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Role of Green Human Resource Management in Enhancing Environmental Performance

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Abstract
The current study examines the effects of Green Human Resource Management (GHRM) practices on sustainable and environmental performance. Data was collected using a structured questionnaire, and a non-probability convenience sampling technique was applied. The analysis was conducted using SmartPLS (version 4.0) based on primary data. The study employed two main analytical approaches: the measurement model and the structural model. The measurement model was used to assess construct reliability and validity, including convergent and discriminant validity. A quantitative research approach was adopted, and data were collected through structured questionnaires from employees across different organizations. Statistical analysis revealed that all GHRM practices have a significant positive impact on organizational performance, with p-values less than 0.05, indicating strong support for all proposed hypotheses.
The findings highlight that organizations implementing green HR strategies can improve employee engagement, foster environmentally responsible behavior, and enhance overall efficiency and competitiveness. The study contributes to existing literature by providing empirical evidence on the effectiveness of GHRM in a developing economy context. It also offers practical implications for managers and policymakers to integrate sustainability into HR functions. Overall, the research emphasizes that GHRM is a vital approach for achieving long-term organizational success and environmental sustainability.

Keywords: Green Recruitment and Selection Practices, Green Training and

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Development Practices, Green, Performance Evaluation Practices, Green Evaluation and Rewards Practices, Green Compensation and benefits Practices, Environmental Performance

Theoretical and Contextual Background

Environmental deterioration has become a critical global issue, demanding urgent and sustained attention. The natural environment is increasingly threatened by industrialization and commercial activities, which have intensified risks to all living organisms. Environmental pollution is not a new phenomenon; however, it remains one of the most severe global challenges and a major contributor to illness and mortality worldwide. In the current context, human cultural development and the expansion of the global economy are key drivers of ongoing environmental change (Din et al., 2024). Previous research indicates that human negligence in workplace practices contributes significantly to environmental degradation. Organizational activities, such as the continuous use of computers and electricity, further exacerbate this problem by increasing carbon emissions (Althnayan et al., 2022). As a result, businesses and organizations are increasingly required to adopt green practices to address the rapid rise in pollution caused by operational activities, which deplete environmental resources (Din et al., 2024). The adoption of environmentally sustainable practices can provide organizations with multiple benefits, including enhanced competitive advantage, improved financial performance, operational growth, and better environmental outcomes (Kondja et al., 2024). In this regard, the human resource's function plays a crucial role in fostering a sustainability-oriented organizational culture and promoting environmentally responsible behavior within the workplace. Green Human Resource Management (GHRM) practices are considered an effective approach to enhancing environmental performance, as they provide a structured framework that enables organizations to manage and reduce their environmental impact efficiently (Chen et al., 2022).

Global Background of the Study

In the present era, human cultural development and the expansion of the global economy are considered the primary drivers of ongoing environmental change (Ali et al., 2025). Issues such as global warming, pollution, acid rain, overpopulation, deforestation, and improper waste disposal have significantly contributed to environmental degradation worldwide.

Environmental challenges continue to intensify globally due to rapid population growth, unchecked urbanization, industrialization, deforestation, and the loss of arable land. These factors collectively contribute to increasing pressure on natural resources and the environment. Business activities, including mining, exploration, and large-scale industrial operations, have further accelerated environmental degradation worldwide (Ottinger et al., 2024). Climate change is one of the most urgent issues facing the world today, requiring immediate and coordinated action. Organizations must recognize their responsibility in reducing their environmental impact and take proactive measures to mitigate climate change. There is a growing need to emphasize

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the environmental dimension of sustainability, ensuring that the planet is preserved and improved for future generations. Environmental problems not only cause current disasters and health risks but are also expected to result in severe consequences in the future. Therefore, urgent action is required from governments, organizations, and individuals to address these challenges and promote the sustainable use of natural resources (Abbas et al., 2023). At the global level, sustainability has become a central concern. The United Nations has played a significant role in advancing environmental sustainability. During the United Nations Sustainable Development Summit 2015, world leaders adopted the Sustainable Development Goals, a set of 17 interconnected goals designed to achieve a more sustainable and equitable future by 2030. These goals, supported by 169 specific targets, provide a comprehensive roadmap for addressing economic, social, and environmental challenges globally (Assembly, 2015; Awewomom et al., 2024). Environmental intervention is essential to address the depletion of non-renewable resources such as energy and water. Societies, economies, and ecological systems are deeply interconnected and continuously influence the physical environment (Gong & Aslam, 2024). Since the Industrial Revolution, human activities have significantly impacted the environment. The rise in carbon dioxide (CO_2) emissions, largely driven by industrialization, has accelerated climate change and global warming. Industrial pollution has led to both global environmental challenges and localized ecological damage, severely affecting ecosystems and all forms of life (Trancoso, 2024). In response, global concern for sustainability is increasing. Organizations are becoming more aware of how environmental challenges affect their competitiveness and long-term profitability. The depletion of natural resources, which many businesses depend on, threatens not only environmental sustainability but also the financial viability of organizations (Adanma & Ogunbiyi, 2024).

The environmental protection plays a crucial role in the successful formulation and implementation of environmental management practices by aligning organizational processes such as recruitment and selection, performance evaluation, and training with ecological objectives (Wang et al., 2024). Over the past decade, Green Human Resource Management (GHRM) has emerged as a proactive strategy for enhancing environmental performance within organizations. Contemporary managers increasingly prioritize maintaining ecological balance while ensuring that human needs are adequately met in the context of ongoing environmental change (Rana & Arya, 2024). Organizations are now compelled to design and implement policies that not only promote a green economy but also reduce the negative environmental impacts of industrial activities. Ecological sustainability has therefore become an urgent necessity. Environmental experts and activists argue that environmental quality is continuously declining, and phenomena such as large-scale floods and climate change provide clear evidence of global warming. To ensure a livable planet for future generations, environmentally friendly policies must be effectively implemented. Public and private organizations can significantly contribute to environmental sustainability by integrating green practices into their operations (Siddique, 2024). Given the growing concerns of climate change and the need for

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sustainable technologies, businesses can no longer ignore the benefits of adopting environmentally friendly practices for both ecological and economic performance. The globalization of environmental issues has encouraged firms to increasingly adopt green practices, enabling them to become both environmentally responsible and competitive. Green Human Resource Management has gained significant attention in recent years as an effective approach for reducing organizational environmental footprints and promoting sustainability (Coelho et al., 2024). In this context, HR departments are adopting green practices in response to rising environmental awareness, focusing on initiatives such as paperless operations, carbon footprint reduction, and effective waste management. Achieving long-term environmental performance requires organizations to invest in both natural and human resources and strategically manage them to support sustainability goals (Mehak & Batcha, 2024). As the global economy shifts toward sustainability, corporate responsibility to adopt green practices has intensified, and organizations are increasingly pressured to implement Green HRM practices to achieve sustainability objectives. Human resource professionals are expected to actively contribute to environmental protection and the well-being of the ecosystem. Organizations are also recognizing that long-term sustainability depends not only on financial performance but also on social and environmental responsibility. Therefore, managers must understand and address environmental risks and opportunities associated with all business decisions and operations (Din et al., 2024).

Regional Setting of the Study

On many climate-related issues, significant differences exist not only between regions and nations but also within individual countries. South Asia comprises several sovereign states, including Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. The region consists largely of developing economies in transition, which are highly vulnerable to resource scarcity, resource exploitation, climate change, and energy crises. Increasing demand and rapid economic growth have intensified competition over water and energy resources, thereby hindering trade, development, and ecological security (Mishra et al., 2024). In recent years, both developed and developing countries have made greater efforts to promote environmental sustainability. This increased attention is driven by the growing recognition that persistent environmental problems pose serious risks to human health and economic development. Climate change has particularly severe implications for South Asia, including rising temperatures, irregular monsoon patterns, water shortages, and declining agricultural productivity. To address these challenges, South Asian countries have entered into various regional and bilateral agreements aimed at reducing the adverse impacts of environmental degradation and industrialization. A notable example of environmental cooperation is the Indus Waters Treaty between India and Pakistan, which is considered a successful model of environmental peacebuilding (Naz & Kousar, 2024). At the organizational level, there is growing concern regarding sustainability and Green Human Resource Management (GHRM). GHRM plays a vital role in integrating sustainability into organizational strategies

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through the development of employee skills, motivation, values, and trust (Coelho et al., 2024). It supports long-term organizational sustainability by promoting policies that ensure employee well-being, equity, and development while encouraging environmentally responsible practices. Furthermore, Green HRM is essential for motivating employees to actively participate in green initiatives that align with organizational goals (Khan et al., 2024).

Rationale and Significance of the Study Context

There has been limited research on green practices among private sector employees, particularly in relation to the circular economy concept. The aim of the present study is to address this research gap by emphasizing the importance of green practices and the moderating role of the circular economy in enhancing organizational economic and environmental performance (Chen et al., 2022).

Recently, Pakistan has experienced severe climatic events, including heavy rainfall, cloudbursts, and devastating floods. Almost two-thirds of the geographical area of Sindh province was affected by torrential rains and subsequent flooding. Large portions of agricultural land were severely damaged, resulting in the destruction of crops and reduced agricultural yields. One of the major causes of such devastation is variations in the global environmental system, which have significantly contributed to the deterioration of Pakistan's economy (Palaščáková & Michalska, 2023).According to the Global Climate Risk Index (CRI) published by German watch, Pakistan is ranked among the eight most vulnerable countries in the world to the adverse effects of climate change. The country is increasingly affected by global warming, which is also disrupting its ecological balance. Due to its harmful impacts on both the environment and public health, climate change has become a critical global concern (Nye & Hoff, 2023). In Pakistan, environmental issues such as carbon dioxide emissions, water wastage, and the use and discharge of hazardous chemicals within industrial operations have gained significant attention. A major environmental concern is the phenomenon of "winter fog," a toxic mixture of gases and particulate matter emitted from industrial units. This has resulted in both economic losses and serious public health issues, particularly respiratory and cardiovascular diseases. It is estimated that this smog affects approximately 40% of the urban population in Pakistan, with annual health-related costs reaching around Rs. 25.7 billion.

Increasing awareness of environmental degradation and the depletion of natural resources has encouraged both individuals and organizations to adopt environmentally friendly practices. Consequently, organizations are becoming more committed to sustainability and Green Human Resource Management. Human resource departments play a key role in fostering a culture of sustainability within organizations. Furthermore, international environmental regulations require firms to develop environmentally responsible initiatives. The growing demand for sustainable corporate behavior is driving organizations toward green economy practices and zero-emission goals, ultimately supporting environmental sustainability (Gallego-Álvarez & Pucheta-Martínez, 2021). Green HRM is a set of practices used by organizations to achieve policies that contribute to environmental sustainability.

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So that the businesses operate in an increasingly competitive global economy, where they are expected not only to achieve efficiency and value creation but also to demonstrate environmental responsibility (Shahzad, Jianguo & Junaid, 2023). In this regard, the human resource (HR) function plays a vital role in formulating and implementing long-term organizational strategies. It supports the development and achievement of both environmental and social objectives while balancing them with traditional financial performance indicators. The Green Human Resource Management (GHRM) function can significantly contribute to building a sustainable organizational culture and promoting environmentally responsible behavior within firms (Shan et al., 2023). Over the past few decades, environmental protection has remained a major global concern. In response to environmental risks, many industries have prioritized green performance and have begun to educate and train employees in environmentally sustainable practices. In recent years, organizations have increasingly focused on training employees to adopt green behaviors as part of their performance development systems. Green HRM is an essential component of environmentally oriented human resource systems. In today's business environment, organizations must adopt sustainable practices to remain competitive, as long-term survival increasingly depends on maintaining a strong competitive advantage (Raimjanova & Popluga, 2023). Furthermore, the perception of eco-friendly products in the modern business environment plays a significant role in shaping organizational systems, technological adoption, and operational processes (Chen et al., 2022).

Research Gap and Problem Statement

Stakeholders are increasingly pressuring modern corporations to reduce their negative impact on the environment. The rapid growth of human populations and economic activities has significantly contributed to severe environmental degradation and the depletion of natural resources (Lee & Ahn, 2024). Globally, there is growing concern for the adoption of environmentally sustainable policies and practices. However, environmental conditions continue to deteriorate with each passing day, largely due to industrial activities, which are among the primary drivers of environmental damage.

Ecological degradation and climate change have emerged as two of the most critical challenges of the twenty-first century. Extreme weather events such as hurricanes, droughts, heat waves, and wildfires are increasingly causing substantial economic losses and social disruptions. Despite these challenges, many organizations still place greater emphasis on profit maximization and market expansion, often neglecting both external environmental sustainability and internal organizational environmental responsibility. Environmental experts and activists argue that climate change is a reality and increasing incidents such as large-scale floods and changing weather patterns provide clear evidence of global warming (Din et al., 2024). Many organizations pay limited attention to external environmental sustainability as well as the internal organizational environment. Instead, they are primarily focused on profit maximization and increasing market share. However, climate change is now widely recognized as a reality by environmental experts and activists, with large-scale floods and shifting weather patterns providing clear evidence of global warming (Din et al.,

Research Contribution and Novelty

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This study explores the concept of "Unlocking Sustainability" and examines the impact of Green Human Resource Management (GHRM) practices on organizational sustainable performance. It also considers the mediating role of green human capital and is grounded in Self-Determination Theory. Green HRM refers to a set of organizational practices designed to support environmental sustainability through the development of eco-friendly policies and employee behaviors. By adopting Green HRM practices, organizations can achieve long-term strategic objectives while contributing to environmental protection, particularly through the reduction of carbon emissions. In this context, the human resource function plays a significant role in building a sustainable organizational culture by promoting environmentally responsible values and behaviors among employees. Furthermore, this study integrates the relationship between Green HRM practices and environmental performance, highlighting the mediating role of green human capital in strengthening sustainability outcomes.

Research Objectives

RO1. To investigate the green training with environmental performance

RO2. To explore the concept of green recruitment with environmental performance

RO3. To examine the effects of the green performance evaluation with the environmental performance

RO4. To explore the concept of green evaluation and rewards with the green human capital and the environmental performance

RO5. To investigate the green compensation and the environmental performance

Self-Determination Theory (SDT), developed by Deci and Ryan (2017), is a widely recognized framework for understanding human motivation and well-being. The theory posits that individuals possess three fundamental psychological needs: autonomy, competence, and relatedness. As a macro-theory of human motivation, SDT provides a comprehensive framework for examining how the fulfillment of these basic needs' influences individuals' psychological functioning and behavioral outcomes. It suggests that the degree to which these needs are satisfied is strongly associated with positive outcomes such as happiness, life satisfaction, and goal attainment. According to SDT, these innate psychological needs serve as the driving force behind human behavior, and the extent to which the social and organizational environment supports or hinders these needs significantly affects individuals' motivation and self-perception. In organizational contexts, the application of SDT can enhance sustainability by promoting employees' psychological well-being and engagement.

Critical Review and Research Gap

Existing literature indicates that Self-Determination Theory (SDT) has not been sufficiently explored in relation to Green Human Resource Management (GHRM), particularly within an environmental and organizational sustainability context. Prior studies suggest that limited attention has been given to integrating motivational theories such as SDT with green human resource practices, highlighting a significant

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gap in literature. To address this gap, the present study examines the influence of economic, social, market, and other external factors on the adoption of environmentally sustainable organizational strategies and GHRM practices. Specifically, it investigates how and to what extent GHRM policies and practices contribute to enhancing organizational sustainability performance (Miah, 2024). Furthermore, this research places particular emphasis on Pakistani organizations, exploring how the implementation of green human resource practices can improve both organizational performance and environmental sustainability. In addition, the study incorporates the mediating role of human capital to better understand the mechanism through which GHRM practices impact sustainability outcomes.

Research Study Questions Developed

RQ1. How does the impact of green training and development with the environmental performance

RQ2. How does the impact of green recruitment and selection impact on environmental performance

RQ3. How does the impact of the green performance evaluation on the environmental performance

RQ4. How is the impact of green evaluation and rewards with environmental performance

RQ5. How does the impact of green compensation on environmental performance

Green HRM Practices and Organizational Sustainability

Green Human Resource Management (Green HRM) refers to a set of human resource practices designed to promote environmental sustainability through employees' behaviors and actions within an organization. It emphasizes the efficient and environmentally responsible use of resources, encouraging employees to adopt eco-friendly practices in their daily activities. The implementation of Green HRM practices contributes to the development of individual pro-environmental values and fosters a culture of environmental responsibility and employee empowerment. As a result, Green HRM has emerged as a strategic priority for organizations aiming to enhance sustainability performance and reduce their environmental impact (Bacha et al., 2024). Moreover, organizational environmental strategies serve as important indicators of a firm's commitment to environmental responsibility and performance. In this context, effective management practices not only improve environmental performance but also strengthen intellectual capital, thereby contributing to long-term organizational success (Naz et al., 2021).

Green HRM and Organizational Environmental Performance

Environmental performance encompasses practices such as the use of biodegradable materials in products, minimization of waste and pollution at the source, reduction of environmentally harmful substances, and improvements in energy efficiency. These practices not only contribute to ecological preservation but also enhance an organization's competitive advantage and social legitimacy (Kansal et al., 2024).

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Green Training & Development

management as a core organizational philosophy one that permeates all functions and actively engages employees in sustainability initiatives.

Prior studies emphasize that organizations should integrate environmental values into their organizational culture, strategic planning processes, and overall environmental strategies (Bacha et al., 2024). In this regard, Green Human Resource Management (Green HRM) plays a pivotal role. Existing research suggests that Green HRM practices such as environmental training and development, recognition of eco-friendly work behaviors, and the incorporation of environmental criteria in recruitment and selection significantly influence employees' attitudes and behaviors toward sustainability. Furthermore, Green HRM promotes environmental sustainability by aligning key HR functions, including performance management, training, recruitment, and compensation, with organizational environmental objectives. These practices enhance employees' environmental performance, while fostering intentional pro-environmental behaviors that positively contribute to overall sustainable organizational performance (Aggarwal & Agarwala, 2023)

Green Recruitment

Organizations should assess candidates' commitment to environmental issues and their alignment with pro-environmental values during the recruitment and selection process (Raimjanova & Popluga, 2023). Firms are encouraged to establish clear criteria for hiring environmentally responsible employees and to ensure that all staff members are well-informed about environmental challenges and sustainability goals. In this regard, organizations can explicitly incorporate environmental responsibilities and sustainability expectations into job descriptions and candidate specifications (Chen et al., 2022). To effectively implement green practices, advanced technologies, and social responsibility initiatives aimed at environmental protection and sustainable development, organizations require employees who possess environmentally conscious skills, knowledge, and attitudes. Therefore, positioning the organization as a "green employer" during the recruitment process can attract candidates who are committed to sustainability (Chen et al., 2022). Furthermore, recruitment decisions should not only evaluate candidates' professional competencies but also consider their environmental awareness, eco-friendly behavior, and interpersonal and collaborative abilities. In this context, Green Human Resource Management (Green HRM) emphasizes the importance of integrating sustainability into hiring practices. Additionally, green recruitment strategies should align with the objectives of the United Nations Sustainable Development Goals (SDGs), ensuring that organizational hiring practices contribute to broader global sustainability targets (Palaščáková & Michalska, 2023).

Green Compensation & Benefits (Green Reward)

Aligning organizational frameworks with environmentally friendly behaviors and practices requires the integration of sustainability into performance management systems, as well as compensation and reward structures. In this context, Green Human

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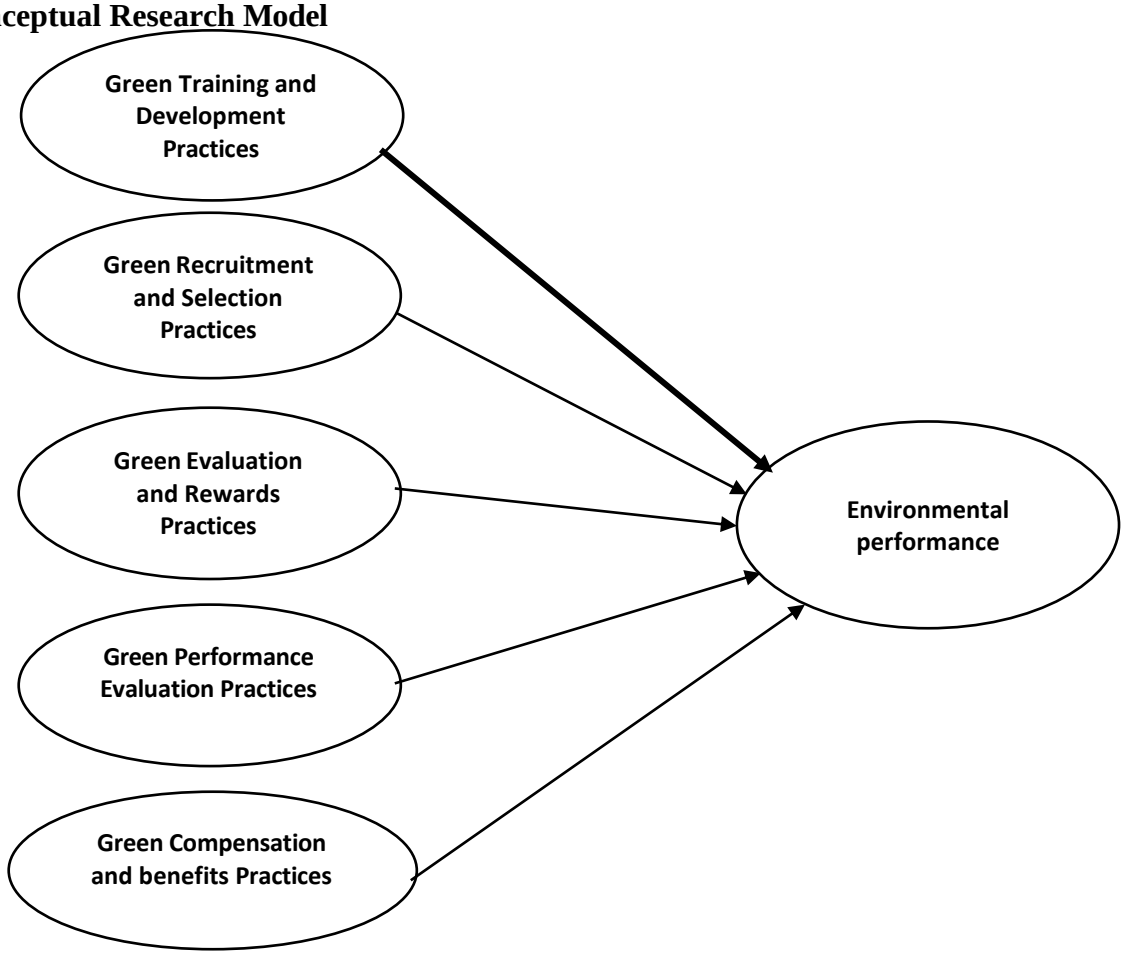
Resource Management (Green HRM) emphasizes the alignment of employee performance evaluation with environmental objectives, ensuring that sustainability becomes a measurable and rewarded aspect of job performance. Organizations increasingly incorporate financial and non-financial incentives into their environmental management strategies. For example, in the United Kingdom, companies have adopted initiatives such as tax incentives, support for low-emission vehicles, and the provision of bicycles to encourage environmentally responsible behavior among employees (Chen et al., 2022). Such practices demonstrate how compensation systems can be designed to promote eco-friendly actions within the workplace. Moreover, employees who exhibit environmentally responsible behavior linked to their job performance can be rewarded through benefit packages and performance-based pay components (Kondja et al., 2024). To effectively encourage sustainable behavior, organizations should implement both incentive- and disincentive-based reward systems that reinforce desired green practices. Rewards and compensation thus serve as powerful tools for supporting environmental initiatives and fostering a culture of sustainability.

Conceptual Research Model



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Research Hypotheses

H1: Green Training and Development has positive environmental performance
H2: Green Recruitment and Selection have the environmental performance
H3: Green Evaluation and Rewards have the positive and the significance impact environmental performance
H4: Green Performance Evaluation has the significance impact on environmental performance
H5: Green Compensation and benefits have a significance impact on environmental performance

Research Approach and Design

This section explains the strategies and techniques used in the research methodology and provides guidance for data collection and analysis. It offers an overview of the overall research design, procedures, and specific methods and instruments employed for gathering and analyzing data. The study incorporates quantitative research approaches along with both inductive and deductive reasoning. It also considers different research purposes, including descriptive and explanatory analysis, as well as various research methods such as surveys, questionnaires, and experimental approaches to examine relationships between variables.

Quantitative research design is generally divided into experimental and non-experimental categories. The present study aims to investigate the effects of one variable on another based on the nature of the research problem. Data was collected using a structured questionnaire. The quantitative approach is primarily used for testing hypotheses and analyzing numerical data.

One of the major advantages of quantitative analysis is that it provides statistically significant results, allowing data to be easily measured, compared, and validated in the research process. This study is based on a quantitative approach and follows a causal-descriptive research design to analyze relationships and causes among both endogenous and exogenous variables.

Data Collection Method and Sampling Strategy

The questionnaire is one of the most widely used and appropriate tools for collecting data in social sciences and other research fields. Researchers commonly rely on distributing questionnaires or survey instruments to respondents in order to gather primary data. In this study, the survey was distributed to organizations through email and online links. A small number of questionnaires were initially tested in a pilot study because the instrument was self-developed. This research is based on primary data, which is directly relevant to the study objectives. The target population includes professionals in financial markets and individuals with expertise in human resource management or experience working in organizations. A convenience sampling technique, which is a type of non-probability sampling, was used to select respondents who met the inclusion criteria. A sample size of 250 respondents was selected for data collection. This sample size was determined based on the requirement to ensure adequate statistical power for data analysis. Convenience sampling was chosen due to

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its cost-effectiveness, simplicity, and accessibility. This approach is suitable when respondents possess relevant knowledge and practical experience, allowing for efficient data collection (Bell et al., 2022). To ensure data quality, the researcher first established trust with respondents by explaining that the study was purely for academic purposes and not for commercial use. The researcher personally visited selected human resource departments and organizations to distribute questionnaires. Permission was obtained from managers and department heads, and respondents were assured of confidentiality so that they could provide honest responses without hesitation. Respondents were given sufficient time to complete the questionnaire, considering their professional responsibilities. On average, each questionnaire required 10 to 15 minutes to complete, allowing respondents to carefully read and answer each question. This approach helped improve the reliability of responses, as participants completed the survey without pressure and provided accurate primary data. The study is based on a primary data approach and aims to test the proposed hypotheses using data collected for the first time from relevant respondents. It follows a cross-sectional research design, where data were collected at a single point in time from human resource professionals in Pakistan. The questionnaire used in this study was adopted from existing literature and distributed physically and electronically to respondents for data collection.

Ethical Compliance and Considerations

The ethical considerations for primary data collection included maintaining confidentiality and privacy, obtaining informed consent prior to participation, and ensuring voluntary participation without any pressure. Participants were also given adequate importance, and their concerns were respected throughout the study.

Furthermore, the researcher ensured the protection of participants' personal information and maintained strict confidentiality throughout the research process. Consent was obtained from all participants to confirm their voluntary involvement, and their personal data was kept private at all stages of the study.

Measurement Reliability Analysis

Data analysis involves systematic collection, organization, and transformation of information to ensure it can be efficiently and clearly interpreted. Key components of data preparation include data entry, editing, and coding. During this process, irrelevant or incomplete responses are removed to improve data quality. Coding is performed using computer software to facilitate statistical analysis. Reliability analysis assesses the internal consistency of the items used in the research instrument. In the present study, Cronbach's Alpha was used to measure the reliability of the constructs. In addition, composite reliability was also calculated to ensure consistency across items. The results indicate that the values of both Cronbach's Alpha and composite reliability exceed the recommended threshold of 0.70, suggesting that all constructs in the study are reliable (Hair et al., 2017). Furthermore, values above 0.60 are considered acceptable in exploratory research, indicating that the questionnaire demonstrates an adequate level of reliability for data collection and variable analysis.

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Validity and Reliability Assessment of Constructs

Reliability refers to the extent to which a measure produces consistent results over time, and dependability and consistency are essential aspects of reliability (Neuman et al., 2012). It is a statistical concept used to determine the stability and consistency of research findings (Blanche et al., 2006). Furthermore, reliability refers to the consistency of an instrument's scores or responses over time (Fraenkel et al., 2012).

Internal consistency is the most used method for assessing the reliability of instruments and measurement scales. Scaled items are used to assess whether they accurately measure the concepts they are intended to evaluate. Cronbach's Alpha (Cronbach, 1951; Nunnally et al., 1978) is a commonly used measure of internal consistency used to determine the reliability of an instrument. A high value of Cronbach's Alpha is generally considered an indicator of good reliability in social science research, with a threshold of 0.70 or above typically regarded as acceptable for establishing strong reliability (Nunnally et al., 1978).

Cronbach's Alpha serves as an indicator of scale reliability, the higher the value, the greater the internal consistency of the scale. Internal consistency focuses on a single construct and does not require item rephrasing. In the present study, this technique was employed to assess the reliability of the research instrument.

Structural Equation Modeling (SEM)

SEM aims to describe the interconnected dependencies between latent or unobserved factors, which are quantified by observed variables (Hair et al., 2010; Schumacker & Lomax, 2010). SEM is a quantitative test of a theoretical model predicted by researchers (Schumacker & Lomax, 2010). Furthermore, it evaluates the model's fitness and tests various parameters to find the best match for the study's data.

Construct	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Environmental Performance	0.774	0.786	0.856	0.599
Green Compensation and benefits	0.726	0.727	0.846	0.647
Green Evaluation and Rewards	0.862	0.867	0.917	0.787
Green Human Capital	0.820	0.823	0.874	0.581
Green Performance Evaluation	0.783	0.796	0.862	0.612
Green Recruitment and Selection	0.776	0.787	0.846	0.647
Green Training and Development	0.866	0.871	0.908	0.713

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Reliability & Validity

The researcher employed PLS-SEM to investigate all expected correlations. Particularly in the fields of business and green management, PLS-SEM has gained scholarly momentum (Peng et al., 2012). PLS-SEM was chosen due to its ability to evaluate complex reflecting models, lack of dependence on distributional assumptions, and exceptional resilience in the face of data disruption. Moreover, PLS's highly predictive character makes it both appropriate and efficient for assessing the causal relationships across constructs (Ringle et al., 2015).

	Enviro nmenta l Perfor mance	**Green Compen sation and benefits**	**Green Evaluati on and Rewards**	**Gree n Hum an Capit al**	**Green Perfor manc e Evalu at ion**	**Green Recruit ment and Selecti on**
Environ mental Performance	**0.774**					
Green Compen sation and benefits	0.756	**0.804**				
Green Evaluati on and Rewards	0.808	0.778	**0.887**			
Green Perform ance Evaluati on	0.941	0.745	0.768	0.84 1	**0.782**	
Green Recruit ment and Selectio n	0.856	0.791	0.725	0.82 1	0.820	**0.683**
Green Training and Develop ment	0.876	0.667	0.804	0.70 6	0.768	0.736

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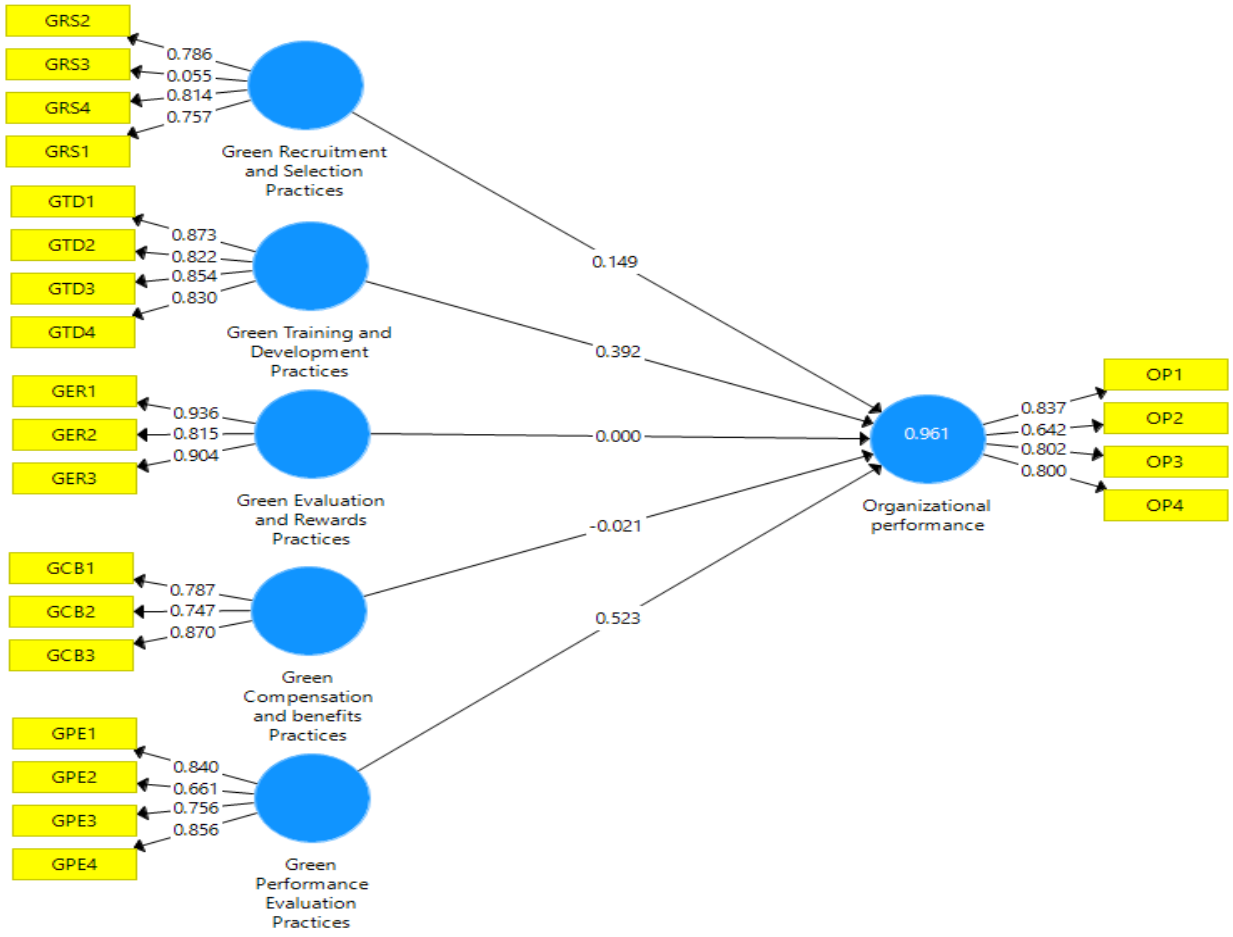

Structural Model

Hypotheses	Relationships	P Values	Decisions
H1: Green Training and Development has the significance impact on the green human capital	Green Training and Development -> Green Human Capital	0.000	Support

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H2: Green Recruitment and Selection have positive and significance impact on the green human capital	Green Recruitment and Selection -> Green Human Capital	0.000	Support
H3: Green Evaluation and Rewards have positive and significance impact on the green human capital	Green Evaluation -> Green Human Capital	0.000	Support
H4: Green Performance Evaluation has a significance impact on green human capital	Green Evaluation and Rewards -> Green Human Capital	0.000	Support
H5: Green Compensation and benefits have significance impact on the green human capital	Green Compensation and benefits -> Green Human Capital	0.000	Support

The results suggested that green training and development do support human capital, because the probability value is less than 0.05. Hence all the hypothesis support.

The results explained green training and development, supported with the green human capital, and further suggested that green recruitment and selection associated with environmental performance. Further, results indicate that green recruitment and selection impact on the environment. But the above results suggested that the green evaluation and rewards and the green performance evaluation, and the green compensation has a positive impact on the human capital. Thus, the finding suggested that green evaluation and the rewards considered important for employees and associated with the green human capital, and green performance evaluation also developed the relationship with the green huma capital. Further results explained that green human capital is positive associated with the firm's performance. Green Human Resource Management (GHRM) enhances organizational performance by aligning employee practices with environmental sustainability and it improves efficiency, innovation, and employee engagement while strengthening competitive advantage. Overall, GHRM supports long-term sustainable growth by integrating environmental

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responsibility into core HR functions. The findings indicate that Green Recruitment and Selection, Green Training and Development, Green Performance Evaluation, Green Compensation and Benefits, and Green Rewards all have statistically significant effects on organizational performance, as their p-values are less than 0.05. This confirms that all proposed hypotheses are supported. These results demonstrate that implementing comprehensive GHRM practices plays a critical role in enhancing employee environmental behavior, which in turn improves overall organizational efficiency and sustainability. It also suggests that organizations investing in green HR initiatives are more likely to achieve better performance outcomes. Moreover, statistical significance strengthens the validity of the theoretical framework, supporting the idea that HR practices aligned with environmental goals can create a competitive advantage. This provides strong empirical evidence for managers and policymakers to adopt and promote green HR strategies.

Conclusion

The goal was to better understand how green recruitment & selection, the green training and development, green compensation & benefits, and green human capital affect sustainable performance. Policymakers and senior management prioritize protecting and maintaining natural eco-resource systems. In today's competitive environment, managers must constantly find new ways to maximize their most valuable resources, particularly human resources. HR plays a crucial role in implementing policies and procedures and improving long-term performance and HR professionals play a crucial role in promoting company success through innovation, sustainable performance, and effective resource management to reduce risks and maintain competitiveness. Efficient and successful company strategies can improve social, economic, and environmental performance. Businesses are encouraged to expand their green practices to improve operational, economic, and social growth by governmental institutions, environmental agencies, stakeholders, competitors, clients, and the community. The study concludes that Green Human Resource Management practices including green recruitment and selection, training and development, performance evaluation, and compensation and rewards—have a significant positive impact on organizational performance. The statistical results ($p < 0.05$) confirm that all proposed hypotheses are supported, indicating the effectiveness of these practices in promoting sustainability and efficiency. These findings suggest that organizations adopting green HR strategies can enhance employee engagement, foster environmentally responsible behavior, and achieve better operational and financial outcomes. Overall, GHRM serves as a powerful tool for achieving long-term organizational success and sustainable development.

Managerial Implications

Numerous studies have highlighted the importance of managerial implementing green culture and values among employees, including green product techniques, environmentally conscious resource usage, energy efficiency, contaminants reduction, and recycling. In the twenty-first century, environmental corporations are transforming

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human resource management by promoting new practices that promote environmental sustainability. They encourage employees to actively participate in sustainability efforts by providing comprehensive green training programs and incentives, as well as encouraging an awareness and accountability culture. HRM researchers are increasingly recognizing the significance of HRM in greening firms, as evidenced by extensive stud and. environmental professionals widely the significant impact and to new challenges for governments, customers, and academics Technology and market changes have prompted firms to prioritize sustainable resource management, leading to economic and growth challenges and impoverished nations such as Pakistan, only a few departments have fully adopted green technologies. This study adds to the corpus of knowledge in a number of ways. GHRM techniques contribute to the field of human resource management and environmental management. This measure was developed through a literature review and empirical confirmation. This makes it an excellent starting point for creating a more comprehensive GHRM measure. GHRM, a relatively new concept, has attracted limited attention in literature, with academics just recently recognizing its management potential. GHRM research primarily focuses on improving employee workplace outcomes). There is less empirical study on the relationship between human resource management and organizational environmental performance. There is less empirical evidence on how GHRM affects staff productivity. This study contributes to the field of human resource management by analyzing how GHRM affects the workplace.

Research Limitations and Future Directions

The limitation of the current research, the time frame, the budget, and the geographical region, further promoting a green culture in a business can lead to increased awareness and understanding. To foster a green office culture, consider practices such as printing on each side of document, separating garbage, using smart LED lighting and faucets, and turning off lighting and equipment at night. Organizational internal guidelines should be strengthened to assist managers and employees in establishing EGB, as they are viewed as a source of motivation. Companies should integrate safeguards for the environment into their organizational structures, procedures, and operations to align with employee perceptions of the organization's rules, procedures, and activities. Further explained that also emphasized the importance of considering the green climate when planning. Empirical research has shown that GHRM strategies, such as green hiring, training, and incentives, play a crucial role in enhancing corporate sustainability. However, GHRM practices continue to emerge in developing countries, and decision-makers must pay closer attention to them. Further support the present study's conclusions. This research contributes to the understanding of GHRM practices in underdeveloped nations, building on existing material. By identifying the level of implementation, decision makers can improve their strategic plans by incorporating green practices that align with sustainability principles. The current research is mostly cross-sectional and the future studies should, conduct longitudinal research to measure long-term

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impact of GHRM, track how green practices influence performance over time, and analyze sustainability outcomes across different organizational life cycles , A growing area is the intersection of GHRM and technology and the research can explore, the role of AI and HR analytics in implementing GHRM, In particular, by applying the ideas of GHRM and environmental performance to the organizations of a developing nation that is changing quickly, like Pakistan. Academics have demonstrated a strong desire to comprehend how HRM might enhance environmental management. far as it is said that this study is one to examine how GHRM and Environmental Performance are related, showcasing GHRM practices as a fresh approach to improving Environmental Performance in Pakistan's developing economy, major contributor to environmental pollution, and the climate change.

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