Green Strategic Management for Sustainable Development: A Systematic Review of Practices in Energy, Manufacturing, Procurement, Finance, and Human Resources

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ABSTRACT

Sustainability has emerged as a central concern in contemporary strategic management due to escalating climate change, environmental degradation, and resource scarcity. This study provides a rigorous systematic review of green strategic management practices and their contribution to sustainable development. Guided by the PRISMA framework, the study synthesizes peer-reviewed literature across six major domains: green energy, green manufacturing, green procurement, green finance, and green human resources. Grounded in the Resource-Based View (RBV) and Triple Bottom Line (TBL) theory, the review integrates empirical evidence to evaluate how organizations leverage internal capabilities and sustainability-oriented strategies to achieve economic, environmental, and social outcomes. A structured search across major databases yielded 100 articles, of which 18 met the inclusion criteria after screening and quality assessment. Findings indicate that green strategic practices significantly enhance organizational efficiency, reduce environmental impact, and improve long-term competitiveness. However, inconsistencies exist across sectors, and gaps remain in SME adoption, longitudinal evidence, and technological integration. The study contributes to theory by advancing the integration of RBV and TBL in sustainability discourse and offers practical implications for policymakers, firms, and financial institutions.

Key terms: Green Purchasing, Green Finance, Green Manufacturing, Green Energy, Green Human Resource, Green Strategic Management, Sustainable Development, RBV, TBL.

INTRODUCTION

Sustainability has become a central concern in contemporary strategic management due to escalating climate change, environmental degradation, and increasing resource scarcity. These global challenges have intensified the need for organizations to adopt integrated strategies that simultaneously promote economic performance, environmental stewardship, and social well-being. Sustainability is inherently multidimensional, encompassing economic efficiency and competitiveness, social equity and cohesion, and environmental responsibility through prudent resource management, waste reduction, and ecological preservation (Garza, 2013; Adanma & Ogunbiyi, 2024). As a result, firms are increasingly compelled to embed sustainability principles within their strategic decision-making processes.

Green related strategic management has emerged as a critical paradigm for aligning organizational objectives with sustainable development goals. It involves the systematic integration of environmental considerations into core business strategies to achieve long-term competitiveness while minimizing ecological impact. Existing literature highlights the growing relevance of green strategies in enhancing organizational performance. For instance, Garza (2013) conceptualized sustainability across operational, tactical, and strategic levels, providing a structured framework for integrating economic, environmental, and social initiatives. However, empirical validation of this framework across diverse sectors remains limited. Similarly, Achieng' (2016) established that

green strategies contribute to cost reduction, environmental conservation, and market expansion, although adoption among small and medium enterprises (SMEs) continues to lag behind large organizations.

Further empirical evidence underscores the role of structured green frameworks in advancing sustainable production. Studies such as Padash, Bidhendi, and Ardestani (2015) emphasize the importance of Environmental Management Systems (EMS), Eco-Management and Audit Scheme (EMAS), and Life Cycle Assessment (LCA) in enhancing energy efficiency, minimizing waste, and improving environmental monitoring. Despite their potential, the effectiveness of these frameworks varies across industries due to differences in regulatory environments, technological capacity, and organizational resources. Additionally, evolving production paradigms including circular economy models, green supply chain management, and environmental innovation have been identified as critical drivers of sustainability (Grisales, 2021). Firms that fail to adopt such approaches risk operational inefficiencies and long-term financial vulnerability.

Empirical studies further demonstrate that green strategic practices positively influence both environmental and financial performance. Mahyarni et al. (2019) and Kehinde and Onuoha (2023) found that green management strategies enhance organizational efficiency and sustainability outcomes, particularly within SMEs and developing economies. Complementary findings by Kovilage (2021) indicate that lean-green strategies improve resource optimization and reduce greenhouse gas emissions, while Olayeni et al. (2021) highlight the mediating role of product quality in linking green strategies to firm performance. These insights suggest that sustainability is not merely a compliance requirement but a strategic capability that can generate competitive advantage.

The importance of green strategic management has also been reinforced in emerging contexts such as post-pandemic recovery and sector-specific transformations. Oladele, Oyenuga, and Adoga (2023) demonstrate that green policies, technological adoption, and waste management practices significantly enhance organizational effectiveness in higher education institutions. Similarly, Sabihaini et al. (2024) emphasize the critical role of leadership commitment, environmental orientation, and stakeholder engagement in driving green strategy adoption among SMEs in the post-COVID-19 era. These studies collectively highlight that successful implementation of green strategies depends not only on technical frameworks but also on organizational culture, leadership, and institutional support.

Despite the growing body of literature, existing studies remain fragmented, largely descriptive, and often sector-specific, limiting a comprehensive understanding of how green strategic management contributes to sustainable development. Furthermore, there is insufficient synthesis of evidence across key domains, including green energy, green manufacturing, green procurement, green finance, and green human resource management. Significant gaps also persist regarding the adoption of green practices by SMEs, the availability of longitudinal evidence, and the integration of emerging technologies into sustainability initiatives. Additionally, Bett (2024) emphasizes that green innovation strategies encompassing process, product, marketing, and organizational dimensions represent another critical aspect of strategic management that should be incorporated into comprehensive green practices.

To address these limitations, this study adopts a rigorous systematic review approach guided by the PRISMA framework to synthesize peer-reviewed literature on green strategic management practices. Anchored in the Resource-Based View (RBV) and Triple Bottom Line (TBL) theory, the study examines how organizations leverage internal capabilities and sustainability-oriented strategies to achieve economic, environmental, and social outcomes. Specifically, the review focuses on six key domains: green energy, green manufacturing, green procurement, green finance, and green human resource management. By providing a structured and analytical synthesis, the study contributes to both theory and practice by clarifying the role of green strategies in advancing sustainable development and identifying critical areas for future research.

LITERATURE REVIEW

Theoretical Review

The adoption of green strategic management practices is anchored in two complementary theoretical perspectives; the Resource-Based View (RBV) Theory and the Triple Bottom Line (TBL) Theory. Together, these frameworks provide a robust conceptual foundation for understanding how organizations can leverage

internal capabilities to achieve sustainable development outcomes while maintaining competitive advantage. While RBV explains sustainability from a resource efficiency and capability perspective, TBL broadens the evaluation of firm performance to include environmental and social dimensions alongside economic outcomes.

Resource-Based View (RBV) Theory

The Resource-Based View (RBV), originally advanced by Wernerfelt (1984) and further developed by Barney (1991), posits that an organization's sustainable competitive advantage is derived from its ability to acquire, develop, and deploy valuable, rare, inimitable, and non-substitutable (VRIN) resources. These resources include both tangible assets, such as technology and infrastructure, and intangible capabilities, such as organizational knowledge, innovation capacity, and managerial expertise.

RBV provides a strategic lens for understanding how firms can internalize environmental practices as core competencies in context of sustainability. Green strategic initiatives which are renewable energy adoption, eco-efficient production systems, and sustainable supply chain management can be conceptualized as strategic resources that enhance both environmental performance and competitive positioning. Empirical evidence suggests that firms integrating sustainability into their resource base achieve improved operational efficiency, reduced costs, and enhanced resilience in dynamic market environments (Manzoor & Jahangir, 2024; Rao & Brown, 2024).

Importantly, RBV shifts the perception of sustainability from a compliance-driven activity to a value-creating strategy. Organizational investments in green technologies, environmental knowledge, and innovation capabilities are not merely cost centers but strategic assets that enable firms to differentiate themselves and respond effectively to evolving stakeholder expectations. However, the extent to which firms, particularly SMEs, can develop and leverage such sustainability-oriented resources remains uneven, highlighting a critical gap in capability development and resource access.

Triple Bottom Line (TBL) Theory

The Triple Bottom Line (TBL) Theory, introduced by Elkington (1994), extends the traditional performance paradigm by emphasizing the simultaneous pursuit of economic (profit), social (people), and environmental (planet) objectives. Unlike conventional approaches that prioritize financial performance, TBL advocates for a holistic evaluation of organizational success based on its broader societal and ecological impact.

TBL provides a comprehensive framework for operationalizing sustainability within green strategic management. Environmental sustainability is reflected in practices such as carbon emission reduction, renewable energy utilization, waste minimization, and resource conservation. Social sustainability focuses on ethical labor practices, employee well-being, stakeholder engagement, and community development. Economic sustainability, on the other hand, emphasizes long-term profitability through efficiency gains, innovation, and sustainable market positioning (Nazir, 2024; Priya, 2024).

The integration of TBL principles enables organizations to balance competing objectives and align their strategies with global sustainability agendas, including the United Nations Sustainable Development Goals (SDGs). Furthermore, adherence to TBL enhances corporate legitimacy, strengthens stakeholder trust, and supports regulatory compliance. However, achieving equilibrium among the three dimensions remains challenging, as trade-offs often arise, particularly in resource-constrained environments and developing economies.

Theoretical Synthesis and Implications

While RBV and TBL originate from different theoretical traditions, their integration provides a more comprehensive understanding of green strategic management. RBV explains how firms build and leverage internal capabilities for sustainability, whereas TBL clarifies what outcomes these capabilities should achieve across economic, environmental, and social domains. This study advances the integration of these theories by positioning green strategies as strategic resources that simultaneously drive triple-bottom-line outcomes. This

combined perspective is particularly relevant in analyzing how organizations operationalize sustainability across key domains such as green energy, manufacturing, procurement, finance and human resource management.

Empirical Review

The empirical literature on green strategic management demonstrates a growing recognition of sustainability as a driver of organizational performance. However, existing studies are largely fragmented, context-specific, and predominantly descriptive, underscoring the need for systematic synthesis.

Early conceptual work by Garza (2013) categorized sustainability practices across operational, tactical, and strategic levels, linking them to economic, environmental, and social outcomes. While this framework provides a useful foundation, subsequent empirical studies reveal varying degrees of applicability across sectors. For instance, Achieng' (2016) found that green strategies contribute to cost reduction, environmental conservation, and market expansion, but adoption remains significantly lower among SMEs due to financial and technological constraints. This highlights a persistent structural gap between large firms and smaller enterprises in implementing sustainability practices.

A substantial body of research has focused on structured environmental management frameworks. Padash, Bidhendi, and Ardestani (2015) examined systems such as Environmental Management Systems (EMS), Eco-Management and Audit Scheme (EMAS), and Life Cycle Assessment (LCA), demonstrating their effectiveness in improving energy efficiency, reducing waste, and enhancing environmental monitoring. However, cross-study comparisons indicate that the success of these frameworks is highly contingent on regulatory environments, organizational capacity, and industry characteristics, suggesting limited generalizability.

Recent studies emphasize the transition toward integrated and dynamic sustainability models. Grisales (2021), through a large-scale systematic review, identified key trends including environmental innovation, circular economy practices, green supply chain management, and sustainable resource utilization. Bett (2024) provides evidence that green innovation itself is a key driver of sustainable development. The demonstrates that green innovation positively influences environmental and social sustainability outcomes. However, adoption is hindered by insufficient policies, regulations, and sector-specific frameworks. These findings indicate a shift from isolated green practices toward holistic sustainability systems. Nevertheless, there remains limited empirical evidence on how these integrated approaches perform across different sectors and over time.

Empirical analyses also demonstrate a positive relationship between green strategies and organizational performance. Mahyarni et al. (2019) found that green management strategies significantly improve financial performance in SMEs within the tourism sector, while Kehinde and Onuoha (2023) established strong correlations between energy efficiency, waste management, and both economic and environmental outcomes. Similarly, Kovilage (2021) showed that the integration of lean and green practices enhances resource efficiency, reduces emissions, and improves operational performance. However, these studies are predominantly cross-sectional, limiting insights into long-term sustainability impacts.

Further evidence highlights the role of mediating and contextual factors. Olayeni et al. (2021) demonstrated that product quality mediates the relationship between green strategies and performance outcomes, suggesting that the effectiveness of sustainability initiatives depends on their integration into core business processes. In sector-specific contexts, Oladele et al. (2023) found that green policies and technologies significantly enhance organizational effectiveness in higher education institutions, while Sabihaini et al. (2024) emphasized the importance of leadership commitment and environmental orientation in driving green strategy adoption among SMEs.

A growing body of literature emphasizes Green Human Resource Management (GHRM) as a critical mechanism for implementing sustainable practices. Arshad and Liu (2025) examined the impact of strategic GHRM practices on sustainable performance in Malaysian manufacturing firms, highlighting that "green" processes foster environmentally friendly organizational cultures. Sustainable performance was positively influenced by GHRM practices, with green innovation mediating the relationship. The study, based on 310 survey responses

analyzed with SPSS 23 and Smart_PLS 4, suggests that GHRM can help developing countries' manufacturing sectors adopt cleaner business processes while achieving environmental objectives.

Similarly, Haile and Singh (2026) investigated the link between green management practices and sustainable environmental performance, focusing on employee green behavior as a mediator and environmental concern as a moderator. Using 359 survey responses and PLS-SEM analysis, they found that employee engagement in environmentally responsible behaviors significantly strengthens the effectiveness of green HR strategies. Organizations demonstrating higher environmental concern were more successful in translating green management practices into tangible sustainability outcomes. This underscores the importance of employee-centered initiatives, particularly in resource-constrained and low-technology contexts.

In addition, Ahmad, Javed, Sharma, and Siddiqui (2025) conducted a bibliometric and Word2Vec-based analysis of 3,233 GHRM publications from 1996–2024, highlighting emerging trends such as AI-driven environmental monitoring and the integration of GHRM into corporate culture through training, performance evaluation, and strategic decision-making. The study emphasizes the need for region-specific, adaptable GHRM frameworks to support global sustainability goals, and points to the increasing role of advanced technologies in enhancing organizational environmental performance. Collectively, these studies establish GHRM as an essential lever for sustainability, showing that effective human resource strategies not only improve environmental performance but also stimulate innovation and employee engagement. Emerging trends include the use of AI for real-time monitoring, integration of GHRM into corporate decision-making, and employee-centered environmental initiatives.

Despite these contributions, several critical gaps emerge from the literature. First, there is limited research on the adoption and effectiveness of green strategies among SMEs, particularly in developing economies. Second, most studies rely on cross-sectional designs, with insufficient longitudinal evidence to assess long-term sustainability outcomes. Third, inconsistencies in findings across sectors highlight the need for comparative analysis. Finally, the integration of emerging technologies such as digitalization and smart systems into green strategic management remains underexplored.

METHODOLOGY

This study adopted a systematic literature review design guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to ensure transparency, rigor, and replicability. Unlike a traditional narrative or desk review, the PRISMA approach provides a structured and standardized procedure for identifying, screening, and synthesizing relevant studies, thereby enhancing the reliability and validity of the findings. The study relied exclusively on secondary data obtained from peer-reviewed journal articles, ensuring that only credible and high-quality sources informed the analysis.

A comprehensive and systematic search was conducted across major academic databases, including Scopus, Web of Science, Google Scholar, and ScienceDirect, selected for their extensive coverage of sustainability and strategic management literature. The search strategy employed a combination of keywords and Boolean operators to capture relevant studies. Key search terms included "green strategic management," "green strategies," "sustainable development," "environmental sustainability," "green energy," "green manufacturing," "green procurement," "green finance," and "green human resource management." These terms were combined using operators such as AND and OR to refine the search results and ensure comprehensive coverage. To maintain relevance and reflect recent developments in sustainability practices, the search was limited to articles published in English between 2014 and 2024.

To ensure the inclusion of relevant and high-quality studies, explicit inclusion and exclusion criteria were applied. Studies were included if they were peer-reviewed journal articles focusing on green strategic management practices and their relationship with sustainable development outcomes, particularly within the domains of green energy, green manufacturing, green procurement, green finance, and green human resource management. Both empirical and conceptual studies were considered, provided they offered meaningful insights into sustainability practices at the organizational level. Conversely, studies were excluded if they were non-peer-

reviewed sources, lacked a clear linkage between sustainability and strategic management, were duplicates, or did not meet the specified time frame or thematic focus.

The study selection process followed the four stages of the PRISMA framework: identification, screening, eligibility, and inclusion. The initial search yielded a total of 100 articles across the selected databases. After the removal of duplicates, titles and abstracts were screened to eliminate irrelevant studies. The remaining articles were subjected to full-text review based on the predefined inclusion criteria. Following this rigorous screening process, a final sample of 18 articles was deemed suitable and included in the systematic review. This structured selection process ensured that only the most relevant and methodologically sound studies informed the analysis.

To further enhance the credibility of the review, a quality assessment was conducted on the selected articles. Each study was evaluated based on the clarity of its research objectives, methodological rigor, validity and reliability of findings, and relevance to green strategic management and sustainability outcomes. Only studies that met acceptable quality standards were retained, thereby strengthening the robustness of the review.

The data analysis was conducted using a thematic synthesis approach, which involved systematically coding and categorizing findings into six key domains: green energy, green manufacturing, green procurement, green finance and green human resource management. Rather than providing a descriptive summary of individual studies, the analysis adopted a comparative and integrative approach to identify emerging trends, examine patterns across different contexts, and highlight inconsistencies in the literature. This approach also facilitated the identification of critical research gaps, particularly in relation to small and medium enterprises (SMEs), longitudinal evidence, and technological integration in sustainability practices. Through this structured analytical process, the study provides a comprehensive understanding of how green strategic management practices contribute to economic, environmental, and social outcomes, consistent with the Triple Bottom Line framework.

FINDINGS AND DISCUSSION

The findings of this systematic review reveal that green strategic management practices play a significant role in advancing sustainable development across economic, environmental, and social dimensions. Drawing from the 18 selected studies, the analysis identifies six dominant thematic domains: green energy, green manufacturing, green procurement, green finance, and green human resource management. Across these domains, the evidence consistently indicates that sustainability-oriented strategies enhance organizational efficiency, reduce environmental impact, and strengthen long-term competitiveness. However, variations in outcomes across sectors and firm sizes highlight important contextual differences and unresolved inconsistencies in the literature.

Green Energy and Sustainable Development

The synthesis shows that green energy adoption is a critical driver of both environmental sustainability and organizational performance. Studies consistently demonstrate that investments in renewable energy sources such as solar, wind, hydro, and biomass significantly reduce carbon emissions while improving cost efficiency over time. An evidence from Kehinde and Onuoha (2023) found a strong positive relationship between energy efficiency practices and both economic and environmental performance, suggesting that firms adopting green energy strategies achieve dual benefits. Similarly, Grisales (2021) emphasizes that the increasing volatility of natural resource supply necessitates a transition toward renewable energy-based production systems.

Cross-study comparison further reveals that while large organizations are more likely to invest in renewable energy technologies due to greater financial capacity, SMEs face significant barriers, including high initial costs and limited access to green financing. This disparity highlights a critical gap in the diffusion of green energy practices. From an RBV perspective, firms that successfully integrate renewable energy into their operations develop strategic capabilities that enhance resilience and competitiveness. At the same time, the TBL framework underscores the broader societal and environmental benefits of reduced emissions and sustainable resource utilization.

Green Manufacturing and Sustainable Development

Green manufacturing emerges as a central pillar of sustainable production, with strong evidence supporting its role in improving resource efficiency and reducing environmental degradation. The reviewed studies highlight the effectiveness of structured environmental management frameworks, including Environmental Management Systems (EMS) and Life Cycle Assessment (LCA), in optimizing production processes and minimizing waste (Padash et al., 2015). In addition, Kovilage (2021) demonstrates that the integration of lean and green practices such as continuous improvement and preventive maintenance enhances both operational efficiency and environmental performance.

However, the analysis also reveals inconsistencies in the application and effectiveness of these practices across industries. While manufacturing-intensive sectors report substantial gains in efficiency and emission reduction, service-oriented sectors show more limited adoption. Furthermore, regulatory environments and technological capabilities significantly influence the success of green manufacturing initiatives. These findings suggest that while green manufacturing contributes to sustainability, its impact is context-dependent and requires supportive institutional and technological frameworks.

Green Procurement and Sustainable Development

The review indicates that green procurement plays a strategic role in extending sustainability practices across the supply chain. By integrating environmental criteria into supplier selection and purchasing decisions, organizations can reduce their overall ecological footprint while enhancing operational efficiency. Achieng' (2016) reports that green procurement contributes to cost reduction, improved corporate reputation, and regulatory compliance. Similarly, Oladele et al. (2023) highlight the importance of procurement policies in reducing carbon emissions within institutional settings.

Despite these benefits, cross-study analysis reveals that the implementation of green procurement remains uneven, particularly among SMEs and in developing economies. Key challenges include limited supplier compliance, higher costs of eco-friendly materials, and inadequate regulatory enforcement. From a theoretical standpoint, green procurement reflects the extension of internal sustainability capabilities (RBV) into inter-organizational networks, while also supporting TBL objectives by promoting environmentally and socially responsible supply chains.

Green Finance and Sustainable Development

Green finance is identified as a critical enabler of sustainability initiatives, facilitating investments in renewable energy, eco-innovation, and environmentally responsible business practices. The reviewed studies consistently demonstrate a positive relationship between access to green finance and organizational performance. Mahyarni et al. (2019) found that green financing significantly enhances SMEs' financial performance by providing access to sustainability-oriented capital. Similarly, Olayeni et al. (2021) emphasize that financial support mechanisms strengthen the link between green strategies and both environmental and economic outcomes.

However, the findings also reveal structural gaps in the availability and accessibility of green finance, particularly for SMEs. While large firms benefit from instruments such as green bonds and sustainability-linked loans, smaller enterprises often face financial constraints and limited awareness of green financing opportunities. This imbalance limits the widespread adoption of green strategies and underscores the need for more inclusive financial frameworks. From an RBV perspective, financial resources act as critical enablers of sustainability capabilities, while TBL highlights their role in driving broader societal and environmental benefits.

Green Human Resource Management (GHRM) and Sustainable Development

Green Human Resource Management (GHRM) emerges as an increasingly significant driver of sustainable organizational performance. Evidence from Arshad and Liu (2025) shows that strategic GHRM practices foster environmentally friendly organizational cultures, enhance sustainable performance, and stimulate green innovation. Similarly, Haile and Singh (2026) demonstrate that employee green behavior mediates the

effectiveness of green management practices, with environmental concern strengthening the translation of GHRM strategies into tangible sustainability outcomes. These studies indicate that employee-centered approaches are essential, particularly in contexts with limited technological adoption and constrained resources.

Further, Ahmad et al. (2025) highlight emerging trends in GHRM, including the integration of advanced technologies such as AI-driven environmental monitoring systems, and the institutionalization of GHRM into corporate culture through training, performance evaluation, and strategic decision-making. These insights suggest that organizations can achieve long-term sustainability benefits by embedding GHRM into organizational structures, promoting employee engagement, and leveraging technology to monitor environmental performance in real time.

Emerging Trends and Cross-Cutting Issues

Beyond the six core domains, the review identifies additional trends shaping green strategic management. These include environmental innovation, corporate social responsibility (CSR), green marketing, and digital technology adoption. Sabihaini et al. (2024) highlight leadership commitment and environmental awareness as critical for effective implementation of green strategies. A key cross-cutting insight is that sustainability success depends on the integration of green practices into a coherent strategic framework rather than the isolated adoption of individual initiatives. Moreover, the application of emerging technologies which are beyond green innovation concept as indicated by Bett (2024) such as artificial intelligence, blockchain, and digital monitoring systems remains underexplored, presenting a significant avenue for future research.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This study provides a rigorous systematic review of green strategic management practices and their contribution to sustainable development, guided by the PRISMA framework and grounded in the Resource-Based View (RBV) and Triple Bottom Line (TBL) theories. The findings demonstrate that the integration of sustainability-oriented strategies across key domains green energy, green manufacturing, green procurement, green finance, and green human resource management (GHRM) significantly enhances organizational efficiency, reduces environmental impact, and strengthens long-term competitiveness. The review highlights that green strategic practices are not merely compliance mechanisms but strategic capabilities that enable firms to create value while addressing environmental and social challenges. From an RBV perspective, investments in green technologies, sustainable processes, environmental knowledge, and human capital constitute valuable organizational resources that enhance resilience and competitive advantage. Simultaneously, the TBL framework underscores that these practices contribute to balanced outcomes across economic, environmental, and social dimensions.

Across the six domains, renewable energy adoption and energy efficiency measures improve cost performance and environmental outcomes, while green manufacturing practices optimize resources and reduce waste. Green procurement extends sustainability across supply chains, reinforcing environmental responsibility beyond organizational boundaries. Green finance serves as a catalytic enabler of sustainability investments, supporting eco-innovation and environmentally responsible business models. Effective waste management, including recycling and circular economy approaches, enhances resource efficiency and environmental conservation. Importantly, GHRM emerges as a key driver of sustainable organizational performance. Strategic green HR practices foster environmentally conscious organizational cultures, promote employee green behavior, and enhance the adoption of green innovation. Organizations that institutionalize GHRM through training, performance management, and strategic decision-making demonstrate stronger environmental outcomes, particularly when complemented by leadership commitment and technology-enabled monitoring systems.

Despite these positive outcomes, several critical gaps remain. The adoption of green strategic practices, including GHRM, remains uneven, particularly among SMEs, due to financial, technological, and institutional constraints. The predominance of cross-sectional studies limits understanding of the long-term impacts of sustainability initiatives, while sectoral and contextual differences highlight the need for comparative studies across industries and regions. Furthermore, the integration of emerging technologies into green strategic management and GHRM

remains underexplored, representing a significant avenue for future research. These gaps suggest that while green strategies are effective, their implementation and outcomes vary depending on organizational capabilities and external environments.

Recommendations

Based on the findings, organizations are encouraged to strategically integrate renewable energy solutions and energy efficiency measures into their operations to reduce costs and environmental impact, aligning energy strategies with long-term organizational goals and investing in supporting technologies. Policymakers should complement these efforts by providing tax incentives, subsidies, and carbon reduction policies, particularly to facilitate adoption among SMEs. In manufacturing, organizations should adopt integrated green approaches that combine lean principles with Environmental Management Systems (EMS) and Life Cycle Assessment (LCA), embedded within circular economy frameworks to maximize resource efficiency and minimize waste. Regulatory authorities should provide technical and financial support while enforcing environmental standards to ensure effective implementation.

Organizations should institutionalize green procurement practices by integrating environmental criteria into supplier selection, evaluation, and contracting processes. Clear sustainability standards and monitoring mechanisms are essential to ensure compliance, and public institutions can lead by example by adopting mandatory green procurement policies. Green finance should be expanded through instruments such as green bonds, sustainability-linked loans, and climate finance products to support investments in eco-friendly technologies. Policymakers should strengthen frameworks to promote transparency, reduce investment risks, and improve access to green finance, particularly for SMEs. Effective waste management should prioritize waste reduction, recycling, and resource recovery, with investments in circular economy models and waste-to-energy technologies encouraged. Governments should incentivize zero-waste initiatives and enforce stricter compliance with environmental regulations.

Green Human Resource Management should be embedded into corporate culture, linking sustainability to training, performance management, and strategic decision-making. Employee engagement in environmentally responsible practices should be actively promoted, supported by leadership commitment and technology-enabled monitoring systems to enhance the effectiveness of green initiatives. Beyond the core domains, organizations should leverage emerging practices by integrating sustainability into corporate governance, innovation strategies, competitive positioning, green marketing, and corporate social responsibility (CSR) initiatives. The use of digital technologies such as artificial intelligence, block-chain, and data analytics presents significant opportunities to improve environmental monitoring, decision-making, and operational efficiency, though these remain underutilized.

Future research should focus on addressing the identified gaps by conducting longitudinal studies to assess the long-term impact of green strategies, including GHRM, across diverse sectors and regions. Greater attention should be given to SMEs and developing economies, where sustainable transformation is most critical. Additionally, the interplay between emerging technologies and GHRM adoption should be explored to understand its potential for enhancing organizational sustainability outcomes.

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