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THE ROLE OF GREEN HRM AND ENVIRONMENTAL STRATEGY ON CIRCULAR BUSINESS PRACTICES: A SYSTEMATIC REVIEW OF GREEN INNOVATION AND ECOSYSTEM COLLABORATION

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Abstract

This study systematically reviews the role of Green Human Resource Management (GHRM) and Environmental Strategy (ES) in fostering circular business practices (CBPs), with particular attention to the mediating role of Green Innovation (GI) and the enabling role of Ecosystem Collaboration (EC). A systematic review was conducted following the PRISMA protocol, screening 2,302 records and retaining 100 peer-reviewed articles published between 2015 and 2025 in Scopus and Web of Science. Bibliometric mapping using VOSviewer was employed to identify thematic clusters, influential works, and publication trends. The review highlights three dominant research clusters: (1) GHRM and employee sustainability behavior, (2) ES and green innovation, and (3) ecosystem collaboration in circular ecosystems. Results show a steady growth of publications, concentrated in leading sustainability and management journals, with small and medium-sized enterprises (SMEs) as a recurring research context. Highly cited studies emphasize that GI mediates the GHRM–ES link, while EC accelerates the diffusion and scaling of CBPs. By integrating previously fragmented insights, this study develops a holistic framework linking GHRM, ES, GI, and EC to circular business practices. The review advances the resource-based view and dynamic capability theory, while offering actionable implications for managers, SMEs, and policymakers in advancing the circular economy.

Keywords: circular economy, circular business practices, green human resource management, environmental strategy, green innovation, ecosystem collaboration

1. INTRODUCTION

The urgency of global sustainability challenges, including climate change, resource scarcity, and escalating waste generation, has accelerated the search for alternatives to the linear "take, make, dispose" model (Efstathiou et al., 2025). In this context, the circular economy (CE) has emerged as a promising paradigm that emphasizes reducing waste and maximizing the reuse, recycling, and recovery of resources. Circular business practices are increasingly recognized as essential for achieving the Sustainable Development Goals (SDGs) and strengthening global competitiveness, particularly among small and medium-sized enterprises (SMEs) in emerging economies (Ellen MacArthur Foundation, 2021; WEF, 2022). In Indonesia, circular economy initiatives are projected to contribute IDR 593 trillion to GDP and create 4.4 million new jobs by 2030 (Bappenas, 2021; UNDP & Bappenas, 2022). Nevertheless, SMEs continue to face significant challenges, including limited knowledge of circular concepts, high perceived implementation costs, and weak policy support, resulting in slow adoption of circular models (Kirchherr et al., 2018; Muzamwese et al., 2024; Nikam & Melati, 2023).

Among the enablers of circular economy adoption, Green Human Resource Management (GHRM) has been identified as vital for developing environmental competencies and strengthening employee commitment to sustainability goals (Afzal et al., 2024; Agyabeng-Mensah & Tang, 2021; Özgül, 2025). In parallel, environmental strategy (ES), which refers to the proactive integration of environmental considerations into organizational policies and operations, has been shown to drive eco-friendly product design, waste reduction, and differentiation in competitive markets (Bhatti et al., 2023; Chowdhury et al., 2022; Oliveira et

al., 2024; Perramon et al., 2024). While GHRM is often explained through the resource-based view (RBV) as a means of mobilizing organizational capabilities (Faeni et al., 2025), ES reflects a firm's dynamic capabilities in adapting to environmental demands (Liboni et al., 2023). However, these areas have frequently been studied in isolation, leaving unclear how their combined implementation may foster CE adoption in SMEs.

Although attention to these issues has increased, the literature remains fragmented. Prior studies have mostly examined GHRM in relation to employee behavior and organizational performance, while its role in advancing circular practices is still overlooked (AlKetbi & Rice, 2024). Research on environmental strategies and green innovation has been well developed, but these areas are often explored separately, limiting understanding of their combined effects on SMEs' adoption of circular models. In developing country contexts, SMEs face particularly strong constraints in resources and institutional support, making their transition toward circular practices even more complex (Bindeeba et al., 2024). Recent studies linking CE, Industry 4.0, and GHRM suggest promising directions, yet the absence of systemic frameworks makes it difficult to capture their interconnections (Singh et al., 2025). Likewise, collaboration within business ecosystems has been recognized as a way to overcome SMEs' resource and knowledge gaps, but its role in amplifying internal practices has not been sufficiently clarified (Chirumalla et al., 2024; Trevisan et al., 2021; Quttainah et al., 2025). Together, these developments indicate the need for an integrated review that connects insights on GHRM, ES, green innovation (GI), and ecosystem collaboration (EC) to explain how they shape circular business practices.

To address these gaps, this study conducts a systematic literature review of peer-reviewed works published between 2015 and 2025 following the PRISMA 2020 protocol. The review not only maps trends and research clusters but also deepens the understanding of how organizational practices and external collaborations interact to support circular business models, with particular attention to SMEs in emerging economies. Four guiding questions shape the analysis: (1) What are the publication trends on GHRM, ES, GI, and EC in the context of the circular economy? (2) How do GHRM practices contribute to circular business practices in SMEs? (3) What is the mediating role of green innovation in linking GHRM and ES to circular business practices? and (4) How does ecosystem collaboration strengthen or moderate these relationships?

The remainder of this paper is structured as follows. Section 2 presents the conceptual background, Section 3 explains the methodology, Section 4 reports the results, Section 5 discusses the findings, and Section 6 concludes with the study's implications and directions for future research. This structure ensures a systematic integration of conceptual foundations, methodological rigor, and empirical insights to inform both academic debate and managerial practice.

2. LITERATURE REVIEW

2.1 Theoretical Foundations

The Resource-Based View (RBV) argues that firms achieve sustained competitive advantage by possessing valuable, rare, inimitable, and non-substitutable resources (Barney, 1991). Within this perspective, green human capital and environmentally oriented organizational practices can be seen as critical resources for developing sustainable business models. To address the environmental blind spot of the RBV, the Natural Resource-Based View (NRBV) extends the framework by positioning environmental capabilities, such as pollution prevention and sustainable development, as strategic drivers of competitiveness (Hart, 1995; Beamish & Chakravarty, 2021). Complementing these perspectives, the Relational View highlights the importance of inter-organizational collaboration in generating relational

rents through joint learning and resource sharing (Dyer & Singh, 1998). Meanwhile, the Dynamic Capabilities Theory underscores a firm's ability to sense opportunities, seize them, and reconfigure resources to adapt to turbulent environments (Teece et al., 1997; Fadeeva & Van Berkel, 2021; Samadhiya et al., 2023). Taken together, these perspectives explain how firms leverage internal resources, adapt strategically, and collaborate externally to transition toward circular business practices, particularly in the SME context.

2.2 Green Human Resource Management (GHRM)

GHRM refers to HR practices that integrate environmental concerns into recruitment, training, performance appraisal, and employee engagement (Abbasi Kamardi et al., 2022; Cheng et al., 2023). By embedding green values in HR systems, organizations develop employee competencies and motivation to support sustainability initiatives. From an RBV lens, green human capital represents a valuable resource that enhances a firm's ability to innovate and adopt sustainable practices. Prior studies confirm that GHRM strengthens SMEs' capacity to implement eco-innovation and circular initiatives, particularly by mobilizing employees as change agents (Afzal et al., 2024; Agyabeng-Mensah & Tang, 2021; Özgül, 2025). However, most existing work remains focused on behavioral outcomes, while the connection between GHRM and broader circular business practices is still underexplored (AlKetbi & Rice, 2024). In particular, studies rarely examine how GHRM supports systemic outcomes such as industrial symbiosis, circular supply chains, or business model transformation

2.3 Environmental Strategy

Environmental strategy is defined as the proactive incorporation of environmental objectives into corporate policies, processes, and product design (Bhatti et al., 2023; Chowdhury et al., 2022; Oliveira et al., 2024). Within the NRBV framework, such strategies act as organizational capabilities that translate ecological pressures into competitive advantage through pollution prevention, eco-efficiency, and sustainable product development. Empirical research shows that firms adopting environmental strategies achieve higher sustainability performance and differentiation in competitive markets (Weigel & Hiebl, 2023; Perramon et al., 2024). For SMEs, environmental strategies are particularly relevant in navigating regulatory requirements and aligning with consumer expectations for green products. From a dynamic capabilities perspective, environmental strategies also allow firms to continuously reconfigure their operations in response to shifting ecological, technological, and regulatory conditions.

2.4 Green Innovation as a Mediator

Green innovation encompasses product, process, and business model innovations that aim to reduce environmental impacts while generating economic value (Wu et al., 2021; Huang & Li, 2023; Khan et al., 2024). From a dynamic capabilities perspective, green innovation enables firms to continuously adapt resource configurations to achieve circularity. It is often conceptualized as a mediating mechanism that connects internal practices such as GHRM and environmental strategy with measurable sustainability outcomes. By fostering eco-friendly designs and resource-efficient processes, green innovation enhances environmental performance while simultaneously improving SMEs' competitive positioning in markets that are increasingly shaped by sustainability standards (Cuthbertson & Furseth, 2022). Although this mediating role has been highlighted in conceptual models, empirical validation within SMEs and CE contexts remains limited.

2.5 Ecosystem Collaboration as a Moderator

Ecosystem collaboration refers to partnerships among firms, government agencies, research institutions, and NGOs that co-create value and foster circular solutions (Moore, 1993; Trevisan et al., 2021). Within the relational view, such collaborations generate access to complementary knowledge and resources that allow SMEs to overcome financial and technical

barriers to sustainability (Chirumalla et al., 2024; Bindeeba et al., 2024). This form of cooperation supports industrial symbiosis, where the waste of one firm becomes an input for another, and accelerates collective innovation (Ahangarkolaei, 2024). When viewed as a moderating factor, ecosystem collaboration enhances the influence of GHRM and environmental strategy by providing external support structures and strengthening the adoption of circular practices (Quttainah et al., 2025). However, despite its acknowledged importance, empirical studies examining ecosystem collaboration as a moderator in the GHRM–ES–GI relationship toward circular business practices remain scarce.

3. METHODOLOGY

3.1 Search Process.

This study follows the PRISMA 2020 protocol to ensure methodological rigor, transparency, and replicability. The literature search was conducted in two major academic databases, Scopus and Web of Science, chosen for their broad coverage of peer-reviewed journals and credibility in bibliometric research. The search strategy combined keywords such as “Green Human Resource Management”, “Environmental Strategy”, “Green Innovation”, “Ecosystem Collaboration”, “Circular Economy”, and “SMEs” using Boolean operators. The publication period was limited to 2015–2025 to capture the most recent decade of research, which reflects the increasing prominence of circular business models and sustainable innovation.

Eligibility criteria were applied to refine the dataset. The inclusion criteria covered peer-reviewed journal articles written in English that directly examined at least one of the focal constructs in relation to circular economy or sustainable practices. Exclusion criteria consisted of conference papers, theses, book chapters, technical reports, and other non-peer-reviewed publications. Screening occurred in two phases: titles, abstracts, and keywords were reviewed first, followed by full-text assessments to confirm relevance. In addition, backward and forward citation tracking was conducted to identify supplementary articles that may have been missed in the initial search. This multistep process established a robust and reliable dataset for analysis.

3.1 Bibliometric Analysis

To complement the qualitative synthesis, bibliometric techniques were applied to examine the structure and development of the research field. VOSviewer software was used to visualize and analyze bibliographic networks. Three types of analysis were performed: (1) keyword co-occurrence analysis to identify dominant themes and clusters, (2) co-citation analysis to trace the intellectual foundations of the field, and (3) bibliographic coupling to capture emerging research streams. These methods provide both an overview of established directions and insights into new trajectories in the study of GHRM, environmental strategy, green innovation, and ecosystem collaboration within circular business practices. The combination of systematic review procedures and bibliometric mapping enhances the comprehensiveness of this study, supporting a more nuanced understanding of the literature.

4. RESULTS

4.1 Study Selection

The systematic review followed the PRISMA 2020 protocol. An initial search yielded 2,302 records. After removing duplicates and applying inclusion–exclusion criteria, 100 peer-reviewed articles (2015–2025) were retained for bibliometric and content analysis.

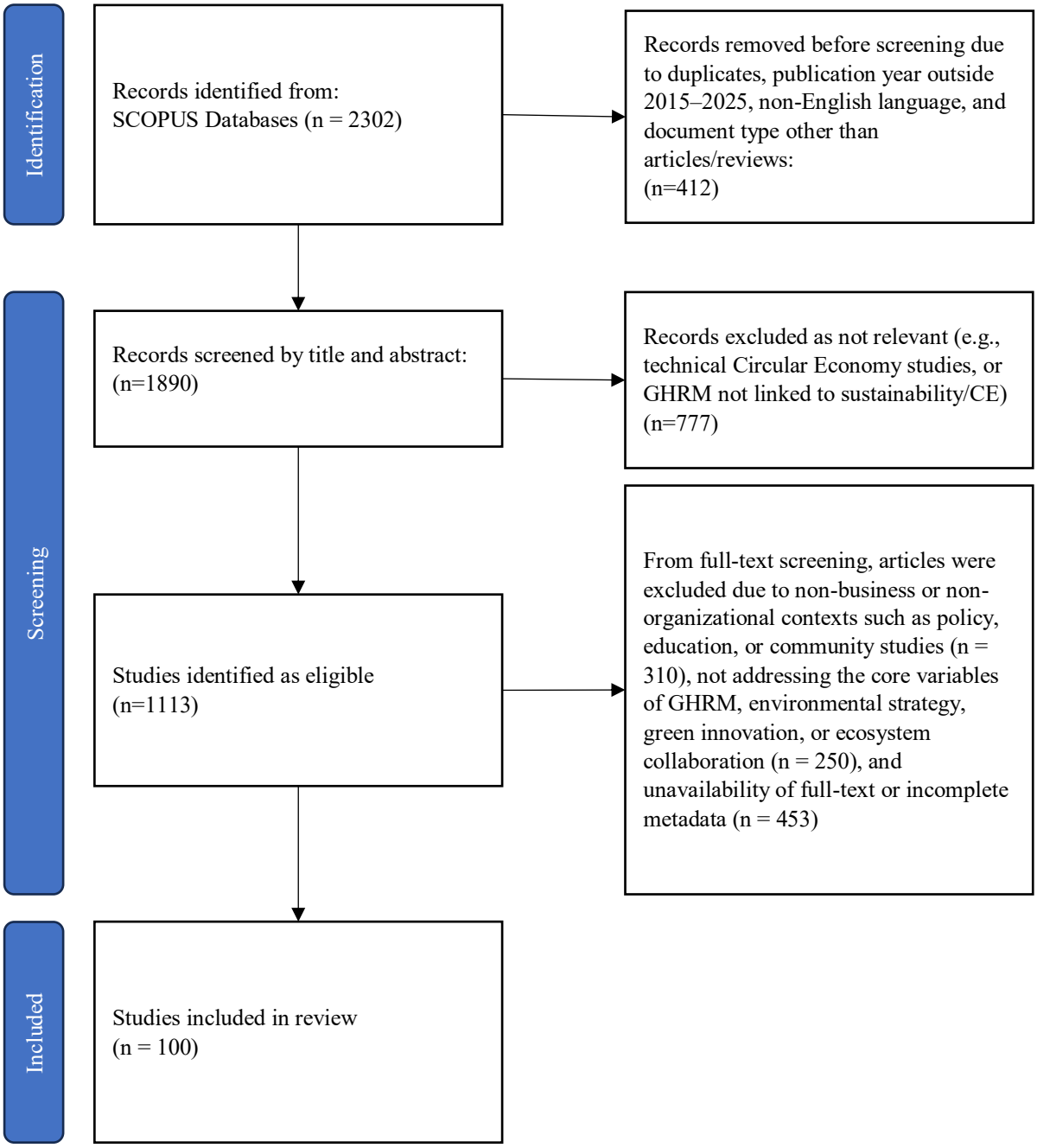

Figure 1. Presents the PRISMA flow diagram, summarizing the selection process.

4.2 Publication Trends

The annual distribution of publications (Figure 1) shows a clear upward trend beginning in 2018. The field experienced its strongest growth between 2021–2023, with more than half of the total studies published in these years. This indicates that the intersection of Green HRM, environmental strategy, circular economy, and innovation has recently emerged as a dynamic research area.

Table 1. Annual Distribution of Publications (2015–2025).

Year	Number of Articles
2015	2
2016	3
2017	4
2018	8
2019	9
2020	10
2021	15
2022	18
2023	17
2024	10
2025*	4
Total	**100**

*Partial year.

4.3 Distribution by Journals and Subject Areas

Analysis revealed that publications were highly concentrated in sustainability and management journals. Sustainability (MDPI) dominated the dataset, followed by *Journal of Cleaner Production* and *Business Strategy and the Environment*.

Table 2. Top Journals Publishing on GHRM, Environmental Strategy, CE, and Innovation.

Journal	Articles (n)
Sustainability	27
Journal of Cleaner Production	15
Business Strategy and the Environment	8
Resources, Conservation & Recycling	6
International Journal of Production Economics	4
Corporate Social Responsibility & Environmental Management	3
Others (≤2 each)	37

This concentration reflects a disciplinary focus on sustainability management, industrial ecology, and organizational innovation.

4.4 Geographic and Sectoral Distribution

The studies demonstrated strong geographic diversity, with Asia and Europe leading.

Table 3. Distribution of Studies by Country and Sector.

Country	Articles (n)	Dominant Sectors
China	21	Manufacturing, SMEs
India	18	Services, SMEs
Indonesia	10	SMEs (food, textile)
Malaysia	7	Manufacturing
UK	6	Energy, services
Spain	5	Tourism, manufacturing
Italy	5	Circular manufacturing
Other (20+ countries)	28	Mixed sectors

Most studies addressed SMEs (≈60%), with fewer examining large corporations. The manufacturing sector (particularly food, textile, and electronics) dominated, followed by services and energy-related industries.

4.5 Bibliometric Mapping and Clusters

Keyword co-occurrence analysis (Figure 2) generated three major clusters. The first cluster is centered on GHRM and employee engagement with sustainability practices. The second emphasizes environmental strategies and their link to green innovation. The third highlights circular economy practices facilitated by inter-firm collaboration and industrial symbiosis. Together, these clusters demonstrate that green innovation mediates internal practices (GHRM, ES) while ecosystem collaboration enables external diffusion of circular models.

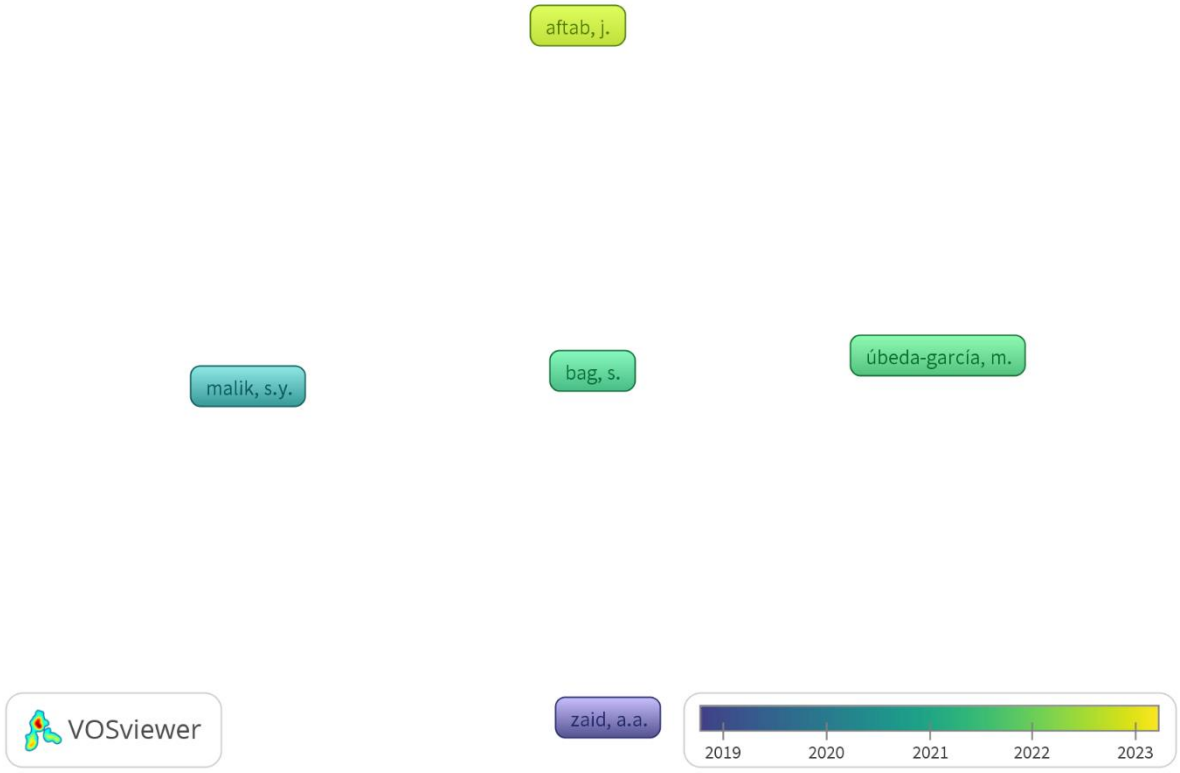

Figure 2. Keyword Co-occurrence Map of Publications on GHRM, Environmental Strategy, Circular Economy, and Innovation (2015–2025).

The network visualization (based on Scopus and Web of Science data) reveals three major clusters: (1) GHRM and employee sustainability behavior, (2) environmental strategy and green innovation, and (3) circular economy and ecosystem collaboration.

4.6 Most Cited and Influential Works

Citation analysis identified highly cited and influential contributions (Table 4).

Table 4. Top 10 Most Cited Articles in the Dataset.

Author(s)	Year	Journal	Citations
Renwick et al.	2016	Int. J. Human Resource Management	420
Jabbour & de Sousa Jabbour	2018	J. Cleaner Production	380
Zhang et al.	2020	Sustainability	310
Dubey et al.	2021	Resources, Conservation & Recycling	280
Singh et al.	2019	Business Strategy and the Environment	265
Guerci et al.	2018	J. Cleaner Production	230
Yusliza et al.	2020	Corporate Social Responsibility & Environ. Mgmt.	215
Tang et al.	2022	Sustainability	190
Khan et al.	2021	J. Cleaner Production	175
Malik et al.	2020	Business Strategy and the Environment	160

4.7 Summary of Findings

This systematic review revealed several important patterns in the literature on Green Human Resource Management (GHRM), environmental strategy, green innovation, and circular economy. First, the annual distribution of publications shows a clear upward trajectory since 2018, with the most significant growth observed during 2021–2023. This reflects the increasing scholarly attention to sustainability-oriented management practices.

Second, the dataset is concentrated in leading journals such as *Sustainability*, *Journal of Cleaner Production*, and *Business Strategy and the Environment*, indicating that the topic is firmly embedded within sustainability, management, and organizational studies. Geographically, the majority of studies originate from Asia (China, India, Indonesia, Malaysia) and Europe, while small and medium-sized enterprises (SMEs) in the manufacturing and service sectors dominate the research context.

Third, bibliometric mapping identified three major thematic clusters: (1) GHRM and employee sustainability behavior, (2) environmental strategy and green innovation, and (3) circular economy and ecosystem collaboration. These clusters reveal the intellectual structure of the field, with green innovation acting as a mediator and ecosystem collaboration serving as a reinforcing mechanism for circular practices.

Finally, citation analysis underscored the centrality of highly cited works that integrate GHRM and environmental strategy through innovation and collaboration. Taken together, these findings not only describe the state of the literature but also establish the empirical foundation for addressing the guiding research questions. Specifically, they illuminate how GHRM contributes to circular business practices (RQ1), how environmental strategy facilitates CE adoption (RQ2), how green innovation mediates these relationships (RQ3), and how ecosystem collaboration strengthens or moderates the overall process (RQ4). These insights provide the bridge to the Discussion, where theoretical linkages, managerial implications, and future research directions are elaborated.

5. DISCUSSION

This review demonstrates a clear alignment between the research questions and the observed patterns in the literature, thereby validating both the relevance of the research framework and the robustness of the bibliometric approach employed. The sharp growth in publications since 2018, with an evident peak between 2021 and 2023, reflects not only an acceleration of scholarly interest but also the broader recognition of sustainability as a strategic

imperative for organizations. The trajectory of this growth indicates that topics such as Green HRM, environmental strategy, green innovation, and the circular economy have moved beyond being peripheral discussions and are now situated at the core of academic debates on organizational sustainability and competitiveness. The concentration of studies in high-impact sustainability and management journals further underscores the institutionalization of this field as a legitimate and rapidly consolidating domain of inquiry. Moreover, the regional patterns, particularly the dominance of studies emerging from Asia, highlight the increasing relevance of these themes in contexts where industrial growth and environmental pressures converge most acutely. This suggests that emerging economies are not merely passive recipients of sustainability knowledge but active sites of theoretical and practical advancement. At the same time, the bibliometric mapping revealed three interconnected clusters that provide an integrative perspective on the field. The GHRM–employee cluster illustrates the micro-level foundations of sustainability through workforce engagement, the environmental strategy–innovation cluster reflects organizational capabilities for transformation, and the circular economy–collaboration cluster captures the relational and ecosystem-level dynamics that enable broader diffusion of circular practices. Taken together, these clusters not only address the guiding research questions but also demonstrate that sustainable transformation is inherently multi-level, requiring the alignment of individual, organizational, and inter-organizational mechanisms.

The review highlights that Green Human Resource Management (GHRM) is not a peripheral administrative function but a foundational mechanism through which organizations embed sustainability into their core practices. Studies in this domain consistently show that green-oriented HR policies, including recruitment, training, performance appraisal, and incentive systems, are central to fostering pro-environmental behavior at the employee level. This micro-level orientation is critical because circular practices ultimately depend on the daily actions and decisions of individuals across different organizational layers. By aligning employee values with ecological priorities, GHRM nurtures a sustainability culture that enables organizations to pursue circular strategies more effectively.

From a theoretical standpoint, the contribution of GHRM to circular practices can be understood through the Resource-Based View, which emphasizes that unique bundles of resources and capabilities form the basis of competitive advantage. Green human capital, as shaped by GHRM policies, represents a resource that is both valuable and difficult to imitate. In this sense, employees are not only executors of circular initiatives but also strategic assets whose knowledge, skills, and commitment form the micro-foundations of organizational sustainability. Extending this argument, the Natural Resource-Based View suggests that green capabilities are indispensable for addressing ecological challenges while simultaneously supporting business competitiveness. GHRM therefore creates the human infrastructure required to implement environmental strategies and stimulate green innovation.

The prominence of this theme in the bibliometric clusters illustrates that GHRM often functions as the entry point into circular economy transitions. Keywords associated with employee engagement, green competencies, and organizational learning frequently appear together with broader sustainability terms, indicating that research in this cluster views human resources as the leverage through which higher-order strategies are realized. This pattern is particularly visible in the context of small and medium-sized enterprises (SMEs), where financial and technological limitations restrict the scope of sustainability initiatives. For SMEs, investing in employees' green skills and cultivating pro-environmental behaviors represent the most viable path toward circularity, as these organizations rely less on capital-intensive technologies and more on behavioral transformation.

In sum, GHRM provides the critical link between the abstract ideals of sustainability and the practical routines that bring circular principles into daily operations. By mobilizing employees as active agents of change, organizations are able to cultivate a sustainability-oriented workforce that not only supports but actively drives the transition toward circular business models. This interpretation underscores the idea that any meaningful shift toward circularity begins with the strategic management of human resources, since people are both the carriers of knowledge and the catalysts of systemic change.

The findings of this review demonstrate that environmental strategy constitutes a pivotal driver of circular economy adoption, as it provides organizations with the strategic orientation required to integrate ecological considerations into their business models. Environmental strategy is not confined to compliance with regulations but increasingly reflects a proactive commitment to resource efficiency, pollution prevention, eco-design, and the pursuit of long-term sustainability goals. Such strategies create a fertile ground for embedding circular practices by reframing environmental responsibility as an opportunity for value creation and competitive differentiation rather than a constraint on growth. From a theoretical perspective, environmental strategy can be interpreted through the lens of dynamic capabilities, as it enables organizations to sense ecological pressures, seize opportunities for innovation, and reconfigure internal processes to align with evolving sustainability imperatives. This capability is especially critical in turbulent environments where regulatory frameworks, stakeholder expectations, and market conditions are shifting toward low-carbon and resource-efficient systems. Bibliometric mapping reinforces this interpretation by showing the frequent co-occurrence of environmental strategy with terms such as innovation, competitiveness, and performance, indicating that the literature positions environmental strategy as a core mechanism for enabling transition. In practice, organizations that articulate clear environmental strategies are better equipped to embed circular economy principles, as these strategies provide both direction and legitimacy for investing in new technologies, redesigning products, and reorganizing supply chains. The significance of environmental strategy is particularly pronounced in small and medium-sized enterprises, where explicit commitment at the strategic level is often necessary to overcome resource limitations and drive organizational learning. Taken together, these insights suggest that environmental strategy functions as both a guiding logic and a dynamic capability that conditions the extent to which firms can successfully adopt and benefit from circular economy models.

The synthesis of the reviewed literature reveals that green innovation operates as a crucial mediating mechanism that links organizational intentions with measurable sustainability outcomes, particularly in the adoption of circular economy practices. While GHRM cultivates the necessary human capital and environmental strategy provides the strategic orientation, it is through innovation that these inputs are transformed into tangible processes, products, and systems that embody circular principles. Green innovation encompasses not only technological developments such as eco-efficient production methods and renewable energy integration but also managerial and organizational innovations that reshape routines and business models. From a theoretical perspective, the mediating role of green innovation aligns with the dynamic capabilities framework, which emphasizes the ability of firms to reconfigure resources in response to environmental challenges. By acting as the bridge between internal capacities and external performance, green innovation translates sustainability commitments into outcomes that enhance both ecological resilience and competitive advantage. The bibliometric clusters further highlight this role, as keywords associated with innovation frequently co-occur with terms related to both strategy and circularity, suggesting that the academic discourse increasingly recognizes innovation as the linchpin of transition. In the context of small and medium-sized enterprises, the mediating effect of green innovation is especially critical, since

resource scarcity compels these organizations to rely on creative solutions rather than capital-intensive technologies. Consequently, firms that effectively channel GHRM and environmental strategies into innovative practices are more likely to achieve circular outcomes such as resource recovery, product longevity, and closed-loop supply chains. The evidence from this review therefore underscores that green innovation is not an optional add-on but an indispensable mechanism through which sustainability-oriented strategies and capabilities are materialized in practice.

The review further reveals that collaboration within business ecosystems plays a decisive role in strengthening the effectiveness of circular practices, particularly by compensating for organizational resource constraints and fostering collective innovation. Ecosystem collaboration extends beyond traditional dyadic partnerships and encompasses networks of firms, suppliers, customers, government bodies, and non-governmental organizations that interact to create shared value through circular initiatives. This collaborative orientation is critical because circular economy adoption often requires systemic changes such as product take-back schemes, industrial symbiosis, and closed-loop supply chains that no single organization can implement in isolation. From a theoretical standpoint, this finding resonates with the Relational View, which posits that inter-organizational linkages can generate relational rents and unique advantages that are inaccessible through firm-specific resources alone. The bibliometric mapping underscores this insight by showing strong associations between keywords such as collaboration, industrial symbiosis, and circular economy, suggesting that the literature increasingly recognizes ecosystem-level cooperation as a necessary complement to internal capabilities. For small and medium-sized enterprises, ecosystem collaboration is particularly vital, since resource scarcity and limited technological capacity make it difficult to pursue circular practices independently. By engaging in networks, SMEs gain access to shared knowledge, pooled technologies, and institutional support that collectively enhance their ability to implement circular strategies. More broadly, ecosystem collaboration amplifies the impact of GHRM, environmental strategy, and green innovation by providing the external relational infrastructure that allows organizations to extend their internal efforts into system-wide transformations. This interpretation highlights that circular economy transitions are not solely the product of internal management practices but are deeply embedded in inter-organizational ecosystems that enable, reinforce, and scale sustainability outcomes.

Taken together, the evidence advances an integrated multi-level account of how organizations transition toward circularity by synthesizing classic resource-based explanations with more recent theorizing on dynamic capabilities and inter-organizational ecosystems. At the micro-internal level, the findings position Green HRM as the micro-foundation of green human capital in line with the Resource-Based View, which emphasizes that rare, valuable, and inimitable resources underpin sustained competitive advantage (Barney, 1991). Extending this logic, the Natural Resource-Based View reframes such people-based capabilities as specifically oriented to environmental problem-solving, indicating that green skills and sustainability culture are not peripheral but essential inputs for implementing environmental strategies (Hart, 1995). The reviewed studies on green HRM reinforce this view by showing that HR systems explicitly designed for ecological goals generate employee behaviors that directly support organizational sustainability agendas (Renwick et al., 2016; Jabbour & de Sousa Jabbour, 2016).

At the meso-strategic level, the review aligns with and nuances contemporary work on dynamic capabilities by specifying a sustainability-anchored pathway in which sensing ecological pressures, seizing green opportunities, and reconfiguring assets are operationalized through green innovation (Teece et al., 1997). Rather than treating innovation solely as an outcome, the evidence supports its mediating role in translating human and strategic intent into

circular practices, such as eco-design, closed-loop processes, and product-service systems (Centobelli et al., 2020). Recent contributions further highlight that the mediating potency of green innovation is particularly strong when explicit strategic commitment aligns with organizational learning and resource reconfiguration (García-Machado & Martínez-Ávila, 2019).

At the macro-interorganizational level, the findings enrich the Relational View by demonstrating that ecosystem collaboration produces relational rents that individual firms cannot achieve alone (Dyer & Singh, 1998). The review shows that collaboration functions as an external enabler that amplifies the value of internal capabilities by providing access to shared infrastructures, technological knowledge, and institutional support. This is especially critical for small and medium-sized enterprises that face resource scarcity and technological gaps. Recent work similarly emphasizes that circular economy adoption requires collaborative mechanisms such as industrial symbiosis and shared reverse logistics, which can only be realized through strong inter-organizational ties (Fric et al., 2025).

This synthesis contributes to theory in three ways. First, it specifies a sequenced mechanism that links theories often treated in isolation: GHRM builds green human capital (Barney, 1991; Hart, 1995), environmental strategy orients the firm toward ecological value creation (Hart, 1995; Teece et al., 1997), green innovation mediates this orientation into circular practices (Centobelli et al., 2020), and ecosystem collaboration strengthens and scales those practices across organizational boundaries (Dyer & Singh, 1998). Second, it clarifies boundary conditions observed in emerging economies where regulatory pressures and market demands coevolve, showing that resources, capabilities, and relationships function as complements rather than substitutes. Third, it updates classic frameworks by embedding circularity as an organizing logic rather than a downstream outcome. In RBV and NRBV terms, the most valuable and inimitable resources increasingly derive from the ability to design out waste and regenerate resources; in dynamic capabilities terms, reconfiguration entails redesigning the firm's role within material cycles; and in the Relational View, relational rents are realized through cross-firm infrastructures and loops that no single actor can control. By articulating these linkages, the review reconciles classic theoretical insights with recent empirical advances in sustainability and circular economy research.

The findings yield several practical implications for organizations, particularly small and medium-sized enterprises (SMEs) operating under resource constraints. First, integrating environmentally oriented HRM practices into corporate policies is essential to ensure that ecological awareness becomes embedded in employees' daily behaviors. Second, proactive environmental strategies can help firms adapt to regulatory pressures and market expectations, reframing sustainability as an opportunity for innovation rather than a compliance burden. Third, green innovation serves as an effective bridge that transforms environmental commitments into competitive products and processes. Finally, collaboration with external partners through ecosystem networks enables organizations to share resources, technologies, and knowledge, thereby accelerating the adoption of circular economy practices.

This discussion underscores that the successful implementation of circular economy principles cannot be separated from the interplay of internal and external factors. On the one hand, GHRM and environmental strategies build strong internal foundations; on the other, innovation and collaboration act as linking mechanisms that facilitate the transformation toward circular business models. Thus, sustainability should not be regarded as an isolated activity but rather as the outcome of dynamic interactions between people, strategy, technology, and organizational networks.

Nevertheless, this review has limitations, particularly because the data analyzed were restricted to internationally indexed publications and relied on bibliometric analysis. Future

research could broaden the scope by employing longitudinal studies, qualitative approaches, or multi-level integration to capture the complex dynamics of sustainability transformation. Such directions would enrich our understanding of how organizations across sectors and countries navigate the challenges of transitioning toward a more circular future.

6. CONCLUSION

This systematic review and bibliometric analysis provide an integrated account of how Green HRM, environmental strategy, green innovation, and ecosystem collaboration contribute to the transition toward circular business practices. The findings highlight a sharp increase in publications since 2018, a consolidation of research within leading sustainability and management journals, and an intellectual structure shaped by three interrelated clusters. These patterns reflect not only the growing centrality of sustainability in academic discourse but also the emergence of a sequenced, multi-level mechanism that links human, strategic, innovative, and relational dimensions of organizational change.

In direct response to the guiding research questions, the review demonstrates that: (1) GHRM contributes to circular business practices primarily by cultivating employee competencies, values, and behaviors that anchor sustainability in daily operations (RQ1). (2) Environmental strategy facilitates the adoption of circular economy models by providing a guiding logic and dynamic capability that align organizational processes with ecological priorities (RQ2). (3) Green innovation plays a mediating role by translating strategic intent and human capacities into concrete products, processes, and business models that embody circular principles (RQ3). (4) Ecosystem collaboration strengthens these relationships by providing shared infrastructures, relational rents, and collective knowledge that enable firms, particularly SMEs, to overcome resource constraints and scale circular practices (RQ4).

Theoretically, this study synthesizes the Resource-Based View, the Natural Resource-Based View, the Dynamic Capabilities framework, and the Relational View into a coherent mechanism that explains how circular business practices are developed and reinforced. Practically, the findings suggest that managers should simultaneously invest in employee development, articulate proactive environmental strategies, foster innovation pathways, and participate in collaborative networks to maximize circular outcomes.

7. Limitations

This review has limitations, as it draws on a dataset restricted to Scopus and Web of Science indexed publications between 2015 and 2025 and relies primarily on bibliometric methods, which capture patterns but not causal dynamics. Future research should complement this approach with longitudinal and mixed-method studies, comparative analyses across industries and regions, and deeper examination of how ecosystem collaboration interacts with firm-level capabilities. Such efforts would enrich understanding of the mechanisms and contingencies that shape organizational transitions toward circularity. By outlining both the empirical state of the field and its theoretical linkages, this study provides a foundation for advancing scholarship and practice in sustainability and circular economy research.

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