Systematic Review: Association between Green Human Resource Management and Sustainable Competitive Edge

Jonathan William Omolo[1]

[1]jonathanomolo1968@gmail.com

[1]https://orcid.org/0009-0002-6250-5787

[1]Rongo University, Kenya

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ABSTRACT

To achieve a Sustainable Competitive Edge in today's environmentally conscious world, organizations are strongly advised to systematically integrate Green Human Resource Management practices across all core HR functions. This strategic imperative necessitates embedding environmental considerations into organizational people management. A multi-faceted approach is crucial, prioritizing robust green training programs to enhance employees' environmental proficiency and skills. Furthermore, the establishment of meticulously designed green performance management and reward systems is vital. These systems incentivize sustainable behaviors, aligning individual actions with organizational environmental objectives and cultivating a workforce deeply committed to ecological stewardship. Complementing these efforts, fostering green employee involvement programs is essential. Actively engaging employees in environmental decision-making processes and encouraging their participation in green initiatives can unlock invaluable insights and foster a stronger sense of ownership and responsibility towards sustainability endeavors. This collaborative approach drives innovative and impactful environmental solutions. The holistic integration of these interconnected GHRM practices enables organizations to cultivate a distinctive and highly valued green human capital pool. This environmentally aware and skilled workforce, coupled with a deeply ingrained environmental stewardship culture, represents a significant organizational asset. These internal capabilities are critical for achieving superior environmental performance, forming a robust foundation for a lasting competitive edge. Moreover, compelling evidence underscores the pivotal role of GHRM practices as both crucial mediators and significant moderators in translating Organizational Environmental Sustainability (OES) initiatives into tangible and enduring competitive advantages. GHRM mechanisms act as key conduits, directly driving green innovation and enhancing overall environmental performance, thereby creating pathways to SCA. Simultaneously, key GHRM-related elements, such as the cultivation of a strong green organizational culture and the development of a highly competent green human capital base, function as powerful moderators, significantly amplifying the positive influence of OES on various SCA-related outcomes. In conclusion, a profound and strategic integration of GHRM into an organization's overarching sustainability strategy is essential. This deep embedding of green principles into human resource management practices is the key to effectively leveraging environmental actions, transforming them into tangible and enduring sources of competitive success in an increasingly environmentally conscious and regulated global business environment.

Keywords: Environmental Performance, Green Human Resource Management, Green Organizational Culture, Sustainable Competitive Edge, Sustainability

I. INTRODUCTION

Raising demand of concerns about environmental degradation and climate change has put weight on organizations to secure sustainable practices (Hameed et al., 2021). In this regard, the concept of Green Human Resource Management (GHRM) has emerged, representing a change in how organizations manage their human resources to achieve environmental goals (Renwick et al., 2013). GHRM entails enjoining HRM policies and practices with an organization's environmental strategic plan, fostering and promoting environmentally friendly employee culture (Dumont et al., 2016).

Green Human Resource Management (GHRM) refers to the series of HRM processes aimed at promoting environmental sustainability, reducing the environmental burden, and nurturing eco-conscious employees. These processes include Green recruitment and selection, Green training and development, Green performance management, and Green reward systems (Jabbour & de Sousa Jabbour, 2016). While Sustainable Competitive Edge, is a long-term that allows an organization to outperform its rivals while simultaneously contributing to environmental and social sustainability. It involves creating value for customers through environmentally friendly products, services, and processes (Barney & Hesterly, 2019).

A sustainable competitive edge is attained when an organization can create premium worth value for its customers while reducing negative environmental and social outcomes. GHRM is considered a crucial factor in achieving this advantage by enhancing organizational environmental performance, enhancing involved party relationships, and fostering innovation (Muisyo et al., 2022).

Various GHRM practices contribute to sustainable competitive Edge: Green Recruitment and selection attracts environmentally committed employees, fostering Green Innovation (Renwick et al., 2013; Saeed et al., 2019). Green Training and Development equips employees to meet environmental goals, improving performance and reputation (Jabbour & de Sousa Jabbour, 2016; Tang et al., 2018). Green Performance Management motivates eco-friendly behaviors and enhances environmental performance (Dumont et al., 2016; Farrukh et al., 2017; Singh et al., 2020). Green Reward Systems reinforce Green behaviors and foster a sustainability culture (Muisyo et al., 2022b). Empirical research shows GHRM's positive association with Enhanced environmental performance (Hameed et al., 2021), improved financial performance (Ren et al., 2018), Increased Innovation (Singh & El-Kassar, 2019), and enhanced stakeholder relationships (Freeman, 1984), though the strength varies by context.

1.2 Statement of the Problem

Given gradual increasing ecological consciousness, firms acknowledge sustainability as a strategic obligation, with Green Human Resource Management (GHRM) proposed as a major influence of sustainable competitive edge. However, concrete evidence directly linking GHRM operationalization to enduring competitive benefits remains scarce. While prior studies have examined related aspects (Daily et al., 2007; Jackson et al., 2011; Ramus, 2001; Zhu et al., 2012), a comprehensive demonstration of how GHRM practices translate into tangible and sustained competitive edge is lacking. This scarcity of empirical support hinders firms from strategically investing in GHRM and justifying resource allocation. Therefore, this research aims to empirically investigate the relationship between GHRM practices and sustainable competitive advantage to provide valuable insights for both theory and practice.

1.2 Research Objectives

i. To identify and analyze the specific Green HRM practices that contributes to the development of Sustainable Competitive Edge.
ii. To empirically measure the correlation between the implementation of Green HRM practices and indicators of Sustainable Competitive Edge.
iii. To determine the extent to which Green HRM practices mediate or moderate the relationship between organizational environmental Sustainable Competitive Edge

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Resource-Based View Theory

The Resource-Based View (RBV) is a management framework that emphasizes how vital a firm's internal resources are to securing a Sustainable Competitive Edge. The argument here is that long-term competitive advantage, leading to outperformance, stems from a company's possession of valuable, rare, inimitable, and organized resources (VRIO) (Barney, 1991). While the original concepts of RBV despite originating in prior scholarly contributions, key figures played a crucial role in shaping and popularizing the theory. Edith Penrose's (1959) significant work "The Theory of the Growth of the Firm," is a fundamental element of RBV, highlighting the way a company's distinct resources fuel its growth. Wernerfelt (1984) formally introduced the term "resource-based view," viewing firms as assemblages of various resources. Jay Barney's (1991) influential paper, "Firm Resources and Sustained Competitive Advantage," firmly established RBV being a dominant theory in strategic management, and notably introducing the widely adopted VRIO framework for resource analysis.

The RBV model furnishes valuable insights into how Green Human Resource Management (GHRM) can contribute to a firm's sustainable competitive advantage. GHRM practices, incorporating green training, green performance management, and green employee involvement, can empower organizations to enhance their environmental performance, decrease operational costs and improve their profile – all beneficial outcomes that increase profits and improve key player furthermore, effective GHRM The failure of many organizations to prioritize or effectively implement these practices makes them rare, thus enabling investing firms to achieve a competitive edge through differentiation. Specific elements of GHRM competitors may find it hard to imitate these, particularly when they are deeply woven into the firm's culture and involve complex social dynamics, such as a strong environmental ethos and significant employee participation in green efforts. To fully build on the potential of GHRM, organizations must ensure that their HRM practices are strategically aligned with their inclusive environmental objectives, establishing supportive systems and structures that motivate and empower employees to substantially support environmental goals.

2.2 Empirical Review

2.2.1 Green HRM and Sustainable Competitive Edge

Drawing upon foundational conceptual work by Jackson et al. (2011), studies have carefully examined specific GHRM endeavors and their impact on organizational outcomes. Ren et al. (2017) revealed a powerful positive association between green training, recruitment/selection, and performance management with improved environmental performance, yielding benefits including decreased costs, a better corporate image, and improved relations with stakeholders – key aspects of Sustainable Competitive Edge .

Furthering this, Daily et al. (2012) underscored the crucial role of employee contribution to environmental initiatives suggesting that GHRM It's crucial for environmental improvements and a competitive advantage via a motivated workforce to have practices that encourage employees to participate in and take ownership of green goals. This aligns with Tang et al.'s (2018) findings, which demonstrated that GHRM Initiatives that spark environmentally friendly actions among employees collectively contribute to organizational sustainability and market differentiation.

Studies have empirically demonstrated the connection between GHRM and innovation, a key factor in gaining a competitive edge. Saeed et al. (2019), revealed a strong positive link between GHRM practices and green innovation, subsequently leading to a positive impact on sustainable competitive advantage within manufacturing firms. This implies that GHRM promotes environmental awareness, knowledge sharing, and a culture of sustainability, thereby encouraging eco-friendly innovations that differentiate organizations.

Besides examining core practices, empirical research has also delved into the impact of green compensation and reward systems on reinforcing sustainable behaviors (Govindarajulu & Daily, 2004), as well as the significance of a Green organizational culture, commonly fostered by GHRM, in driving environmental performance and competitive advantage (Chiang et al., 2013). Overall, this body of research highlights the multifaceted aspects of GHRM and its potential to contribute to sustainable competitive advantage through improved environmental performance, greater employee engagement, the promotion of green innovation, and the development of a supportive organizational culture.

Prior empirical research has investigated several specific Green Human Resource Management (GHRM) practices contributing to Sustainable Competitive Edge. Regarding Green Recruitment and Selection, Ren et al. (2016) and Saeed et al. (2019) pointed out its key role in the development of green human capital and the promotion of green innovation, respectively. On Green Training and Development, Jabbour et al. (2013) and Tang et al. (2018) emphasized its role in equipping employees for sustainable practices, enhancing resource efficiency, and improving environmental performance. For Green Performance Management and Reward Systems, Farrukh et al. (2017) and Singh et al. (2020) put forth that aligning these with environmental objectives and rewarding Green behavior encourages a sustainability culture and magnifies the impact of green initiatives on competitive advantage. Finally, in relation to Green Employee Involvement, Daily et al. (2007) proposed that employee participation in environmental decision-making fosters innovation and ownership, contributing to a unique, environmentally conscious culture and sustainable competitive advantage.

GHRM comprises a number of activities, including green recruitment, green training, green performance management, and green compensation, all geared towards encouraging environmentally conscious behaviors and boosting organizational environmental performance (Ren et al., 2018).

The NRBV suggests that environmentally-related capabilities, if they are valuable, rare, difficult to imitate, and without substitutes, can be a foundation for sustainable competitive advantage. GHRM is vital in developing these capabilities by nurturing a workforce that is both competent and motivated to support environmental initiatives (Dumont et al., 2016; Renwick et al., 2013). For instance, green recruitment attracts individuals with pro-environmental values, while green training equips employees with the knowledge and skills necessary for sustainable practices (Jabbour & Santos, 2008). Green-oriented performance management and reward systems provide further incentives for environmentally responsible conduct, thereby embedding sustainability within the organizational culture (Akgün, 2019).

Evidence from empirical research is emerging to support the link between GHRM and competitive advantage. Cherian and Jacob (2012) established that implementing GHRM practices positively contributes to an organization's competitive advantage by enhancing its public image, employee morale, and overall efficiency. Carmona-Moreno et al. (2012) maintained that environmental HRM can produce both cost and differentiation advantages via improved resource utilization and the development of unique Green capabilities. Muisyo et al. (2022) further suggested that GHRM can drive innovation and market differentiation, contributing to a stronger competitive position. More recently, Zhang et al. (2024) revealed that GHRM is positively associated with both green product and process innovations, which in turn strengthens a firm's green competitive advantage, thereby highlighting the mediating role of innovation.

2.2.2 Measuring the Correlation between Green HRM Practices and Sustainable Competitive Edge

GHRM as a multidimensional construct, including practices like Green recruitment and selection, training and development, performance management, compensation and rewards, and employee involvement in environmental efforts (Ren et al., 2017; Saeed et al., 2019; Tang et al., 2018), with researchers developing scales to measure the extent of their implementation using tools like Likert scales. Empirically measuring sustainable competitive advantage (SCA) is more complex due to its multifaceted nature; while earlier studies used proxies like financial or environmental performance, current research adopts a holistic approach informed by the Resource-Based View (RBV) and Natural Resource-Based View (NRBV), measuring SCA through indicators reflecting value creation, rarity, inimitability, and non-substitutability related to an organization's environmental, social, and economic performance (Hart, 1995).

Composite SCA measures in studies include Environmental Performance (Ren et al., 2017), Green Innovation (Saeed et al., 2019), Reputational Benefits (Fombrun et al., 2000), Stakeholder Engagement, and Organizational Efficiency/Cost Savings).

To empirically determine the correlation between GHRM practices and sustainable competitive edge (SCA) researchers employ statistical techniques such as correlation analysis (Pearson's r or Spearman's rho) to assess linear relationships and regression analysis to examine the predictive power of GHRM practices on SCA, often controlling for organizational factors. Furthermore, some studies utilize structural equation modeling (SEM) to analyze complex relationships involving mediating variables and various SCA dimensions simultaneously, allowing for the testing of hypothesized causal pathways (Tang et al., 2018).

Studies that directly correlate GHRM with indicators of competitive advantage demonstrate positive relationships. Yong et al. (2019) in Malaysian manufacturing linked GHRM to improved environmental performance (a key SCA indicator); Saeed et al. (2019) in textiles found GHRM correlated with green innovation, leading to SCA; Singh et al. (2020) in SMEs demonstrated GHRM's positive correlation with both environmental performance and competitive edge; and Farrukh et al. (2017) in SMEs linked GHRM leading to improved corporate environmental performance, indicating a route to SCA via stakeholder relations and compliance.

Mediation and moderation studies clarify GHRM's link to competitive advantages: Jabbour et al. (2013) found environmental performance mediates this relationship; Tang et al. (2018) proposed that a green culture influences the positive relationship between GHRM and environmental outcomes. Amrutha and Geetha (2020) showed green innovation mediates GHRM's positive impact on sustainable organizational performance.

Indicators like environmental performance are frequently used in studies assessing sustainable competitive advantage (Farrukh et al., 2017; Yong et al., 2019), green innovation (Amrutha & Geetha, 2020; Saeed et al., 2019), reputation and stakeholder relations (Singh et al., 2020), and sometimes indirectly, financial performance, assuming positive impacts from environmental performance and innovation.

2.2.3 Green HRM Practices Mediate or Moderate Relationship between Organizational Environmental Sustainable Competitive Edge

To achieve environmental sustainability, organizations engage in diverse activities that lessen negative impacts and enhance ecological well-being (Elkington, 1997); encompassing areas like cleaner production, waste management, eco-friendly products, and conservation. Nevertheless, the effective execution of these initiatives frequently hinges on workforce engagement and commitment (Daily et al., 2007); highlighting the critical role of GHRM practices.

GHRM includes HRM, environmental sustainability-focused policies and practices, both internal and external, encompassing green recruitment/selection, training/development, performance management/rewards, and employee involvement (Jackson et al., 2011; Ren et al., 2016). By integrating environmental aspects into these core HR functions, organizations can cultivate an environmentally aware workforce, foster a sustainability culture, and promote green behaviors throughout the organization.

Drawing on theoretical frameworks such as the resource-based view (RBV) (Hart, 1995) and stakeholder theory (Porter & Kramer, 2006), the relationship between organizational environmental sustainability and competitive advantage has been a subject of examination. The RBV suggests that sustainable practices can be a source of competitive advantage by creating unique and valuable resources like environmental reputation and eco-innovation (Hart, 1995). In contrast, stakeholder theory argues that by addressing environmental concerns, organizations can enhance their legitimacy and strengthen stakeholder relationships, ultimately improving their competitive position (Porter & Kramer, 2006). Recognizing the crucial role of human capital in implementing environmental strategies, the literature theorizes that Green Human Resource Management (GHRM) practices play a mediating or moderating role in this relationship.

GHRM as a Mediator Within this framework, organizational initiatives aimed at environmental sustainability instigate the implementation of Green Human Resource Management (GHRM) practices, which subsequently contribute to the attainment of sustainable competitive advantage. By way of illustration, an organization endeavoring to diminish its carbon emissions might deploy green training programs to cultivate environmentally responsible employee behaviors, leading to outcomes such as enhanced resource efficiency, waste reduction, and the generation of green innovations, ultimately yielding competitive advantages such as cost savings, improved organizational reputation, or market differentiation (Jabbour et al., 2013; Saeed et al., 2019).

In contrast, Green Human Resource Management (GHRM) practices can also function as a moderator, affecting the strength or the nature of the relationship between environmental sustainability and competitive advantage. Effective GHRM practices have the potential to strengthen the positive impact of environmental sustainability initiatives on competitive advantage. To illustrate, an organization that has implemented strong green performance management and reward systems may observe a more pronounced positive correlation between investments in renewable energy and its competitive advantage, as employees are incentivized to actively support these initiatives (Tang et al., 2018). Conversely, the absence of effective GHRM practices could diminish or even eliminate the competitive advantages derived from environmental sustainability efforts due to factors such as low employee engagement or inadequate employee skills and knowledge.

The empirical investigation into whether Green Human Resource Management (GHRM) acts as a mediator or a moderator is ongoing, with existing research supporting both viewpoints. Several studies have indicated that GHRM practices mediate the relationship by promoting environmentally friendly employee behavior and enhancing organizational environmental performance, which in turn contributes to a greater competitive advantage (Farrukh et al., 2017). Conversely, other research posits a moderating role for GHRM, suggesting that the positive influence of environmental sustainability on competitive advantage is amplified in organizations that have effectively implemented GHRM practices (Singh et al., 2020).

Several studies have empirically investigated the mediating or moderating role of Green Human Resource Management (GHRM) in the relationship between organizational environmental sustainability (OES) and sustainable competitive advantage (SCA). For instance, Farrukh et al. (2017) suggested a mediating role, finding that green innovation mediated the link between GHRM and corporate environmental performance, ultimately contributing to SCA through enhanced reputation and efficiency. Similarly, Saeed et al. (2019) identified green innovation as a mediator between GHRM and SCA within the textile sector, leading to product differentiation and improved brand image. Yong et al. (2019) also argued for a mediating effect, proposing that GHRM-facilitated improved environmental performance mediates the achievement of broader organizational sustainability goals, inherently linked to long-term competitive viability. In contrast, studies suggesting a moderating role include Tang et al. (2018), whose findings implied that a strong green culture amplifies the positive impact of GHRM on environmental outcomes, indirectly strengthening the OES-SCA link. Furthermore, Singh et al. (2020) suggested that green human capital, influenced by effective GHRM, moderates the positive impact of green innovation on environmental performance, potentially enhancing the pathway to SCA.

III. METHODOLOGY

This systematic review employed a rigorous and transparent methodological framework to synthesize empirical evidence concerning the relationship between Green Human Resource Management (GHRM) and Sustainable Competitive Advantage (SCA). To achieve this, a comprehensive search strategy was developed, utilizing a combination of keywords and controlled vocabulary across prominent academic databases, including Scopus, Web of Science, and Google Scholar. The search terms encompassed variations of "Green HRM," "environmental HRM," "sustainable HRM," "ecological HRM," coupled with "sustainable competitive advantage," "environmental performance," "ecological performance," and "organizational sustainability." Boolean operators (AND, OR) and truncation techniques were employed to refine search results and ensure comprehensive coverage, aligning with best practices for systematic reviews (Petticrew & Roberts, 2006). A two-stage screening process was used to minimize bias and ensure the relevance of the reviewed studies. Data was extracted using a standard form, capturing study details, GHRM variables, SCA measures, design, and findings for systematic comparison. Methodological quality was assessed using Joanna Briggs Institute tools to evaluate bias and limitations (Munn et al., 2014), ensuring the validity of the findings. Data synthesis employed a narrative approach to organize and summarize findings, identifying patterns and inconsistencies in the GHRM-SCA relationship for a comprehensive overview.

IV. FINDINGS & DISCUSSION

4.1 Findings

4.1.1 Green HRM Practices that Contributes to the Development of Sustainable Competitive Edge

Organizations that integrate environmental criteria into their recruitment and selection processes are more likely to acquire employees with pro-environmental values and skills. This strategic approach provides a foundational green human capital pool that can be difficult for competitors to imitate, contributing to a sustainable competitive advantage (Ren et al., 2016; Saeed et al., 2019).

Green training equips employees with the necessary knowledge and skills to implement environmentally sustainable practices. Well-trained employees are more likely to contribute to resource efficiency and the development of green products or services, which can be sources of competitive differentiation (Jabbour et al., 2013; Tang et al., 2018).

Management systems with environmental objectives and rewarding green employee behavior foster a culture of sustainability. This alignment leads to improved environmental performance, which enhances the organization's reputation and attractiveness to stakeholders, creating a sustainable competitive advantage (Farrukh et al., 2017; Singh et al., 2020).

Involving employees in environmental decision-making and encouraging their participation in green initiatives can lead to innovative solutions and a stronger sense of ownership. This employee engagement can be a unique capability that fosters a more environmentally conscious organizational culture, contributing to a sustainable competitive advantage through enhanced innovation and employee commitment (Daily et al., 2007).

4.1.2 Empirical Correlation between Green HRM Practices and Sustainable Competitive Edge

Empirical studies have consistently demonstrated a positive correlation between the implementation of various GHRM practices (such as green training, green recruitment, and green performance management) and improved environmental performance indicators like reduced emissions, waste, and energy consumption (Yong et al., 2019; Hameed et al., 2021).

Research has found a significant positive correlation between GHRM practices and the development and adoption of green innovation, including new green products, processes, and technologies. This suggests that GHRM fosters an environment conducive to innovation that can lead to a sustainable competitive advantage through product differentiation (Saeed et al., 2019; Singh & El-Kassar, 2019).

Studies indicate a positive correlation between the implementation of GHRM practices and enhanced organizational reputation and stakeholder relations. By demonstrating a commitment to environmental sustainability through GHRM, organizations can improve their corporate image and stakeholder satisfaction, contributing to a sustainable competitive advantage (Singh et al., 2020).

While often indirect, some empirical evidence suggests a positive correlation between GHRM implementation and improved financial performance. This is often attributed to cost savings from enhanced environmental efficiency and increased revenue from a stronger reputation and green innovation (Ren et al., 2018).

4.1.3 The Mediating and Moderating Roles of Green HRM in Environmental Sustainable Competitive Edge

Studies suggest that Green HRM practices can mediate the relationship between OES and SCA by fostering green innovation. Saeed et al. (2019) found that GHRM practices positively influence green innovation capabilities, which subsequently lead to a stronger competitive advantage through product differentiation and improved brand image.

Research indicates that GHRM practices can mediate the impact of OES on SCA through improved environmental performance. Jabbour et al. (2013) explored this, finding that GHRM positively influences environmental performance, which in turn contributes to a stronger competitive position. Yong et al. (2019) also suggest that GHRM-facilitated improved environmental performance acts as a mediator in achieving broader organizational sustainability goals linked to long-term competitive viability.

Some studies suggest that green organizational culture, often nurtured by GHRM practices, can moderate the relationship between OES and SCA-related outcomes like environmental performance. Tang et al. (2018) found that a strong green culture amplifies the positive impact of GHRM on environmental outcomes, implying a stronger indirect link between OES and SCA.

Research indicates that green human capital, developed through effective GHRM, can moderate the relationship between green innovation (often driven by OES efforts) and environmental performance, a precursor to SCA. Singh et al. (2020) suggested that effective GHRM practices, contributing to green human capital, strengthen the positive impact of green innovation on environmental performance, thereby potentially enhancing the pathway to sustainable competitive advantage.

4.2 Discussion

4.2.1 Integrated Green HRM Practices and Sustainable Competitive Edge

The early phases of sourcing and recruiting individuals who possess eco-conscious principles and the required environmental competencies are vital for establishing organizational bedrock dedicated to ecological responsibility. As emphasized by Ren et al. (2016) and Saeed et al. (2019), this environmentally focused workforce, or "green human capital," is difficult for rivals to imitate and cultivates a personnel naturally predisposed towards ecological ingenuity and active involvement in sustainability endeavors, ultimately contributing to a distinctive and enduring competitive edge.

Allocating resources to ecological education and skill-building initiatives is crucial for providing personnel with the understanding and abilities necessary to efficiently enact environmentally sound practices. The investigation conducted by Jabbour et al. (2013) and Tang et al. (2018) emphasizes how a knowledgeable workforce can boost resource optimization, contribute to the development of eco-friendly goods and services, and improve overall ecological results. These advancements can generate financial savings, a more robust brand image, and distinctiveness in the marketplace, all vital components of a lasting competitive advantage.

Incorporating ecological standards into employee evaluation processes and recognizing personnel for their environmentally responsible actions conveys a clear message regarding the organization's dedication to sustainability. As demonstrated by Farrukh et al. (2017) and Singh et al. (2020), this consistency not only encourages personnel to actively participate in ecological goals but also fosters a profoundly ingrained sustainability ethos. Such a culture can result in continuous enhancements in environmental outcomes and boost the organization's appeal to eco-aware interested parties, consequently reinforcing its enduring competitive edge.

Engaging personnel in ecological policymaking and promoting their involvement in environmentally friendly endeavors can reveal significant perspectives and cultivate a stronger feeling of responsibility for sustainability objectives. Daily et al. (2007) propose that this participatory method can lead to the creation of more novel and impactful environmental solutions, while also establishing a distinctive organizational competence grounded in employee involvement and dedication. This internal asset, being challenging for rivals to duplicate, can be a substantial factor in an enduring competitive edge.

4.2.2 Empirical Correlation between Green HRM Practices and Sustainable Competitive Edge

Studies reliably point to a favorable connection between the implementation of different Green Human Resource Management (GHRM) approaches and enhancements in metrics of ecological results. Studies such as Yong et al. (2019) and Hameed et al. (2021) have discovered that enacting GHRM practices like green training, recruitment, and performance management is associated with reduced emissions, waste, and energy consumption, demonstrating a quantifiable connection between HR's environmentally focused actions and concrete ecological results, a vital aspect of an enduring competitive edge.

Research indicates a significant positive relationship between the implementation of Green Human Resource Management (GHRM) approaches and an organization's capacity for ecological innovation. Saeed et al. (2019) and Singh and El-Kassar (2019) provide evidence that GHRM fosters an organizational climate and develops employee expertise that promotes the creation of innovative eco-friendly products, processes, and technologies. This evidence-based link suggests that investing in environmentally conscious HR practices can directly contribute to market differentiation and a sustainable competitive advantage through enhanced ingenuity.

Evidence-based research has indicated a favorable link between enacting Green Human Resource Management (GHRM) and improved corporate image and interested party connections. Singh et al. (2020) emphasize that showcasing a dedication to ecological responsibility via Green HRM approaches favorably affects how stakeholders view the organization and its public image. This quantifiable enhancement in external connections, resulting from HR's environmentally focused endeavors, is a vital component of an enduring competitive advantage.

While the direct financial impact can be complex to isolate, some empirical studies suggest a positive correlation between Green Human Resource Management (GHRM) and improved financial performance. For instance, Ren et al. (2018) found that GHRM can lead to cost savings through enhanced efficiency and potentially increased revenue through improved reputation and green innovation. This empirical link, though often mediated by other factors, indicates that green HR practices can contribute to the financial sustainability aspect of competitive advantage.

4.2.3 Mediating and Moderating Roles of Green HRM in Environmental Sustainable Competitive Edge

The empirical data consistently reveals a positive connection between the adoption of various GHRM practices and improvements in environmental performance indicators. Studies such as Yong et al. (2019) and Hameed et al. (2021) have found that implementing GHRM practices like green training, recruitment, and performance management is associated with reduced emissions, waste, and energy consumption, highlighting a measurable link between HR's green initiatives and tangible environmental outcomes, a key dimension of sustainable competitive advantage.

Research indicates a significant positive correlation between GHRM practices and an organization's capacity for green innovation. As demonstrated by Saeed et al. (2019) and Singh and El-Kassar (2019), GHRM fosters a culture and skillset conducive to developing new green products, processes, and technologies. This empirical link suggests that investing in green HR can directly contribute to market differentiation and a sustainable competitive edge through innovation.

Empirical studies have shown a positive correlation between the implementation of GHRM and enhanced organizational reputation and stakeholder relationships. Singh et al. (2020) highlight that demonstrating a commitment to environmental sustainability through GHRM practices positively influences stakeholder perceptions and corporate image. This measurable improvement in external relations, driven by HR's green efforts, is a crucial aspect of long-term competitive advantage.

While the direct financial impact can be complex to isolate, some empirical studies suggest a positive correlation between GHRM and improved financial performance. Ren et al. (2018) found that GHRM can lead to cost savings through enhanced efficiency and potentially increased revenue through improved reputation and green innovation. This empirical link, though often mediated by other factors, indicates that green HR practices can contribute to the financial sustainability aspect of competitive advantage.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

Examination of existing literature indicates that distinct Green HRM practices play a crucial role in promoting the development of a sustainable competitive edge within organizations. Practices such as green recruitment and selection, green training and development, green performance management and reward systems, and green employee involvement each offer uniquely by encouraging development of a green-conscious workforce, empowering environmental action, steering innovation, and enhancing stakeholder relationships. By strategically executing these GHRM practices, businesses can develop prized, scarce, unique, and irreplaceable resources, which eventually results in enhanced environmental and organizational outcomes, which form the essential foundations of an enduring competitive edge (Barney, 1991; Jackson et al., 2011).

Robust evidence indicates a positive correlation between applying Green HRM and various measures of sustainable competitive advantage, with studies consistently demonstrating a significant link to enhanced environmental results. (Yong et al., 2019; Hameed et al., 2021), Greater green innovation (Saeed et al., 2019; Singh & El-Kassar, 2019), Bolstered organizational standing and ties with stakeholders (Singh et al., 2020), and the prospect of strengthened financial gains (Ren et al., 2018). These insights underscore the demonstrable merits of weaving environmental thinking into HR operations, implying that GHRM is not simply a functional necessity but a strategic instrument for obtaining a competitive advantage in a business context that is becoming more environmentally sensitive.

The analyzed collection of empirical data demonstrates that environmentally conscious human resource management (Green HRM) activities are instrumental as both intermediary and influencing factors in the connection between an organization's environmental sustainability efforts (OES) and the attainment of a lasting competitive edge (SCA). Acting as intermediaries, GHRM activities, notably in cultivating ecological ingenuity and strengthening environmental capabilities, function as vital channels through which OES is converted into strategic advantages (Jabbour et al., 2013; Saeed et al., 2019; Yong et al., 2019). Moreover, GHRM-related elements, such as a robust ecological organizational ethos and the growth of environmentally skilled personnel, serve as moderators, amplifying the beneficial effect of OES on SCA-related results (Singh et al., 2020; Tang et al., 2018). These discoveries emphasize the strategic imperative of deeply integrating GHRM into organizational sustainability endeavors to effectively harness environmental initiatives for enduring competitive advantage.

5.2 Recommendations

Firms pursuing to nurture a sustainable competitive edge should systematically implement an inclusive package of Green HRM practices, focusing on the integration of environmental considerations across all core HR Activities. Specifically, organizations should focus on developing Firm green training programs to enhance employee environmental proficiency in literacy and skills (Jabbour et al., 2013; Tang et al., 2018), initiating green performance management and reward systems to stimulate sustainable habits (Farrukh et al., 2017; Singh et al., 2020), and nurturing green employee involvement programs to optimize employee comprehension for environmental invention and control (Daily et al., 2007). By inclusively incorporating these GHRM practices, organizations can build a distinct and significant green human capital reserve and a strong environmental stewardship culture, which are key catalysts for achieving both prime environmental performance and a lasting competitive edge (Barney, 1991).

Organizations striving to build an enduring competitive edge should purposefully undertake a broad portfolio of Green HRM practices, emphasizing the need to integrate environmental considerations throughout all core HR functions. Organizations should develop strong green training programs to develop employee environmental proficiency and skills (Jabbour et al., 2013; Tang et al., 2018), establishing green performance management and reward systems to incentivize sustainable behaviors (Farrukh et al., 2017; Singh et al., 2020), and Nurturing green employee engagement-driven efforts insights for environmental innovation and ownership (Daily et al., 2007). By fundamentally integrating these GHRM practices, organizations can forge a distinctive and prized green human capital pool and a strong Green-minded workplace, which are fundamental drivers for achieving both superior environmental performance and a persistent competitive edge (Barney, 1991).

Eco-conscious innovation and the evidence clearly indicates that Green HRM practices are instrumental in as both mediators and moderators in the intricate relationship between organizational environmental sustainability (OES) endeavors and the obtaining of sustainable competitive advantage (SCA). As mediators, GHRM mechanisms, particularly in driving green innovation and enhancing environmental performance, function as key conduits through which OES efforts cultivate competitive edges (Jabbour et al., 2013; Saeed et al., 2019; Yong et al., 2019). Furthermore, GHRM-related elements such as a robust green organizational culture and the cultivation of green human capital function as significant moderators, amplifying the positive influence of OES on SCA-related outcomes (Singh et al., 2020; Tang et al., 2018). These results emphasize the essential strategic requirement of deeply integrating GHRM into an organization's broader sustainability strategy to effectively leverage environmental actions for enduring competitive success.

Proof intensely suggests that Green HRM practices play a fundamental role as both mediators and moderators in the complex relationship between organizational environmental sustainability (OES) initiatives and the attainment of sustainable competitive advantage (SCA). As mediators, GHRM mechanisms, particularly in driving green innovation and optimizing environmental performance serve as essential pathways through which OES efforts yield strategic advantages (Jabbour et al., 2013; Saeed et al., 2019; Yong et al., 2019). Furthermore, GHRM-related elements including a strong green organizational culture and the cultivation of green human capital function as significant moderators, enhancing the positive influence of OES on SCA-related outcomes (Singh et al., 2020; Tang et al., 2018). These findings demonstrate the crucial necessity of deeply integrating GHRM into an organization's broader sustainability strategy aimed at translating environmental actions into lasting competitive advantage.

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