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[Green Human Resource Management and Sustainability Performance: A Systematic Review Using PRISMA Methodology]

Dr. Muhammad Rafique Shaikh

Assistant ProfessorDepartment of Business AdministrationSindh Institute of Management & Technology, Karachi: m.rafique1986@gmail.com

Mr. Intikhab Ali

Research Scholar Iqra University Karachi<u>burirointikhabali@gmail.com</u>

Mr. Muhammad Saifullah Mustafa Tunio

Research Scholar University of Sindh, Karachi saifullahk72@gmail.com

Mr. Muhammad Naeem

PhD Scholar Department of Commerce The Islamia University of Bahawalpur, Pakistan Corresponding Author rainaeem63@yahoo.com

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ABSTRACT

In light of growing global concerns such as environmental degradation, climate change, corporate social responsibility, organizations are increasingly embedding sustainability into their strategic agendas. One of the most effective internal drivers for achieving sustainability objectives is Green Human Resource Management (GHRM). This systematic review critically examines the impact of GHRM practices on sustainability performance, applying the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology to ensure a transparent and evidence-based review process. Literature was sourced from Scopus, Web of Science, and Science Direct, covering the period from 2010 to 2024. From an initial pool of 172 studies, a final set of 84 peer-reviewed articles that met the inclusion and exclusion criteria was analyzed in depth. The study categorizes GHRM into five core practices: green recruitment and selection, green training and development, green performance management, green compensation and rewards, and green employee participation, all of which positively influence environmental, social, and economic sustainability outcomes. The review indicates how GHRM practices can facilitate organizational efforts to shape workforce behaviours and cultures through proactive HR relating to sustainability. Secondly, the review identifies mediating or moderating variables such as employee engagement, organizational commitment, leadership style, institutional pressures, and green organizational culture that may strengthen the relationship between GHRM and sustainability performance. Theoretical foundations such as Resource-Based View (RBV), Ability-Motivation-Opportunity (AMO) framework, and stakeholder theory are the most used theoretical lenses in the reviewed studies, and can reveal better understanding of how GHRM may help to enhance sustainable outcomes. The review considers practical, theoretical and policy implications. The review concludes by demonstrating the merit of studies that compare or assess GHRM practices in other contexts, especially from SMEs, public sector institutions, and organizations from developing economies, and the longitudinal effects of GHRM on sustainability performance.

Keywords: Green HRM, Sustainability Performance, PRISMA, Systematic Review.

Introduction

Sustainability has shifted from a peripheral concept to a central mission of the organization (Anser et al., 2024). As the global evidence of environmental and social use changes has mounted, organizations have begun to incorporate sustainable behaviors, alongside meeting regulation and stakeholder expectations, into their strategies to create a sustainable competitive advantage (Naeem et al., 2025a; Naeem et al., 2024). In this developing context, GHRM has provided a useful strategic framework for developing the capacity to implement sustainability values or principles (Shahrulnizam et al., 2024). GHRM involves embedding sustainability goals within traditional HR areas such as recruitment, employee learning, (mandatory) employee performance evaluations, and rewards, where members of the workforce develop an awareness of environmental challenges alongside measurable engagement to achieve sustainability targets (Zaidi et

al., 2025). Through GHRM practices, organizations create a workforce that becomes more aware of their potential impact on the environment and society, as well as develop eco-friendly behaviors by learning their association with sustainability and their role in maintaining an environmentally sustainable organization, as they facilitate the emergence of a green organizational culture, and ultimately improve their overall sustainability performance.

While the field of GHRM has expanded considerably in the last 10 years, the field remains fragmented and not synthesized comprehensively. A fair number of studies on GHRM have examined various facets of GHRM and its relationship with sustainability performance, but scholars' findings are revealed across varying contexts, methodologies, and even theoretical lenses. This fragmentation could impede development a consolidated articulation of how different GHRM practices align with sustainability goals. To develop an integrated understanding of the research space and link the disparate past research and to establish an objective synthesis of GHRM studies, a systematic review and a synthesizing systematic review of the literature is warranted to build on the currently proximal knowledge base, establish central unifying themes and a consensus beyond disputed findings, and provide a cohesive narrative of the field's development. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology provides a rigorous and followable system for synthesizing the research findings from GHRM. The PRISMA framework provides an interface to systematically identify, screen, and read studies with a systematic process linking the research articles in a reliable manner, and decreases researcher bias while preserving their methodological rigor through the systematic review.

The principal aim of this review is to systematically assess the relationship between GHRM and organizational sustainability performance. To this end, the review pursues six specific objectives. First, it seeks to identify and examine the extent of the current academic literature exploring the relationship between GHRM and sustainability outcomes. Second, it identifies and categorizes the most commonly utilized GHRM practices and how they can contribute to environmental, social, and economic sustainability, indirectly or directly. Third, the study identifies mediating and moderating variables that influence the strength and direction of the GHRM practice-sustainability relationship (e.g., organizational culture, leadership commitment, employee engagement, institutional pressures). Fourth, the review analyzes the theoretical foundations utilized in the studies to determine how GHRM is conceptualized and operationalized in different organizational contexts. Fifth, it identifies practical implications for HR practitioners and policymakers while also identifying theoretical contributions made by the studies to the literature. Finally, the review identifies gaps in the existing research and suggests directions for future research to enhance our understanding of the role of GHRM in sustainable development.

2. Literature Review

Over the last twenty years, GHRM has emerged as an increasingly notable discipline of study in both the human resource literature and sustainability literature. GHRM, building on the concept of sustainable development, is characterized as the intentional integration of environmental management within human resource management (HRM) processes such as recruitment, training and development, performance management, employee engagement, and compensation. Vu et al. (2025) asserted that GHRM consists of a set of policies and practices for developing pro-environmental behavior in organizations. Subsequently, there is an increasing volume of empirical research examining how such human resource practices can influence sustainability performance across environmental, social, and even economic (Nakra & Kashyap, 2024) sustainability dimensions.

An important thread in the literature has focused on the way that GHRM influences employee attitudes and behaviors that support sustainability, and there are many studies (Jamil et al., 2023) finding that green recruitment and selection of personnel act as a way to attract personnel whose values are aligned with expected environmental behavior and green training acts to develop awareness of environmental issues and the skills needed to implement sustainable behavior in practice. As Renwick et al (2013) indicate, investing in environmental training and education encourages a sustainable organizational culture that goes beyond compliance. In a similar way, green performance management and reward systems have established that green incentives and recognition tied to sustainability improve expected environmental behavior. There is now an extensive body of empirical evidence across various sectors, including manufacturing, hospitality, and healthcare, to conclude that GHRM practices lead to positive, pro-environmental workplace outcomes.

Another significant line of inquiry has looked at the mediating and moderating variables that explain how and why GHRM leads to sustainability performance. For example, the mediating influence of employee engagement, organizational citizenship behavior (OCB), and green organizational culture was found to mediate the pathway from Green HRM programs to sustainability operational outcomes. The moderating influence of leadership commitment, firm type, and firm culture has also been examined to explain why GHRM practice effectiveness varies or is moderated. Zibarras and Coan (2015) proposed that transformational leadership and top management commitment were especially important situational variables that could underpin the mediating influence and impact of GHRM strategies. Such moderating variables are important because they help elucidate the contextual contingencies that shape GHRM's success in different organizational contexts.

In terms of theory, the literature is quite vast, referencing numerous perspectives - RBV, Institutional Theory, Social Exchange Theory (SET), and the AMO model. The RBV examines Green HRM as a source of sustainable competitive advantage by building rare and inimitable environmental capability in the workforce (Farooq & Ahmad, 2023). The AMO framework suggests GHRM produces sustainability outcomes by providing employees with abilities (through training), motivation (through incentives), and opportunities (through participation in Green practices) to perform pro-environmental

behaviours. Institutional Theory was introduced to clarify how external pressures resulting from regulators, consumers, and stakeholders compel organisations to utilise GHRM practices. All of these theoretical perspectives enhance our understanding of ways the potential of GHRM can support the strategic objectives of organisations in achieving long-term sustainability (Farooq et al., 2023; Naeem et al., 2025b, c).

The literature also examines sustainability performance and its relationships with various aspects of sustainability. Environmental performance received the most attention in the literature, and important and relevant empirical studies also link GHRM practices to performance improvement (e.g., reduced waste, energy savings, better environmental responsibility/compliance, etc.). The empirical studies explored social sustainability performance outcomes (e.g., employee well-being, community engagement, equality, etc.) and identified inclusive and participatory HRM practices (and GHRM also collects this aspect). Economic performance, though less studied, is gaining attention as firms begin to recognize the cost savings and reputational gains associated with sustainability-focused human resource strategies. In this context, GHRM is seen not merely as a tool for environmental stewardship but as a driver of holistic organizational performance.

Despite these advancements, several gaps persist in the literature. Firstly, much of the existing research is cross-sectional, limiting the ability to infer causality between GHRM practices and sustainability outcomes. Secondly, studies are heavily concentrated in certain industries and geographical contexts, such as manufacturing firms in East and South Asia, with limited research in the service sector or emerging economies. Thirdly, there is a lack of longitudinal and mixed-methods studies that can offer deeper insights into the dynamic interplay between HR practices and sustainability over time. On top of that, both GHRM and sustainability performance have not been measured consistently, with diverse operational definitions and measures among the various studies, making it hard to compare their results or yield broader conclusions.

Finally, while a lot of the studies take an individual approach to GHRM practices, fewer employ a more integrated approach by investigating the influence on sustainability performance of bundled practices or HRM systems. There is growing support for the notion that any HR intervention may have a limited effect if it cannot be integrated into a broader organizational strategy on sustainability. There is also a lack of research on the negative consequences of GHRM-related practices, including potentially negative consequences to employees for greenwashing and competing demands based on role expectations. In addition to these many complexities related to understanding GHRM from an organizational lens, other studies will increasingly need to adopt more holistic, multi-level, and cross-disciplinary frames of reference.

Table 1 Common Green HRM Practices Identified in the Literature

Green HRM Practice			Description	Sample Citations	
Green Selection	Recruitment	&	Integrating environmental criteria in job descriptions	Jabbour & de Sousa	
		and hiring processes.	Jabbour (2016)		
Development		Educating employees on eco- friendly procedures and sustainability knowledge.	Pham et al. (2019); Teixeira et al. (2016)		

Green Performance Management	Aligning appraisals with environmental KPIs and evaluating green behavior.	Jackson et al. (2011); Tang et al. (2018)
Green Compensation & Rewards	Offering bonuses, incentives, or promotions linked to environmental behavior.	Jabbour (2011); Pinzone et al. (2016)
Employee Involvement in Green Initiatives	Facilitating participation in green campaigns and employee-driven ecoprojects.	Dumont et al. (2017); Daily et al. (2012)

Table 2 Summary of Theoretical Frameworks in Green HRM-Sustainability Research

Theory	Application in Green HRM Research	Core Contribution
Resource-Based View (RBV)	Green HRM builds unique and inimitable capabilities that drive sustainability.	Highlights green human capital as a competitive advantage.
Social Exchange Theory (SET)	Explains how perceived organizational support from green practices leads to reciprocated behaviors.	Emphasizes the mutual relationship between employer and employee.
Ability-Motivation- Opportunity (AMO)	Describes the mechanism through which green behaviors are cultivated via HR practices.	Focuses on employee competencies, motivation, and opportunities.
Institutional Theory	Firms adopt Green HRM due to regulatory, normative, and mimetic pressures.	Important for understanding behavior in emerging markets.
Strategic HRM Theory	Green HRM functions as a strategic enabler of sustainability goals.	Links people management with long-term environmental strategy.

1.1.1 3. Methodology: PRISMA Approach

1.1.2 To provide a rigorous and transparent review process, this study will follow the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach. PRISMA is a well-recognized protocol that improves the quality and reproducibility of systematic literature reviews by providing a structured reporting process for identifying, screening, and synthesizing research evidence. It has four phases, identified with the PRISMA model: identification, screening, eligibility, and inclusion. The stages of the PRISMA model were followed in a systematic way and used to accumulate relevant empirical and conceptual studies about the link between GHRM and sustainability performance.

1.1.3 3.1 Identification

The initial step of the process consisted of an exhaustive search of scholarly databases to

locate potentially relevant research. The databases involved were Scopus, Web of Science, Science Direct, Emerald Insight, Springer Link, and Google Scholar. The search strategy used combinations of the keywords: "Green HRM," "Green Human Resource Management," "Sustainability Performance," "Environmental HR Practices," "Sustainable HRM," and "Organizational Sustainability." Boolean operators (AND, OR) were used throughout to increase the results and inclusivity. Due to quality concerns, we only considered peer-reviewed journal articles published in the time frame of 2010 and 2024. This time frame reflects the emergence and development of GHRM as a recognized research field.

3.2 Screening

In the screening phase, the titles and abstracts of all retrieved articles were reviewed to assess their relevance to the research objectives. Studies that did not explicitly discuss GHRM practices or their relationship with sustainability performance were excluded. Duplicate entries, editorials, book reviews, and non-peer-reviewed papers were also removed at this stage. An initial pool of 486 articles was identified, and after screening for relevance and duplication, 212 articles remained for full-text review.

3.3 Eligibility

The remaining full-text articles were then examined in detail against specific inclusion and exclusion criteria. To be eligible for inclusion, studies had to:

- (a) focus on Green HRM practices as a core independent or mediating variable;
- (b) examine sustainability performance or any of its dimensions (environmental, social, economic) as an outcome;
- (c) be empirical, conceptual, or theoretical with clearly stated findings or frameworks;
- (d) be published in English.

Articles were excluded if they addressed general HRM practices without any environmental or sustainability context, or if they examined sustainability without any reference to HRM. After applying these criteria, 84 articles were retained as eligible for the final synthesis.

3.4 Inclusion and Data Extraction

A total of 84 studies were included in the final review. Each article was carefully read and analyzed to extract relevant data points including: study objectives, research design (qualitative, quantitative, or mixed-methods), sample size and context (country, industry), key Green HRM practices explored (e.g., green recruitment, green training), sustainability dimensions examined, theoretical frameworks used, and significant findings. This process enabled the categorization of studies into thematic clusters for analysis, including GHRM practices, mediators/moderators, sustainability outcomes, and underlying theories.

3.5 Quality Assessment

To ensure reliability and consistency, a quality assessment was performed using a modified version of the Critical Appraisal Skills Programme (CASP) checklist for both qualitative and quantitative studies. Criteria included clarity of research aims, methodological appropriateness, data validity, and relevance of conclusions. Studies scoring low on methodological rigor were flagged but not immediately excluded, as they

provided conceptual insights beneficial for the review.

3.6 Data Synthesis

The selected studies were synthesized using a narrative synthesis approach, which involved grouping the findings thematically rather than statistically (as meta-analysis was not feasible due to methodological heterogeneity). Themes were organized around key Green HRM practices, their direct and indirect effects on sustainability performance, the role of mediators and moderators, and the theories grounding these relationships. Visual tools such as conceptual diagrams and summary tables were also developed to facilitate interpretation and pattern recognition.

1.2 4. Results

The systematic review process yielded 84 articles that met the inclusion criteria and were analyzed thematically. The results are presented in terms of geographic distribution, research methods, sectoral focus, core Green HRM practices, sustainability dimensions explored, mediating and moderating variables, and underlying theoretical frameworks. Geographically, the majority of studies were conducted in emerging economies such as India, Pakistan, China, and Malaysia, accounting for over 60% of the total sample. This highlights the growing interest in sustainable HR practices within developing contexts where environmental regulations are becoming more stringent and stakeholder awareness is rising. Developed countries such as the United Kingdom, Germany, and Australia also contributed, though to a lesser extent. Sector-wise, manufacturing, energy, hospitality, and higher education were the most studied industries due to their environmental impact and human capital intensity.

In terms of methodology, 63% of the studies employed quantitative methods, primarily using survey-based designs and structural equation modeling (SEM) to test hypothesized relationships. Approximately 21% used qualitative methods such as interviews and case studies, while 16% adopted mixed-methods designs. Most studies collected cross-sectional data; however, a few longitudinal designs were also observed, providing deeper insights into long-term sustainability impacts.

The analysis revealed a consistent set of GHRM practices associated with sustainability performance. The elements investigated were green recruitment and selection, green training and development, green performance appraisal, green rewards and compensation, and green involvement and participation. Green recruitment is a way of attracting candidates with a passion for sustainable practices, while green training develops the competency that is needed to act in an environmentally sustainable way. Green performance appraisal and rewards aligned employee performance to environmental objectives and developed a culture of accountability and motivation. Green involvement included participative environmental management and suggestion systems, which enabled employees to facilitate sustainability values in the workforce.

In terms of sustainability performance, to better assess sustainability and organisational performance, most studies adapted a triple bottom line (TBL), focusing on the environmental, social, and economic parts of the framework. In terms of environmental performance, the most cited environmental performance outcomes were energy efficiency, waste reduction, emissions reduction, etc. In terms of social performance,

employees' well-being, the socially responsible innovation outcome was often reported; community engagement and trust from stakeholders were also commonly reported indicators for social performance. While economic performance received less empirical evidence in the SLR, reported outcomes included cost reductions, increases in productivity, and cost savings. In terms of economic performance, it is more commonly reported that improvements to the organisation's reputation have become common.

In addition, the review found a range of mediating and moderating variables in the relationship between GHRM and sustainability performance. The mediating variables were employee environmental commitment, organizational citizenship behavior for the environment (OCBE), psychological empowerment, and green organizational culture. Moderating variables included environmental knowledge, organizational climate, top management support, and industry type, which affected the strength and direction of GHRM and sustainability performance.

Theoretical frameworks were particularly significant, and the most common were RBV, Social Exchange Theory (SET), AMO, and Institutional Theory. The RBV describes how GHRM practices lead to unique human capital characteristics and competitive advantage. The SET and AMO, in combination, describe the mediating pathways for GHRM practices to affect employee motivation and behaviors. The Institutional Theory was often used and primarily with studies in developing contexts to help explain the regulatory and normative pressure in which organizations operate.

1.3 5. Discussion

This systematic review provides empirical support for the growing acknowledgement that GHRM is a powerful enabler of sustainability performance. GHRM's ability to align employee behaviours with environmental outcomes via their integration to primary HRM functions provides organizations with the capability to achieve sustainability across timeframes. The predominance of studies from emerging economies, given their contemporary circumstances involving rapid industrialisation, urbanisation, and environmental degradation, demonstrates GHRM's pertinence in regulating, monitoring, and enforcing compliance via social or relational means, as regulatory environments grow stronger, and stakeholder expectations grow increasingly burdensome.

One of the significant insights from the analysis is how GHRM practices cohere in an integrated and cyclical fashion. GHRM constitutes more than a series of discrete one-off interventions: recruitment, training, performance management, and reward systems cohesively operate to develop a culture of organizational environmental responsibility. For example, effective green recruitment puts an emphasis on attracting talent that will resonate with core organizational sustainability values; green values are also replicated and reinforced through direct training and development. When employee performance appraisals are linked to employees' green behaviours, and employees are rewarded with systemic or symbolic recognition linked to green behaviours, employees understand the importance of sustainability as a strategic priority. This tight framework fosters an emergent and self-sustaining virtuous circle of environmental awareness, responsible behaviour, accountability, and innovation.

Mediating variables such as psychological empowerment and OCBE suggest that employee attitudes and behaviors are critical in transforming GHRM into sustainability

performance. The current research implies that technical HR-based interventions alone are not sufficient; they must be accompanied by a work environment that promotes intrinsic motivation and environmental awareness. Employees who are empowered and value their role in an organization are more likely to exhibit discretionary green behaviors that exceed formal job expectations, which enhances the positive impact of GHRM on organizational outcomes.

Moderating variables are now considered, as they provide context to the relationship and indicate that both organizational and external variables affect the success of GHRM. One such variable is top management support, as top management support contributes to green initiatives becoming embedded and credible in an organization. Organizational climate is one of the least researched contextual variables, defined as the values and norms shared in a given organization that can reinforce or erode the impact of GHRM. Also, the type of industry may apply as a factor suggesting context, as companies and industries that produce higher environmental footprints will be more inclined to experience greater returns from GHRM practices.

The application of diverse theoretical frameworks enriches the understanding of GHRM and sustainability linkages. RBV, SET, and AMO provide robust explanatory models for how GHRM influences organizational capabilities, employee behavior, and performance outcomes. Institutional Theory, especially relevant in emerging markets, underscores the role of coercive, normative, and mimetic pressures in shaping organizational responses to sustainability challenges. Future research could benefit from integrating multiple theories to capture the multidimensional nature of GHRM's influence on sustainability.

Despite the advances in this field, several limitations persist. First, the predominance of cross-sectional and self-reported data limits causal inferences and may inflate positive associations due to common method bias. Second, there is a geographic concentration of studies in a few Asian countries, with limited representation from African, Latin American, and Middle Eastern contexts. Third, while environmental and social outcomes are well-documented, the economic impacts of GHRM remain underexplored. Finally, the field lacks studies exploring technological and digital enablers of GHRM, such as HR analytics, Al, and green digital tools.

In sum, this systematic review offers compelling evidence that GHRM significantly contributes to sustainability performance through a combination of strategic alignment, employee engagement, and organizational culture. It also highlights the need for further empirical research using longitudinal and multi-method designs, deeper exploration of underrepresented regions and sectors, and theoretical integration that reflects the complexity of modern organizational sustainability.

6. Conclusion

This systematic review, grounded in the PRISMA framework, aimed to synthesize and critically analyze the existing body of knowledge on the relationship between GHRM practices and sustainability performance. The analysis of 84 studies reveals that GHRM serves as a strategic organizational tool to align human capital with environmental and social objectives, thereby enhancing sustainability outcomes. The review demonstrates that embedding green practices in its core HR activities of recruitment, training, appraisal, and reward systems had a positive effect on its environmental, social, and economic

performance.

An important insight from the review is that GHRM travels through complicated mechanisms involving mediators such as employee environmental commitment and OC behavior, and moderators like senior management support and organizational climate. These findings indicate that the positive impact of GHRM on sustainability performance is not just transactional, but is woven throughout the organizational systems, employee psychology, and cultural values.

Moreover, the theoretical richness of the field is evident in the diverse frameworks employed by RBV, SET, AMO theory, and Institutional Theory, each offering unique perspectives on how GHRM influences organizational sustainability. However, while the field has made significant strides, the review also highlights gaps such as geographical concentration, methodological limitations, and underexplored economic and digital aspects of GHRM.

6.1 Theoretical Implications

This systematic review has important implications for theoretical development in GHRM and sustainability performance since it elaborates on several foundational organizational theories. For example, the findings reinforce the strategic human resource management (SHRM) perspective, suggesting that HRM is not merely concerned with increasing employee efficiency. Rather, it is also designed to serve the larger organizational goals like environmental sustainability. GHRM practices are shown to strategically align environmental goals within HR systems, reinforcing the strategic role of HR in shaping organizational sustainability trajectories. Furthermore, the review underscores the relevance of both the RBV and SET in understanding the GHRM-sustainability nexus. From an RBV standpoint, GHRM fosters the development of valuable, rare, inimitable, and non-substitutable resources, such as employee commitment to environmental values, which can generate sustained competitive advantage. Concurrently, SET provides a behavioral explanation, suggesting that organizations investing in green initiatives foster reciprocal, environmentally friendly behaviors from employees due to perceived fairness and support.

Moreover, the AMO framework is refined in this context, with the review emphasizing how the development of environmental competencies, intrinsic motivation to engage in green behaviors, and opportunities to participate in sustainability initiatives play a critical role in eliciting pro-environmental conduct from employees. The review also provides empirical backing for Institutional Theory, particularly in emerging economies, by revealing how coercive pressures (e.g., environmental regulations), normative influences (e.g., societal expectations), and mimetic forces (e.g., industry benchmarking) shape the adoption and implementation of Green HRM. However, one key theoretical implication is the evident fragmentation within the literature; studies often adopt single-theory lenses, limiting broader generalizability. The review calls for more integrative models that synthesize insights from SHRM, RBV, SET, AMO, and Institutional Theory, among others, to construct a holistic understanding of how GHRM drives sustainability performance in varying organizational contexts.

6.2 Practical Implications

The insights gained from this review offer several actionable strategies for HR

professionals, sustainability managers, and organizational leaders aiming to strengthen environmental outcomes through human capital interventions. One of the primary practical implications is the strategic integration of environmental values across all HR functions. Organizations are encouraged to embed green goals into recruitment criteria, selection procedures, training modules, performance evaluations, and reward systems to ensure that the entire employee lifecycle aligns with sustainability objectives. Leadership commitment emerges as a decisive factor in the success of GHRM. When top management actively champions green initiatives by allocating resources, establishing environmental KPIs, and leading by example, employee engagement and program effectiveness are significantly enhanced.

Another important implication is the central role of employee engagement in achieving sustainability performance. The review highlights how mechanisms like participative decision-making, suggestion schemes, and green-focused training programs not only improve environmental outcomes but also build a culture of ecological consciousness and shared responsibility. Importantly, the review advocates for sector-specific customization of Green HRM practices. For instance, organizations in pollution-intensive sectors such as manufacturing, construction, or energy must tailor their HR strategies to address the unique environmental challenges and compliance requirements of their industries. Finally, the use of green digital tools is increasingly relevant. Integrating technologies such as digital HR systems, e-learning platforms, and virtual onboarding can enhance the reach, efficiency, and monitoring of Green HRM programs, particularly in large or geographically dispersed organizations. These practical recommendations offer a roadmap for embedding sustainability into organizational DNA through HR functions.

6.3 Limitations

Despite offering robust insights, this review is not without its limitations. Firstly, the scope of included studies was limited to peer-reviewed journal articles published in English, which may have excluded relevant contributions in other languages or formats, such as white papers, government reports, or dissertations. This linguistic and publication-type bias could restrict the generalizability of the review's conclusions, particularly in non-English-speaking contexts where sustainability practices may differ significantly. Secondly, while the PRISMA method ensures methodological rigor, it is reliant on the quality and consistency of the primary studies reviewed. Variations in conceptual definitions of GHRM and sustainability performance across studies make direct comparisons challenging and introduce potential inconsistencies in thematic interpretation.

Another limitation arises from the geographic concentration of the reviewed literature. A significant proportion of studies were conducted in developed countries or upper-middle-income economies, with relatively fewer studies addressing GHRM practices in low-income or conflict-affected regions. As such, the review may underrepresent the contextual constraints, institutional voids, and resource limitations faced by organizations in less developed settings. Additionally, the review focuses primarily on empirical findings and does not extensively critique the methodological approaches used in the primary studies. Variability in research designs, sample sizes, and data collection methods may affect the robustness of the findings presented. Finally, most of the

reviewed studies focus on short-term sustainability outcomes, whereas the long-term impacts of GHRM, such as cultural transformation or ecological innovation, remain underexplored. This limitation signals the need for more longitudinal and interdisciplinary studies in the future.

6.4 Future Directions

Building upon the identified limitations, several promising directions for future research emerge. One key area is the development and testing of integrative theoretical models that combine elements from multiple frameworks, such as Strategic HRM, RBV, AMO, and Institutional Theory, to offer a more nuanced and comprehensive understanding of Green HRM. Such models could help uncover interactions among internal and external drivers of sustainability, enhancing both academic depth and practical relevance. Researchers are also encouraged to explore the longitudinal effects of GHRM initiatives. Long-term studies can reveal how sustained HR interventions influence organizational culture, employee mindset, and environmental innovation over time, moving beyond immediate compliance outcomes.

In terms of geographic focus, future research should aim to diversify the contexts under investigation. Expanding the study of GHRM into underrepresented regions, particularly developing and emerging economies, will provide richer cross-cultural insights and illuminate how institutional and resource constraints shape the effectiveness of green HR practices. Scholars should also delve deeper into the role of digital transformation in supporting GHRM. Investigating how technologies such as Al-driven recruitment tools, virtual training, and cloud-based HR platforms facilitate or hinder sustainability initiatives could bridge the gap between green practices and digital innovation. Another fertile area for exploration is the micro-foundations of Green HRM. Future studies might examine how individual employee traits such as environmental values, green identity, or ecoanxiety interact with organizational initiatives to influence behavioral outcomes. Finally, policy-oriented research that investigates how public incentives, industry regulations, or ESG (Environmental, Social, and Governance) reporting standards influence GHRM adoption could provide valuable recommendations for both policymakers and practitioners.

Table 3 Identified Gaps and Suggested Future Research Directions

Identified Gap	Proposed Future Direction	
Lack of longitudinal studies	Implement multi-year studies to measure	
Lack of foligitudinal studies	lasting impacts of GHRM on sustainability.	
Limited focus on developing economies	Conduct more empirical research in regions	
Littlited focus off developing econornies	such as South Asia and Sub-Saharan Africa.	
Under-exploration of digital tools	Analyze the use of AI, e-HRM, and automation	
Officer-exploration of digital tools	in enhancing Green HRM effectiveness.	
Scarcity of integrated theoretical models	Combine theories like AMO, SET, and RBV into	
Scarcity of integrated theoretical models	unified conceptual frameworks.	
Focus on large organizations	Include SMEs, public organizations, and NGOs	
Focus on large organizations	in GHRM studies.	

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