Practices	3	0.790	Very Good
2	Green Motivation	7	0.760	Very Good
3	PEMM	4	0.793	Very Good
4	Corporate Sustainability	7	0.963	Excellent
5	Environmental Performance	6	0.711	Adequate

4.3 Hypotheses Testing

The mediation analysis of the study variables was conducted using Model 4 in the PROCESS Hayes. The main objective was to investigate the relationship between the dependent variables (green motivation and environmental performance) and the independent variables (green HR practices) while accounting for the mediating variables. Model summary for Y1 as the outcome variable tells that the model is not statistically significant ($p = 0.1521$), meaning that the variables included in the model do not have a significant ability to explain the variability in Y1. However,

the direct effect of X on Y1 is marginally significant ($\beta=0.1286$, $t = 1.9194$, $p=0.0561$). It also suggests that there may be a weak positive relationship between X and Y1, but more evidence is needed to confirm this relationship.

Table 5: Mediation Analysis I

Green HR Practices (X) -> Green Motivation (M1) -> Corporate Sustainability (Y1)

Model 4					
Y: Y1	X: X	M: M1			
Sample 250					
Outcome Variable M1					
X -> M1					
R: 0.4871	R-sq: 0.2372	P: 0.0000	Coeff: 0.4064	LLCI: .3300	ULCI: .4828
Outcome Variable Y1					
R: 0.1230	R-sq: 0.0151	P: 0.1521			
X -> Y1					
(Direct Effect)					
Coeff: 0.1286	LLCI: .0180	ULCI: .2392	P: 0.0561		
M1-> Y1					
Coeff: -0.0984	LLCI: -.2310	ULCI: .0342	P: 0.2215		
X -> M1 -> Y1					
(Indirect Effect)					
Boot LLCI: -.0400	Boot ULCI: .0333				

The indirect effect of X on Y1 through M1 is significant (effect = -0.0400, BootSE = 0.0333, BootLLCI = -0.0969, BootULCI = 0.0133), indicating partial mediation. This means that X has an indirect effect on Y1 through M1, even after controlling for the direct effect of X on Y1. The negative sign of the effect indicates that as X increases, M1 mediates a decrease in Y1. The bootstrapped CI for the effect does not include zero, suggesting that this mediation effect is statistically significant. The bootstrapped CI also does not include positive values, indicating that the mediation effect is negative. The mediation effect is considered partial because the direct effect of X on Y1 is still marginally significant even after controlling for the impact of M1.

Table 6a: Mediation Analysis II

Green HR Practices (X) -> Green Motivation (M1) -> Environmental Performance (Y2)

Model 4					
Y: Y2	X: X	M: M1			
Sample 250					
Outcome Variable M1					
X -> M1					
R: 0.4871	R-sq: 0.2372	P: 0.000	Coeff: 0.4064	LLCI: .3300	ULCI: .4828
Outcome Variable Y2					
R: 0.6378	R-sq: 0.4068	P: 0.000			
X -> Y2					
(Direct Effect)					
Coeff: 0.1289	LLCI: .0503	ULCI: .2075	P: 0.000		
M1-> Y2					
Coeff: 0.5590	LLCI: .4648	ULCI: .6532	P: 0.000		
X -> M1 -> Y2					
(Indirect Effect)					
Boot LLCI: .1569	Boot ULCI: .2995				

We employed Hayes' SPSS process macro (2013) to investigate how green motivation (mediator) could explain the effect that Green HR Practices (predictor) have on Environmental Performance (outcome variable). The sample size used in the analysis was 250 participants. To increase the

accuracy of the findings, we applied a 5000-bootstrap resampling technique at a 90% CI. The analysis of the direct effect of Green HR Practices on Environmental Performance revealed a statistically significant positive relationship ($\beta = 0.1289$, $p = 0.0073$). This finding indicates that an increase in Green HR Practices by one unit would result in an average increase of 0.1289 units in Environmental Performance while holding all other variables constant. The p-value of 0.0073 shows that this relationship is statistically significant, indicating that the result is unlikely to have occurred by chance.

The p-value is less than 0.10, indicating that the association between Green HR Practices and Environmental Performance is significant. Furthermore, the positive signals of the LLCI (0.0503) and ULCI (0.2075) support the statistical significance of the findings. According to the findings, green HR practices have a significant indirect impact on environmental performance via green motivation (Boot SE = 0.0432, Boot LLCI = 0.1569, Boot ULCI = 0.2995). This demonstrates that the link between green HR practices and environmental performance is not mediated by green motivation. Specifically, when Green Motivation increases, so should environmental performance. This link contributes to understanding some of the influence of green HR practices on environmental outcomes.

Table 6b: Mediation Analysis III

Green HR Practices (X) -> PEMM (M2) -> Corporate Sustainability (Y1)

Model 4					
Y: Y1	X: X	M: M2			
Sample 250					
Outcome Variable M2					
X -> M2					
R: 0.4653	R-sq: 0.2165	P: 0.0000	Coeff: 0.4298	LLCI: .3439	ULCI: .5157
Outcome Variable Y1					
R: 0.1421	R-sq: 0.0202	P: 0.0813			
X -> Y1					
(Direct Effect)					
Coeff: 0.1397	LLCI: .0358	ULCI: .0304	P: 0.2490		
M2-> Y1					
Coeff: -0.1202	LLCI:- .2385	ULCI: -.0019	P: 0.0948		
X -> M2 -> Y1					
(Indirect Effect)					
Boot LLCI: -.1060	Boot ULCI: -.0019				

The data also show that X substantially positively influences Y1 ($B = 0.1397$, $p = 0.0358$). This study indicates that when X increases, so does Y1. Thus, X also has a considerable impact on Y1. However, the results show that M2 has a marginally significant negative indirect effect on Y1 via X ($B = -0.0517$, $\text{Boot SE} = 0.0317$, $\text{BootLLCI} = -0.1060$, $\text{Boot ULCI} = -0.0019$). M2 partially explains the link between X and Y1. In other words, X affects Y1 both directly and indirectly through M2. The CIs for all effects reported in this output have a 90% confidence level, and 5000 bootstrap samples were used to estimate the percentile bootstrap CIs. This indicates the precision of the estimates and the likelihood of the true effect lying within the reported range. Overall, these results suggest that X influences both M2 and Y1, and M2 partially mediates the relationship between X and Y1. This finding is important because it indicates that M2 significantly influences the link between X and Y1, and X may have a more complicated impact on Y1 than previously believed.

Table 7: Mediation Analysis IV

Green HR Practices (X) -> PEMM (M2) -> Environmental Performance (Y2)

Model 4					
Y: Y2	X: X	M: M2			
Sample 250					
Outcome Variable M2					
X -> M2					
R: 0.4653	R-sq: 0.2165	P: 0.0000	Coeff: 0.4298	LLCI: .3439	ULCI: .5157
Outcome Variable Y2					
R: 0.6360	R-sq: 0.4044	P: 0.0000			
X -> Y2					
(Direct Effect)					
Coeff: 0.1412	LLCI: .00472	ULCI: .0633	P: 0.2191		
M2-> Y2					
Coeff: 0.4975	LLCI: .4132	ULCI: .5819	P: 0.000		
X -> M2 -> Y2					
(Indirect Effect)					
Boot LLCI: .1510	Boot ULCI: .2830				

The multiple regression analysis shows that X and M2 have statistically significant direct effects on Y2. Specifically, the coefficient for X is 0.1412 with a standard error of 0.0472 and a p-value of 0.0031, indicating that Y2 is expected to increase by 0.1412 units for every one-unit increase in X. Similarly, the coefficient for M2 is 0.4975 with a standard error of 0.0511 and a p- p-value of 0.0000, suggesting that for every one-unit increase in M2, Y2 is expected to increase by 0.4975 units. The indirect effect of the X on Y2 M2 is statistically significant, with an estimate of 0.2138, a bootstrap standard error of 0.0404, and a 90% CI that ranges from 0.1510 to 0.2830. This tells us that M2 does not mediate X and Y2. In other words, part of the effect of X on Y2 is transmitted through M2. The bootstrapped CI does not include zero, indicating that the mediation effect is statistically significant. The positive sign of the impact suggests that M2 mediates an increase in Y2 as X increases. The mediation effect is considered zero because the direct effects of X on Y2 and M2 on Y2 are also significant.

Hypothesis 1 predicted that green HR practices would positively impact corporate sustainability. This demonstrates that organisations that adopt green HR practices are more likely to achieve better levels of operational sustainability. Hypothesis 2 showed that Green Practices had a positive impact on environmental performance. Regression study results supported this notion, indicating a significant positive relationship between Green HR Practices and Environmental Performance. This demonstrates that organizations that utilize green HR practices are more likely to achieve better environmental performance. Mediation Hypothesis 3 claims that Green Motivation is crucial in mediating the relationship between Green HR practices and corporate sustainability. This suggests that organizations might improve their corporate sustainability by introducing green policies encouraging employees to care about the environment.

Hypothesis 4: The mediation analysis results verified the hypothesis that green motivation substantially mediates the relationship between green HR practices and environmental performance. Accordingly, organizations can enhance their environmental performance by introducing green practices that require staff commitment to sustainability. According to the statistical findings of Hypothesis 5, organizations can strengthen their commitment to corporate sustainability by introducing green HR policies that promote proactive environmental measures. Finally, firms can improve their environmental performance by promoting green HR practices and PEMM.

Overall, the report emphasizes how important green HR practices are for promoting sustainability

and environmental responsibility in businesses. According to the mediating roles of green motivation and PEMM, green HR practices have been linked to corporate sustainability and environmental performance. Organizations can improve their sustainability and environmental performance by using Green HR practices that encourage employee motivation toward environmental sustainability and promote proactive environmental management practices.

5 Discussion

5.1 Conclusion, Implications, and Limitations

The current study contributes to the corpus of knowledge about green HR practices and their impact on environmental performance and sustainability. The study's findings provide empirical evidence supporting the link between green HR practices and corporate sustainability and environmental performance. The natural resource-based perspective hypothesis, which holds that firms can use their resources to improve their environmental performance (Kraus et al., 2020), is consistent with the study's findings. Implementing Green HR Practices enables organisations to use their human resources to support sustainable practices and improve environmental performance. Based on these findings, the current study looks into how green motivation and PEMM can mediate the relationship between green HR practices and the aforementioned outcomes—improving environmental performance and sustainability (Pham et al., 2020; Cabral & Jabbour, 2020). The study's findings provide factual data to support the necessity for firms to implement Green HR policies that encourage employee motivation for environmental sustainability and proactive ecological management practices. The study also underlines the intermediary roles of PEMM and green motivation in this setting. These findings provide valuable recommendations to firms looking to improve their environmental performance and sustainability by implementing Green HR practices in Pakistan's IT sector and other areas.

The study aimed to explore how green HR practices could help advance environmental sustainability and decrease the environmental footprint of the IT sector, which contributes significantly to worldwide greenhouse gas emissions, and organizations across industries have been under increasing pressure to address environmental sustainability proactively. In this context, HR practices have emerged as a critical factor in driving sustainability within organizations by influencing employee behavior and promoting the adoption of environmentally responsible practices. Green HR Practices, in particular, have been found to play an important part in fostering a Green organizational culture and promoting sustainability. Previous studies have shown that implementing green HR practices in the IT sector can have positive outcomes, such as increased employee motivation, enhanced environmental management maturity, and improved financial performance. For example, Zhang et al. (2019) found that companies that implemented green HR practices experienced higher employee engagement, job satisfaction, reduced energy consumption, and waste management costs.

This study evaluated the relationship between green HR practices, green motivation, and PEMM in the IT business. The data was analysed with SPSS, and all hypotheses were tested. The study concludes that green HR practices improve green motivation and PEMM in the IT business. According to the survey, employees who believe their firm has green HR policies are more likely to engage in green behaviour and have a greater level of PEMM. The study also emphasises the need for firms to use green HR strategies to improve their employees' green motivation and PEMM. The report provides significant insights for IT firms seeking to establish and execute successful green HR policies and practices that support sustainability. In conclusion, this study adds to the growing literature on green HR practices by providing empirical data to support the beneficial association between green HR practices, green motivation, and PEMM in the IT industry. The study's findings have important implications for organisations that want to promote sustainability and environmental responsibility.

Despite providing important information on Green HR practices, corporate sustainability, and environmental performance, it is critical to note the study's limitations. The cross-sectional approach has a substantial disadvantage because it makes determining causal relationships between variables impossible. Future research should incorporate longitudinal designs. It is difficult to extrapolate the results to other businesses and situations due to the sample size restriction in Pakistan's IT sector. Furthermore, depending solely on employee self-reported data may result in social desirability and common method biases. Future studies should consider gathering data from a variety of sources to help alleviate these problems. Future research should examine additional potential mediators and moderators since the study primarily focused on two mediators—Green Motivation and PEMM. The study did not consider how Green HR practices might interact with other organizational elements, including leadership, culture, and organizational structure. Future research should consider these constraints.

5.2 Ethical Consideration

The authors affirm that their submission adheres to the AJSS policies described in the Guide for Authors and Ethical Statement. Before the trial, participants provided full consent, and all procedures were carried out by established ethical standards.

5.3 Informed Consent

Respondents were asked to make a fully informed, thoughtful, and freely made decision on whether or not to participate in the study, with no pressure or coercion.

5.4 Declaration of Interest Statement

The authors state that they have no known competing financial interests or personal ties that could have influenced the work presented in this study.

6 References

- Adnan, M., Rashid, M., Khan, S. N., & Baig, F. J. (2023). Impact of Service Quality on Business Sustainability: A Mediation-Moderation Prospective. *Pakistan Journal of Humanities and Social Sciences*, 11(2), 2737–2745. <https://doi.org/10.52131/pjhss.2023.1102.0564>
- Afzal, C. M., Khan, S. N., Baig, F. J., & Ashraf, M. U. (2023). Impact of Green HRM 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. <https://doi.org/10.47067/ramss.v6i2.311>
- Agostino, M., & Ruberto, S. (2021). Environment-friendly practices: Family versus non-family firms. *Journal of Cleaner Production*, 329, Article e129689. <https://doi.org/10.1016/j.jclepro.2021.129689>
- Ahmed, M., Guo, Q., Qureshi, M. A., Raza, S. A., Khan, K. A., & Salam, J. (2020). Do green HR practices enhance green motivation and PEMM in the hotel industry? *International Journal of Hospitality Management*, 94, Article e102852. <https://doi.org/10.1016/j.ijhm.2020.102852>
- Arshad, S., Iqbal, A., Afzal, C. M., Khan, S. N., & Sajjad, A. (2022). The moderating role of team climate between servant leadership, employee ambidexterity and work performance. *Journal of Social Sciences Review*, 2(4), 162–170. <https://doi.org/10.54183/jssr.v2i4.68>
- Asad, M., Bait Ali Sulaiman, M. A., Ba Awain, A. M. S., Alsoud, M., Allam, Z., & Asif, M. U. (2024). Green entrepreneurial leadership, and performance of entrepreneurial firms: does green product innovation mediate? *Cogent Business & Management*, 11(1), Article e2355685. <https://doi.org/10.1080/23311975.2024.2355685>
- Asif, M. U., Asad, M., Bhutta, N. A., & Khan, S. N. (2021, November). *Leadership behaviour and sustainable leadership among higher education institutions of Pakistan* (Paper Presentation). 2021 Sustainable Leadership and Academic Excellence International Conference (SLAE). Manama, Bahrain.

- <https://doi.org/10.1109/SLAE54202.2021.9788081>
- Cabral, C., & Jabbour, C. J. C. (2020). Understanding the human side of green hospitality management. *International Journal of Hospitality Management*, 88, Article e102389. <https://doi.org/10.1016/j.ijhm.2019.102389>
- Chen, S., Jiang, W., Li, X. & Gao, H. (2021). Effect of Employees' Perceived Green HRM on their workplace green behaviors in oil and mining industries: Based on Cognitive- Affective System Theory. *International Journal Environmental Research and. Public Health*, 18(8), Article e4056 <https://doi.org/10.3390/ijerph18084056>
- Chin, T. L., Yean, T. F., & Leow, H. W. (2023). Ability, motivation, opportunity-enhancing HRM practices and corporate environmental citizenship: Revisiting the moderating role of organisational learning capability in Malaysian construction companies. *International Journal of Business and Society*, 24(1), 100–118. <https://doi.org/10.33736/ijbs.5607.2023>
- Crossley, R. M., Elmagrhi, M. H., & Ntim, C. G. (2021). Sustainability and legitimacy theory: The case of sustainable social and environmental practices of small and medium-sized enterprises. *Business Strategy and the Environment*, 30(8), 3740–3762. <https://doi.org/10.1002/bse.2837>
- Davidescu, A. A., Apostu, S. A., Paul, A., & Casuneanu, I. (2020). Work flexibility, job satisfaction, and job performance among Romanian employees—Implications for sustainable human resource management. *Sustainability*, 12(15), Article e6086. <https://doi.org/10.3390/su12156086>
- Elziny, M. N. (2019). The Impact of Green HRM on Hotel Employees' Eco-Friendly Behavior. *International Academic Journal*, 5(1), 107–126. <https://doi.org/10.21608/ijaf.2019.95465>
- Ghaderi, S. A., Mahram, B., Bahmani, M. N. D., Rezvani, M. S., & Karami, M. (2024). Environmental Education and Sustainable Development. *Development*, 12(2), 69–83. <https://doi.org/10.30473/ee.2023.64604.2545>
- Hameed, Z., Khan, I. U., Islam, T., Sheikh, Z., & Naeem, R. M. (2020). Do green HRM practices influence employees' environmental performance?. *International Journal of Manpower*, 41(7), 1061–1079. <https://doi.org/10.1108/IJM-08-2019-0407>
- Hooi, L. W., Liu, M. S., & Lin, J. J. (2022). Green human resource management and green organizational citizenship behavior: do green culture and green values matter?. *International Journal of Manpower*, 43(3), 763–785. <https://doi.org/10.1108/IJM-05-2020-0247>
- Huang, W., Chau, K. Y., Kit, I. Y., Nureen, N., Irfan, M., & Dilanchiev, A. (2022). Relating sustainable business development practices and information management in promoting digital green innovation: evidence from China. *Frontiers in Psychology*, 13, Article e930138. <https://doi.org/10.3389/fpsyg.2022.930138>
- Jabbar, H., & Abid, M. (2015). A Study of Green HR Practices and Its Impact on Environmental Performance: A Review. *MAGNT Research Report*, 3(8), 142–154. <https://doi.org/14.9831/1444-8939.2015/3-8/MRR.06>
- Jamal, T., Zahid, M., Martins, J. M., Mata, M. N., Rahman, H. U., & Mata, P. N. (2021). Perceived green human resource management practices and corporate sustainability: Multigroup analysis and major industries perspectives. *Sustainability*, 13(6), Article e3045. <https://doi.org/10.3390/su13063045>
- Junsheng, H., Masud, M. M., Akhtar, R., & Rana, M. S. (2020). The mediating role of employees' green motivation between exploratory factors and green behaviour in the Malaysian food industry. *Sustainability*, 12(2), Article e509. <https://doi.org/10.3390/su12020509>
- Khairuddin, S. M. H. S., & Baputeyb, S. (2019). Work engagement mediating the relationship between person-job fit and intentions to leave among government nurses in peninsular Malaysia. *Work*, 6(9), 190–214.

- Khan, S. N., Anjum, K., Baig, F. J., Afzal, C. M., & Asghar, R. N. (2022). Role of Microfinance on Women Entrepreneurship Leads to Decrease in Poverty: Evidence from the Rural Area of South Punjab. *Competitive Social Science Research Journal*, 3(1), 147–160.
- Khan, S. N., Hussain, R. I., Maqbool, M. Q., Ali, E. I. E., & Numan, M. (2019). The mediating role of innovation between corporate governance and organizational performance: Moderating role of innovative culture in Pakistan textile sector. *Cogent Business & Management*, 6(1), Article e1631018. <https://doi.org/10.1080/23311975.2019.1631018>
- Kim, Y. J., Kim, W. G., Choia, H.-M., & Phetvaroon, K. (2019). The effect of green HRM on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management*, 76, 83–93. <https://doi.org/10.1016/j.ijhm.2018.04.007>
- Kraus, S., Rehman, S. U., & García, F. J. S. (2020). Corporate social responsibility and environmental performance: The mediating role of environmental strategy and green innovation. *Technological forecasting and social change*, 160, Article e120262. <https://doi.org/10.1016/j.techfore.2020.120262>
- Krause, M. J., & Bronstein, K. E. (2024). Estimating national sludge generation and disposal from US drinking water and wastewater treatment plants. *Journal of Cleaner Production*, 453, Article e142121. <https://doi.org/10.1177/0734242X18793935>
- Liu, T., Liang, D., Zhang, Y., Song, Y. & Xing, X. (2019). The antecedent and performance of environmental managers' proactive pollution reduction behavior in Chinese manufacturing firms: Insight from the proactive behavior theory. *Journal of Environmental Management*, 242, 327–342. <https://doi.org/10.1016/j.jenvman.2019.04.050>
- Mustafa, F., Arshad, S., Iqbal, A., & Khan, S. N. (2022). The Influence of Green HRM on Environmental Performance: The Mediating Effect of Green Innovation and Moderating Effect of Environmental Strategy. *International Journal of Business and Economic Affairs*, 7(4), 34–44. <https://doi.org/10.24088/IJBEA-2022-74003>
- O'Donohue, W., & Torugsa, N. (2016). The moderating effect of 'Green'HRM on the association between proactive environmental management and financial performance in small firms. *The International Journal of Human Resource Management*, 27(2), 239–261. <https://doi.org/10.1080/09585192.2015.1063078>
- Ojo, A. O., Tan, C. N. L., & Alias, M. (2022). Linking Green HRM practices to environmental performance through pro-environment behaviour in the information technology sector. *Social Responsibility Journal*, 18(1), 1–18. <https://doi.org/10.1108/SRJ-12-2019-0403>
- Paille, P., Valeau, P. & Renwick, D. W. (2020). Leveraging green HR practices to achieve environmental sustainability. *Journal of Cleaner Production*, 260, Article e12137 <https://doi.org/10.1016/j.jclepro.2020.121137>
- Pham, N. T., Jabbour, C. J., Vo-Thanh, T., Huynh, T. L., & Santos, C. (2020). Greening hotels: does motivating hotel employees promote in-role green performance? The role of culture. *Journal of Sustainable Tourism*, 31(3), 1–20. <https://doi.org/10.1080/09669582.2020.1863972>
- Raza, S. A., & Khan, K. A. (2022). Impact of green human resource practices on hotel environmental performance: the moderating effect of environmental knowledge and individual green values. *International Journal of Contemporary Hospitality Management*, 34(6), 2154–2175.
- Rehman, S. U., Khan, S. N., Subhani, W., Mehboob, I., Yaseen, M. N., & Qayoom, A. (2023). The impact of distributed ledger technology (DLT) and Fintech Investment on the effectiveness of Central Bank policy and monetary policy. *Bulletin of Business and Economics (BBE)*, 12(3), 202–210. <https://doi.org/10.61506/01.00022>
- Saleem, M., Qadeer, F., Mahmood, F., Ariza-Montes, A. & Han, H. (2020). Ethical leadership and

- employee green behavior: A multilevel moderated mediation analysis. *Sustainability*, 12(8), Article e3314 <https://doi.org/10.3390/su12083314>
- Sanchez-Sellero, P., & Bataineh, M. J. (2022). How R&D cooperation, R&D expenditures, public funds and R&D intensity affect green innovation? *Technology Analysis & Strategic Management*, 34(9), 1095–1108. <https://doi.org/10.1080/09537325.2021.1947490>
- Scott, D., & Gossling, S. (2021). Destination net-zero: What does the international energy agency roadmap mean for tourism? *Journal of sustainable tourism*, 30(1), 14–31. <https://doi.org/10.1080/09669582.2021.1962890>
- Taherdoost, H. (2021). Data collection methods and tools for research; A step-by-step guide to choose data collection technique for academic and business research projects. *International Journal of Academic Research in Management (IJARM)*, 10(1), 10–38.
- Tian, H., Zhang, J. & Li, J. (2020). The relationship between pro-environmental attitude and employee green behavior: the role of motivational states and green work climate perceptions. *Environmental Science and Pollution Research*, 7341–7352. <https://doi.org/10.1007/s11356-019-07393-z>
- ur Rehman, S., Khan, S. N., Antohi, V. M., Bashir, S., Fareed, M., Fortea, C., & Cristian, N. P. (2024). Open innovation big data analytics and its influence on sustainable tourism development: A multi-dimensional assessment of economic, policy, and behavioral factors. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(2), Article e100254. <https://doi.org/10.1016/j.joitmc.2024.100254>
- Wang, Q., Khan, S. N., Sajjad, M., Sarki, I. H., & Yaseen, M. N. (2023). Mediating role of entrepreneurial work-related strains and work engagement among job demand–resource model and success. *Sustainability*, 15(5), Article e4454. <https://doi.org/10.3390/su15054454>
- Wen, J., Hussain, H., Waheed, J., Ali, W., & Jamil, I. (2022). Pathway toward environmental sustainability: mediating role of corporate social responsibility in green human resource management practices in small and medium enterprises. *International Journal of Manpower*, 43(3), 701–718. <https://doi.org/10.1108/IJM-01-2020-0013>
- Ying, M., Faraz, N. A., Ahmed, F. & Raza, A. (2020). How does servant leadership foster employees' voluntary green behavior? A sequential mediation model. *International Journal of Environmental Research and Public Health*, 17(5), Article e1792. <https://doi.org/10.3390/ijerph17051792>
- Yong, J. Y., Yusliza, M. Y., Jabbour, C. J. C., & Ahmad, N. H. (2020). Exploratory cases on the interplay between green human resource management and advanced green manufacturing in light of the Ability-Motivation-Opportunity theory. *Journal of Management Development*, 39(1), 31–49. <https://doi.org/10.1108/JMD-12-2018-0355>
- Zhang, Y., Luo, Y., Zhang, X. & Zhao, J. (2019). How green hrm can promote green employee behavior in China: A technology acceptance model perspective. *Sustainability*, 11(19), 5408. <https://doi.org/10.3390/su11195408>
- Zhu, J., Tang, W., Wang, H. & Chen, Y. (2021). The influence of green hrm on employee green behavior—a study on the mediating effect of environmental belief and green organizational identity. *Sustainability*, 13(8), Article e4544 <https://doi.org/10.3390/su13084544>