

From green workforce to green supply networks: A systematic review of green HRM and green supply chain management practices driving sustainability in India

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Abstract

This systematic literature review examines the integration of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) practices in Indian firms, focusing on their contribution to the Sustainable Development Goals (SDGs). Employing a structured methodology, the review synthesises findings from academic databases, including Scopus, covering research articles and reports published between 2014 and 2024. The analysis reveals that GHRM initiatives, such as environmentally focused recruitment and employee development programs, effectively cultivate an organisational culture oriented toward environmental responsibility, while GSCM practices, notably sustainable procurement and waste minimisation strategies, significantly advance environmental sustainability objectives. Collectively, these practices demonstrate substantial positive impacts on specific SDGs, including Climate Action (SDG 13), Responsible Consumption and Production (SDG 12), and Decent Work and Economic Growth (SDG 8). The review also identifies persistent barriers to widespread implementation, notably financial limitations, ambiguous regulatory frameworks, organisational resistance to change, and deficiencies in robust sustainability performance measurement. To address these challenges, the study advances strategic frameworks alongside policy recommendations aimed at stimulating and institutionalising sustainability oriented initiatives within Indian enterprises. This review contributes to the literature by exploring the synergistic potential of integrating Green Human Resource Management and Green Supply Chain Management practices, thereby advancing broader sustainability objectives aligned with global development frameworks.

Keywords: Green Human Resource Management, Green Supply Chain Management, Sustainable Development Goals, Indian Organizations, Sustainable Development, Systematic Literature Review

JEL Classification: Q56, M12, M14, O53

1. Introduction

In the Indian context, Green Supply Chain Management and Green Human Resource Management have gained attention as potential drivers of organizational sustainability and contributors to the United Nations' Sustainable Development Goals (SDGs). While these practices are associated with improved operational efficiency, environmental stewardship, and corporate social responsibility, their practical implementation is often uneven across firms. Constraints such as limited resources, lack of technical expertise, and varying managerial commitment can restrict the realization of tangible sustainability outcomes. Furthermore, empirical evidence directly linking GSCM and GHRM to measurable SDG achievement in India remains limited, indicating the need for more context-specific research. At the national level, India has strategically integrated the core principles of the 2030 Agenda for Sustainable Development into its policy frameworks. Initiatives like the 12th Five-Year Plan (2012–2017), the National Action Plan on Climate Change, and the National Mission for Enhanced Energy Efficiency demonstrate a commitment to economic growth, social advancement, and environmental sustainability. However, the effectiveness of these programs has been inconsistent due to implementation gaps, regional disparities, limited resource allocation, and inadequate monitoring mechanisms. While these policies provide a structured approach for promoting renewable energy, energy efficiency, sustainable urban development, and ecological preservation, critically assessing their measurable impact is essential for understanding India's actual progress toward the SDGs (Government of India, 2020; United Nation, 2025).

1.1 Green-Human Resource Management (GHRM)

It emphasizes recruiting, developing, and retaining employees committed to advancing sustainability objectives by integrating environmental considerations into core HR operations. While initiatives such as environmentally conscious hiring, training programs to enhance environmental awareness, and performance evaluations incorporating sustainability metrics have the potential to foster engaged and productive employees, their practical adoption in Indian organizations remains uneven. Factors such as limited managerial commitment, resource constraints, and low employee awareness often hinder the effectiveness of GHRM strategies. Consequently, while it can contribute to SDGs like SDG 8 (Decent Work and Economic Growth) and SDG 12 (Responsible Consumption and Production), the extent to which these goals are realized depends on organizational capacity and the consistent implementation of green HR practices (United Nation, 2025; Sustainable Development Solutions Network, 2024).

1.2 Green SCM (GSCM)

GSCM entails the systematic integration of environmentally sustainable practices—such as green sourcing, eco-efficient logistics, and waste minimization—into supply chain operations. These practices not only aim to reduce the ecological footprint but also reshape how industries pursue growth and competitiveness. While GSCM significantly contributes to SDG 9 (Industry, Innovation, and Infrastructure) by stimulating innovation and promoting the adoption of

sustainable technologies, its effectiveness is highly dependent on organizational investment, technological readiness, and policy support. Similarly, GSCM supports SDG 13 (Climate Action) through carbon reduction and sustainable logistics, yet the scale of impact varies across industries and regions due to differences in regulatory frameworks, supplier collaboration, and cost constraints. Thus, although it emerges as a critical pathway toward sustainability, its long-term success requires overcoming structural challenges, ensuring cross-sector alignment, and embedding green practices into the organizational culture (United Nation, 2025; Sustainable Development Solutions Network, 2024).

1.3 Integrated Effects of GHRM and GSCM practices

The comprehensive integration of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) provides a synergistic framework for advancing the Sustainable Development Goals (SDGs) in India. GHRM initiatives not only develop a workforce that is skilled and motivated to adopt sustainable practices but also foster a culture of environmental accountability, which is crucial for translating sustainability policies into tangible actions. At the same time, GSCM enhances organizational efficiency by promoting responsible sourcing, reducing resource waste, and embedding eco-innovation across corporate processes. While these approaches collectively strengthen employee engagement and optimize resource utilization, their long-term effectiveness is contingent on overcoming challenges such as cost implications, technological readiness, and weak regulatory enforcement. Thus, the alignment of GHRM and GSCM offers a promising pathway toward achieving SDGs, yet its success depends on the ability of firms to integrate green practices within broader strategic and institutional frameworks (Press Information Bureau, Government of India, 2020; United Nation, 2025).

1.4 Voluntary National Review Report of SDGs

India's Voluntary National Review (VNR) Reports on the Sustainable Development Goals (SDGs) underscore the country's strong commitment to sustainable development by serving as a key mechanism for documenting progress, challenges, and policy lessons. The second VNR, presented in 2020, adopted a comprehensive 'whole-of-society' approach by engaging state governments, civil society, local communities, and the private sector, thereby reflecting the inclusive nature of India's SDG implementation strategy. While this participatory model demonstrates India's determination to align national development priorities with global sustainability targets, the effectiveness of this approach is constrained by issues such as uneven state-level capacities, data gaps, and the complexity of coordinating diverse stakeholders. Thus, the VNRs provide evidence of achievements and highlight systemic challenges that must be addressed for India to sustain its trajectory toward achieving the SDGs (United Nation, 2025; Sustainable Development Solutions Network, 2024). This strategy aligns closely with India's national development agenda, underscoring its commitment to inclusive growth and sustainable development. The integration of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) is

particularly vital in this regard, as GHRM advances SDG 8 (Decent Work and Economic Growth) and SDG 12 (Responsible Consumption and Production) by cultivating environmentally conscious and engaged workforces, while GSCM contributes to SDG 9 (Industry, Innovation, and Infrastructure) and SDG 13 (Climate Action) by fostering sustainable industrial practices and reducing environmental impacts (Bhaduri et al., 2016; Press Information Bureau, Government of India, 2020; United Nation, 2025). However, the extent of this contribution depends on the degree of institutional support, organizational commitment, and effective policy implementation. Thus, the alignment of these two practices represents not only a strategic pathway to SDG realization but also a test of India's capacity to balance economic growth with environmental stewardship (NITI Aayog, Government of India, 2020; YAROOMS, 2023).

1.5 Challenges and Opportunities

Despite the recognized advantages of integrating practices, persistent challenges remain particularly limited awareness of sustainable practices and insufficient regulatory support. Addressing these barriers requires sustained and coordinated action between policymakers and the business sector. While organizations can strengthen environmental awareness through targeted training and collaborations with industry stakeholders to foster green innovation, the effectiveness of such measures depends on long-term institutional commitment and resource availability. Embedding sustainability in educational curricula and investing in green skills development can further create a future-ready workforce. Moreover, closer collaboration between government bodies and industry sectors is essential to design and enforce policies that enable the effective implementation of these two practices, ensuring that sustainability transitions move beyond symbolic adoption toward systemic change. Although prior research highlights the advantages of integrating GHRM and GSCM practices for advancing environmental sustainability, their implementation in India continues to face significant obstacles. This paper seeks to address this gap by examining the implications of incorporating practices for organizational sustainability within the Indian context. The industrial sector, as a cornerstone of India's economic growth, contributes over 27.6% to the national GDP and employs more than 17% of the total workforce, as of 2024. Given this pivotal role, understanding how the sector responds to government-led sustainability initiatives is critical, not only for achieving national development priorities but also for ensuring progress toward the Sustainable Development Goals (SDGs) (United Nations Economic and Social Commission for Asia and the Pacific, 2017). This study aims to address the following research question:

How do Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) practices contribute to achieving the Sustainable Development Goals (SDGs) in Indian organizations?

In particular, this study aims to achieved the following reseach objectives:

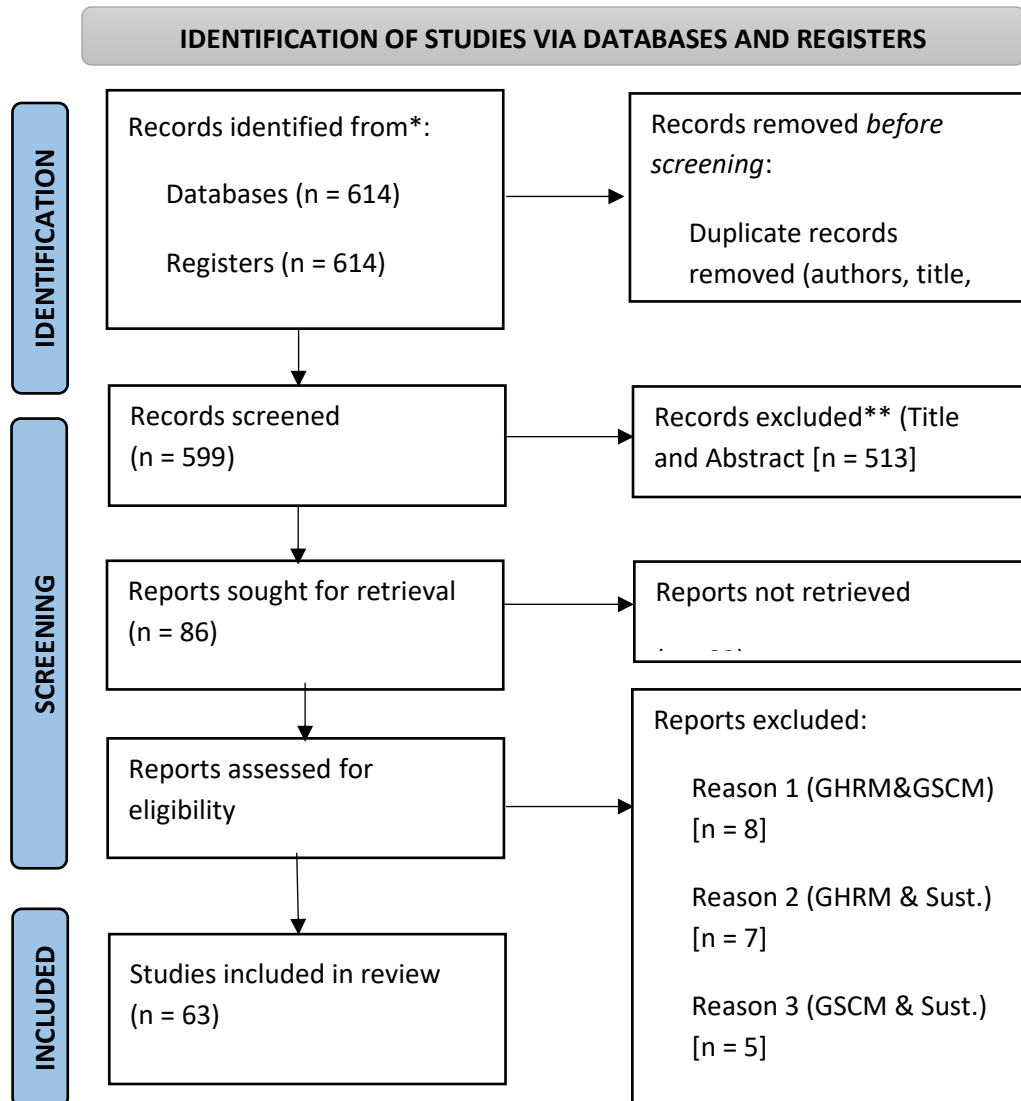
1. To conduct a systematic review of extant literature on GHRM, GSCM, and SDGs.
2. To identify critical GHRM and GSCM practices that can contribute to achieving SDGs in India.
3. To explore the challenges and opportunities associated with implementing GHRM and GSCM practices in Indian organizations.
4. To construct a conceptual framework that outlines the relationship between GHRM, GSCM, and SDGs in the Indian context.
5. To formulate evidence based recommendations targeting policymakers, organizations, and academic researchers to promote the adoption of GHRM and GSCM practices in India.

2. Research Methodology

This study adopted a systematic literature review approach, critically engaging with scholarly databases such as Scopus and selected search engines to ensure the inclusion of credible and contextually relevant sources. The systematic procedure facilitated a rigorous review of both national and international sources, drawing on scholarly articles, dissertations, government reports, policy documents, websites, and digital repositories. To ensure relevance and coverage, keywords related to Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) in the Indian context were strategically employed. This structured approach not only enhanced the comprehensiveness and credibility of the search but also enabled the literature to be organized into three primary clusters: integrated GHRM and GSCM, GHRM, and GSCM. However, despite the methodological rigor, the reliance on documented and indexed sources may have excluded certain industry practices or unpublished insights, which represents a potential limitation of the review. Data collection was conducted through both search engines and academic references, with the overall methodology depicted using a PRISMA flow diagram.

As illustrated in the PRISMA diagram (Figure 1), the study identification phase began with the retrieval of 614 records each from databases and registers. Following the removal of 15 duplicate records based on authors, titles, citations, abstracts, and keywords, 599 records were selection was conducted through an initial screening of titles and abstracts. This screening process led to the exclusion of 513 records deemed irrelevant to the research focus. Subsequently, 86 reports were sought for retrieval, but 3 of these could not be accessed. The remaining 83 reports were then assessed for eligibility based on predefined criteria, resulting in the exclusion of studies focusing on general GHRM & GSCM (n=8), GHRM & Sustainability (n=7), and GSCM & Sustainability (n=5). In total, 63 studies met the established inclusion criteria and were subsequently incorporated into the final analysis.

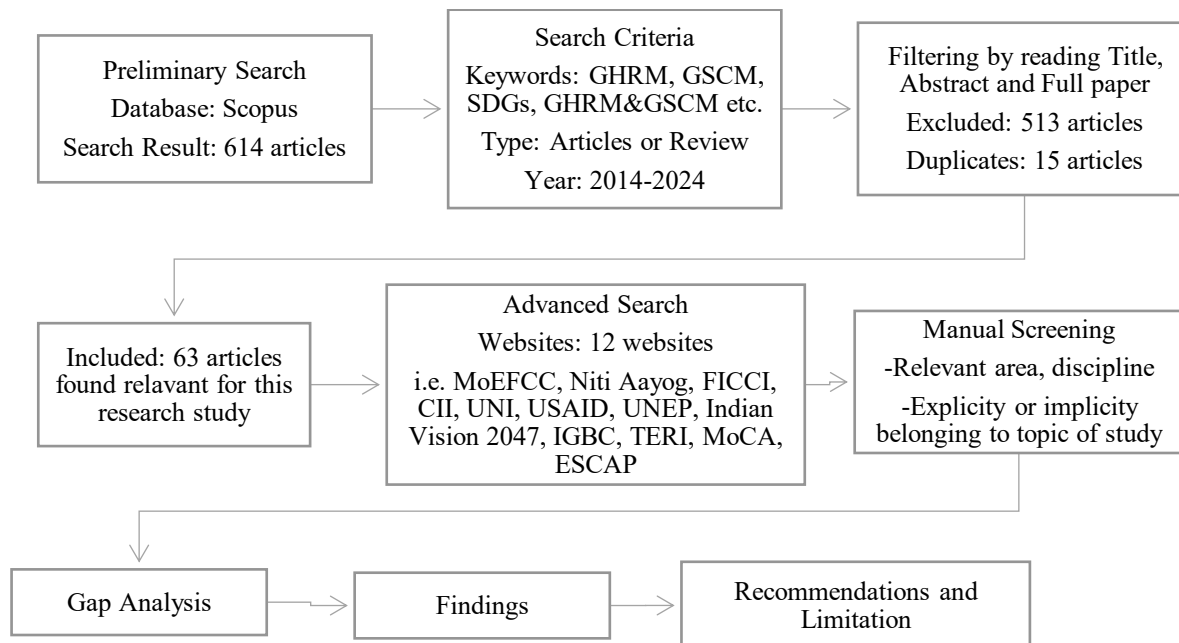
Figure 1. PRISMA Diagram



To establish a comprehensive search, specific keywords were used. For GHRM, these included “sustainable HRM,” “green HR,” “GHRM practices,” “sustainability and HR,” “SDGs and GHRM,” “SDGs and GHRM practices,” “GHRM and GSCM,”. Similarly, keywords like “sustainable SCM,” “green SCM,” “GSCM practices,” “sustainability and SC,” “SDGs and GSCM,” “SDGs and GSCM practices,” “GSCM and GHRM,” were used for the GSCM search. The use of these keywords facilitated a comprehensive exploration of the interconnections between Green Human Resource Management (GHRM), Green Supply Chain Management (GSCM), and their combined contribution to advancing the Sustainable Development Goals (SDGs). The selected literature was not limited to descriptive accounts but also encompassed theoretical foundations, practical applications, and regulatory frameworks, thereby offering a

multidimensional understanding of the subject. This integrative perspective strengthens the analytical depth of the review while highlighting how diverse strands of research collectively shape the discourse on sustainability.

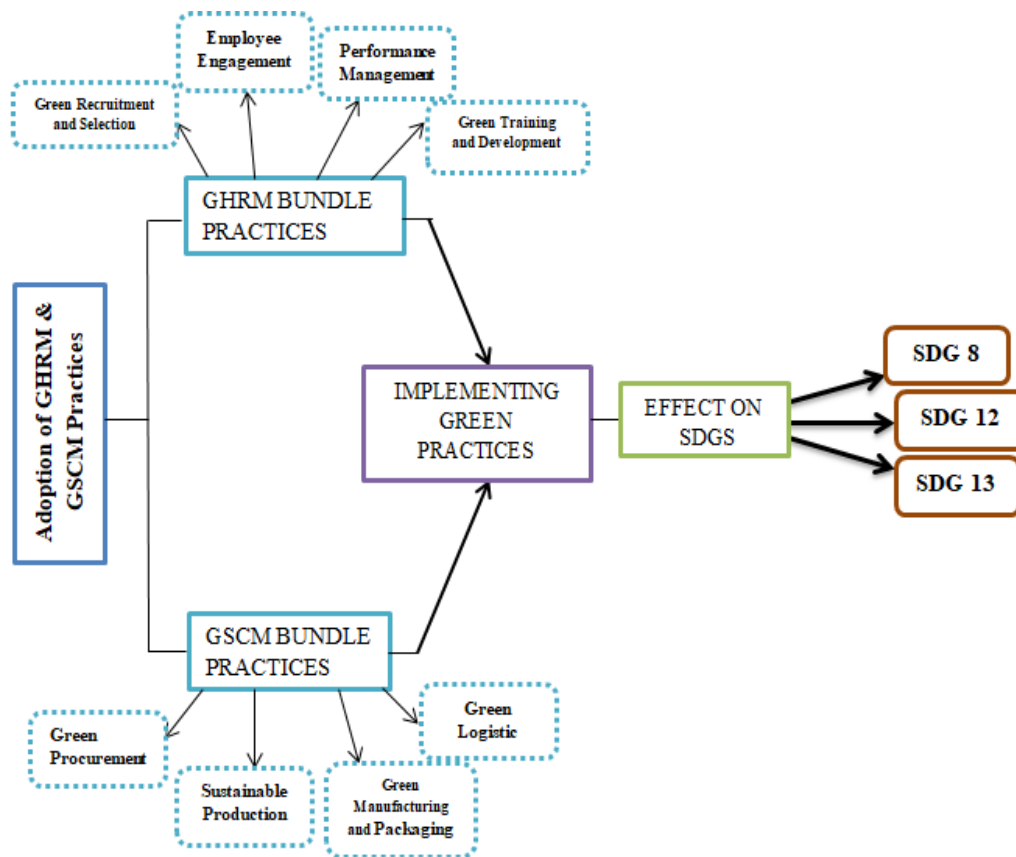
Figure 2. Research Design and Methodological Framework, illustrating the systematic approach adopted in the present study



2.1 Proposed Conceptual Framework: Integrating GHRM and GSCM for Sustainable Development

The proposed framework outlines a conceptual paradigm in which the adoption of Green Human Resource Management and Green Supply Chain Management practices enables the systematic integration of environmentally sustainable initiatives into organizational processes. This integration is posited to advance the Sustainable Development Goals (SDGs) by underscoring the synergistic role of GHRM and GSCM in fostering sustainable organizational performance and long-term resilience. Figure 3 illustrates this proposed conceptual framework and the hypothesized linkages among its key constructs.

Figure 3. Conceptual Framework illustrating the integrated relationship between GHRM, GSCM, and sustainability outcomes



Source: Author's conceptualization

2.1.1 Adoption of GHRM & GSCM Practices (Independent Variables)

The framework is initiated by the organization's strategic decision to adopt and implement GHRM and GSCM practices, serving as the foundational step toward embedding sustainability within organizational operations. The adoption of these practices serves as a catalyst for subsequent sustainability-oriented actions within the organization.

- **GHRM Bundle Practices:**

- **Green Recruitment and Selection:** Recruiting individuals who demonstrate environmental awareness and values to ensure alignment with the organization's sustainability objectives (Renwick et al., 2013; Yong et al., 2019).
- **Employee Engagement:** Involving employees in environmental initiatives to foster ownership (Li et al., 2023).

- **Performance Management:** Integrating environmental metrics into evaluations to hold employees accountable (Renwick et al., 2013; Yong et al., 2019).
- **Green Training and Development:** Providing training on environmental issues and sustainable practices (Yong et al., 2019; Li et al., 2023).
- **GSCM Bundle Practices:**
 - **Green Procurement:** Prioritizing environmentally friendly products and services (Yong et al., 2019).
 - **Sustainable Production:** Implementing processes that minimize environmental impact (Yong et al., 2019).
 - **Green Manufacturing and Packaging:** Using environmentally friendly materials and processes (Yong et al., 2019).
 - **Green Logistics:** Optimizing transportation to reduce emissions (Yong et al., 2019).

2.1.2 Implementing Green Practices (Mediating Variable)

The integration of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) practices enables organizations to systematically embed environmental initiatives within their operations. Such initiatives may encompass energy efficiency measures, waste minimization, water conservation, and the adoption of renewable energy sources, all of which contribute to advancing organizational sustainability and environmental performance (Renwick et al., 2013; Li et al., 2023).

- **Examples of Green Practices:** This may include a diverse array of initiatives, such as:
 - Reducing energy consumption
 - Minimizing waste generation
 - Conserving water resources
 - Implementing recycling programs
 - Facilitating organizational transition toward renewable energy sources to enhance sustainability outcomes
 - Facilitating strategies to reduce carbon emissions and enhance environmental sustainability.
 - Designing eco-friendly products

2.1.3 Effect on SDGs (Dependent Variables)

The strategic implementation of green practices significantly contributes to advancing the achievement of the Sustainable Development Goals (SDGs):

- **SDG 8:** Promoting SDG 8 by fostering green employment opportunities and driving sustainable economic growth through environmentally responsible organizational practices.
- **SDG 12:** Advancing SDG 12 by implementing strategies to minimize waste generation, optimize resource utilization, and institutionalize recycling practices across operations.
- **SDG 13:** Supporting SDG 13 by actively reducing greenhouse gas emissions and strategically investing in renewable energy initiatives to mitigate climate change impacts (Renwick et al., 2013; Yong et al., 2019).

3. Literature Review

The literature review investigates the impact of Green Human Resource Management and Green Supply Chain Management on organizational sustainability initiatives, with a particular focus on their role in advancing Sustainable Development Goals 8 (Decent Work and Economic Growth), 12 (Responsible Consumption and Production), and 13 (Climate Action) in the Indian context. It proposes a causal framework where GHRM (green recruitment, training) and GSCM (eco-friendly procurement, waste reduction) foster environmentally responsible cultures and operational innovations, enabling progress toward these SDGs. The review synthesizes empirical evidence linking these practices to reduced emissions (SDG 13), ethical labor practices (SDG 8), and circular economy adoption (SDG 12), while addressing India's unique challenges of balancing rapid industrialization with ecological preservation. Key research gaps identified include limited studies on sector-specific implementations and longitudinal impacts. With India's economy projected to grow alongside escalating climate risks, the analysis underscores the urgency of integrating GHRM-GSCM systems to align corporate strategies with global sustainability agendas.

3.1 Correlation

This literature review emphasizes that Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) are not standalone organizational initiatives but interdependent systems that collectively promote sustainability and facilitate the attainment of the Sustainable Development Goals (SDGs). For GSCM to work well, the people who work for the company need to have the right green knowledge, skills, and abilities to put sustainable practices into action (Setyaningrum & Muafi, 2023). In this context, GHRM is crucial because it incorporates environmental values into important HR processes like hiring, green training, and performance reviews to build the skills needed for a sustainable supply chain (Renwick et al., 2013; Campos-Garcia et al., 2024). On the other hand, research shows that well-organized GSCM procedures can boost staff engagement, environmental knowledge, and dedication to the business, which strengthens a company's focus on sustainability (Gandhi & Vasudevan, 2020; Khan et al., 2022). Despite these findings, empirical research into the synergistic mechanisms by which GHRM and GSCM collaboratively influence sustainability outcomes and facilitate the achievement of SDGs is limited, especially within the Indian industrial sector. The synergistic

coupling of GHRM and GSCM constitutes a promising yet inadequately examined avenue for enhancing business sustainability and accelerating progress towards the SDGs. Table 1 summarizes the main results of previous studies, pointing out the conceptual and empirical gaps that this research is based on.

Table 1. Overview of Existing Research on GHRM, GSCM, and Sustainable Development

Sr. No.	Title	Methodology	Findings	Gaps and Recommendations	Ref. No.
1	The Relationship between Green Human Resource Management and Green Supply Chain Management: A systematic review	A systematic study utilizing the PRISMA methodology examined 30 peer-reviewed articles (2016–2023) regarding the merging of GHRM and GSCM. The procedure encompassed identification, screening, eligibility assessment, and inclusion to guarantee transparency and replicability. The majority of studies employed quantitative surveys, indicating a methodological disparity, and suggesting the necessity for qualitative research to more thoroughly investigate GHRM-GSCM connections. The study emphasizes the need of incorporating these techniques to attain lasting competitive advantage and advocates for varied methodologies in subsequent research.	The review shows that most research on GHRM and GSCM is done in developing nations and uses mostly quantitative methodologies. It also shows that combining the two is important for achieving sustainability and a competitive edge. It advocates for more diversified methods and studies in areas that aren't well represented, and it gives practitioners ideas for how to improve the performance and sustainability of their organizations.	The study points out problems with GHRM and GSCM research, such as not enough attention on developed areas, too much dependence on quantitative approaches, and not enough studies that look at their combined effects. It suggests broadening the geographical reach, embracing varied techniques, creating cohesive frameworks, and highlighting the significance of human resources in environmental projects to enhance sustainability and corporate performance.	(Freihat et al., 2024)
2	Green Human Resource Management/Supply Chain Management/Regulation and Legislation and Their Effects on Sustainable Development Goals in Jordan	The study employed a systematic methodology, incorporating a PRISMA-guided literature review and keyword searches such as “sustainable HRM” and “regulations for SDGs.” We sorted data from local and worldwide sources to look at how GHRM, GSCM, and rules helped Jordan reach the SDGs.	The report underscores the necessity for more robust rules, governmental assistance, and professional experience to improve GHRM and GSCM practices in Jordan. It highlights the need for stakeholders to work together, for rules to be flexible, and for comparative studies to provide us a wider view, while also recognizing that the results are only applicable in certain situations. Future study should focus on filling in	The research on GHRM, GSCM, and sustainable development in Jordan reveals deficiencies such as a scarcity of empirical evidence, context-specific constraints, inadequate examination of stakeholder engagement, and the necessity for varied techniques. It suggests that future research should concentrate on quantitative validation, cross-national comparisons, comprehensive case studies, and the observation of regulatory changes to guarantee the sustained efficacy of green practices. These results	(Al Masud et al., 2024)

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| | | the gaps and looking into the things that affect sustainable practices in order to help SDGs 8, 12, and 13 move forward. | underscore the necessity of continuous study and collaboration to promote sustainable practices both inside Jordan and outside. | | |
| 3 | Modelling the Combined Effect of Green Leadership and Human Resource Management in Moving to Green Supply Chain Performance Enhancement in Saudi Arabia | The study utilizes a deductive methodology, employing a bilingual (Arabic and English) questionnaire developed from a comprehensive literature review to investigate the interconnections among GTL, GHRM, and GSCM. Data was gathered from 111 surveys conducted within pharmaceutical businesses in Saudi Arabia, guaranteeing a varied representation of the industry. The G*Power method found that the minimal number of replies needed for the research was 89, taking into consideration six different variables. | The research indicates that pharmaceutical firms in Saudi Arabia exhibit considerable sophistication in GSCM processes, with GTL serving a crucial function in advancing GHRM activities such as sustainable recruitment, training, and performance evaluations. GTL has a big effect on GHRM, as evidenced by a high coefficient of determination. This shows how important leadership is in encouraging green habits. These results are in line with the goals of Saudi Vision 2030, which include improving the healthcare system and making sure drugs are safe. | The study underscores deficiencies, including its restricted sector emphasis, insufficient examination of GTL and GHRM as separate constructs, inadequate consideration of modern technologies, and tenuous connections between GSCM and sustainability measures. Future study ought to expand sectoral analysis, evaluate GTL and GHRM separately, incorporate technologies such as blockchain and IoT, and link GSCM with sustainability measures, all while building frameworks for assessing supplier and customer partnerships. | (Ali et al., 2024) |
| 4 | Fostering sustainability through technological brilliance: a study on the nexus of organizational STARA capability, GHRM, GSCM, and sustainable performance | The research employed a quantitative methodology, collecting data from 395 employees in Bangladesh's manufacturing industry via a survey utilizing a seven-point Likert scale. We used structural equation modeling (SEM) to look at the data and test ideas about how organizational STARA skills, Green HRM (GHRM), Green Supply Chain Management (GSCM), and sustainable performance (SP) are related. | The research identified favorable correlations between organizational STARA skills and both GHRM and GSCM practices, subsequently improving sustainable performance (SP). In particular, STARA skills had a beneficial effect on GHRM ($\beta = 0.210$), GSCM ($\beta = 0.247$), and SP ($\beta = 0.135$). Furthermore, GHRM and GSCM were identified as mediators in the link between STARA and SP, enhancing sustainable results in manufacturing. | The research underscores a deficiency in the literature concerning the amalgamation of STARA skills with GHRM and GSCM within the Bangladeshi manufacturing industry. It indicates that additional research is necessary to investigate these correlations across other businesses or areas. The study suggests that businesses use STARA technology to make their operations more sustainable and efficient. It also suggests that politicians develop rules that encourage the use of these technologies for better environmental and economic results. | (Setyaningrum & Muafi, 2023) |

- 5 Weaving a greener future: The impact of green human resources management and green supply chain management on sustainable performance in Bangladesh's textile industry

The research employed structural equation modeling (SEM) with Amos-24 and SPSS to evaluate theoretical correlations among variables. It involved looking at the measurement model, then the structural model, and finally making sure that the constructs were true in both convergent and discriminant ways.

The study identifies deficiencies in comprehending the impact of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) on the long-term viability of Bangladesh's textile industry. It also looks at how the performance of employees and the environment influences the long-term health of the industry. The report aims to address these deficiencies by providing stakeholders with distinctive insights and pragmatic recommendations to safeguard the sector. To increase long-term performance, GHRM and GSCM processes might be made better, using employee and environmental performance as mediators.

(Rizzi et al., 2023)

- 6 Green human resource management, green supply chain management, green lifestyle: Their effect on business sustainability mediated by digital skills

The research concentrated on logistics managers inside manufacturing firms in DKI Jakarta and West Java, Indonesia, yielding 218 valid replies from a total of 250 questionnaires. Using AMOS 24 for SEM analysis, we tested the data.

The research indicated that during the COVID-19 epidemic and Indonesia's Industry 4.0 and 5.0 revolutions, both Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) are essential for business sustainability (BS). GSCM has a favorable influence on BS, while GHRM also has a big positive effect on BS. Companies that make things support green practices, and digital skills (DS) help GSCM work better, although DS does not directly improve BS.

(Maskuroh et al., 2023)

- 7 Exploring the nexus between GSCM and organisational culture: insights on the role of supply chain integration

The research employed a quantitative methodology through a survey of 381 Italian supply chain managers. It included self-reported data regarding organizational culture (OC), supply chain integration, and Green Supply Chain Management (GSCM) practices, alongside an experimental methodology to

The findings underscore the necessity to investigate particular pathways connecting organizational culture (OC) and supply chain (SC) integration characteristics to each Green Supply Chain Management (GSCM) strategy. It shows how SC integration affects the interaction between OCs

(Fiorini et al., 2022)

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| | investigate the relationships between Green Human Resource Management (GHRM) and business performance under neutral settings. | and GSCM practices, with a focus on how knowledge, skills, and abilities (KSAs) can help performance last. Building good ties with clients and people involved in the production process is really important for making things more sustainable. | that replication in other nations might uncover country-specific processes. Finally, subsequent research should investigate the distinct impacts of Green Human Resource Management (GHRM) practices on Green Supply Chain Management (GSCM) practices. | | |
| 8 | Green human resource management and green supply Chain Management on Sustainable performance of nickel mining companies in Indonesia | The study quantitatively establishes causal relationships between constructs through hypothesis testing. It used a convenience sampling strategy and chose 80 workers from a nickel mining firm in North Maluku as the sample. Partial Least Squares was utilized to evaluate primary data derived from ordinal scale questionnaires. PLS is perfect for research that involves making predictions and testing theories because it doesn't need to scale data. The study design adheres to methodologies in sustainability performance research. | The research indicates that Green Human Resource Management (GHRM) enhances Green Supply Chain Management (GSCM) but does not elevate sustainability performance. Health Safety Environment Culture (HSEC) has an effect on how well GHRM and GSCM work for sustainability. GSCM and HSEC make the world more sustainable by changing how we handle trash, use energy, keep workers safe, and affect the community. Getting ISO 14001 accreditation and having environmental audits done on your business will help it last longer. The research says that leadership, training, and clear rules are needed to bring together GHRM, GSCM, and HSEC practices. | The study's limited emphasis on Green Human Resource Management (GHRM), Green Supply Chain Management (GSCM), and Health Safety Environment Culture results in deficiencies in the examination of additional sustainability performance components. It recommends that companies hire and teach workers on safety and environmental practices, set up clear rules, and use effective reward and punishment systems to make work safer and protect the environment. Companies should improve how they handle trash and try to get ISO certification. To enhance generalizability, subsequent research should incorporate additional factors, expand the sample size, and evaluate the model across various industries. | (Saeed et al., 2022) |
| 9 | Green Emerging Digital Technologies, Green Supply Chains, and the Performance of Environmentally Friendly Firms: The Underpinning Role of Human Resources | This study utilizes data from 211 Brazilian firms to examine the relationships among Green Information Systems (IS), Green Human Resource Management (GHRM), and Green Supply Chain Management (GSCM). Our survey-based research use structural equation modeling (SEM) as its primary analytical instrument. It investigates the direct and mediated impacts of Green Information Systems (IS) and Green Human Resource | The study shows that Green Information Systems (Green IS) help Green Supply Chain Management (GSCM) by managing environmental data and making better decisions. Green IS helps the environment and the bottom line by using GSCM practices like eco-design and cutting down on waste. Green Human Resource Management (GHRM) improves GSCM by getting employees involved and giving them | The study highlights gaps, including its single-country focus on Brazil, limited analysis of managerial challenges in integrating Green IS, GHRM, and GSCM, narrow focus on environmental and financial performance, and unexplored reasons behind the lack of performance differences between ISO 14001-certified and non-certified firms. It recommends expanding research to other countries, exploring additional mediators, adopting mixed methods for deeper insights, incorporating | (Trujillo-Gallego et al., 2022) |

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| | Management (GHRM) on Green Supply Chain Management (GSCM), as well as their collective effects on environmental and financial performance, in alignment with the resource-based view (RBV) concept. | rewards based on their performance. Integrating Green IS, GHRM, and GSCM makes businesses more sustainable, which is good for the environment and their bottom line. | social sustainability metrics, and investigating the dynamics of ISO 14001 certification to address these gaps effectively. |
| 10 | Green human resource management and environmental performance: the role of green supply chain management practices | The research created a conceptual prototype informed by literature connecting EP, GSCM, and GHRM. Using a quantitative method, data were gathered via interviews and questionnaires from executives and managers within Pakistan's industrial industry. Partial Least Squares Structural Equation Modeling (PLS-SEM) was utilized to examine 269 valid replies. | The study suggests that GHRM and GSCM substantially enhance EP. Additionally, GSCM plays a crucial role in mediating the relationship between GHRM and EP. |
| | | | This study advises manufacturing entities to implement policies aimed at enhancing ecological sustainability through the advancement of optimal GHRM and GSCM practices. (Freihat et al., 2024) |
| 11 | Digital technologies and green human resource management: Capabilities for GSCM adoption and enhanced performance | The study collected data from 207 manufacturing companies in Colombia in early 2021, omitting those with fewer than five years of operation, those undergoing reorganization, or those with profits below COP \$7.299 billion. The study utilized data from the Colombian Ministry of Commerce to examine correlations across components through Partial Least Squares Structural Equation Modeling (PLS-SEM). We used 5-point Likert scales to measure economic and environmental performance, focusing on lowering costs, increasing market share, cutting down on waste, and using less energy. Preventive approaches dealt with the bias that comes from using the same method. | The research demonstrates the enhancement of performance with digital technologies, GHRM, and GSCM. It presents the dynamic capabilities framework and demonstrates that GSCM operational procedures facilitate the interaction between digital technology and GHRM, enhancing both environmental and economic results. The study emphasizes the integration of technology and interpersonal abilities for competitive advantage. Data from 207 Colombian companies shows that it gives managers useful tips on how to strategically embrace GSCM techniques, make the most of their financial investments, and make sure that their resources are in line with their sustainability goals. |
| | | | The study reveals deficiencies, including its narrow emphasis on Colombia with a low sample size, an insufficiently examined perspective on dynamic capabilities, and reliance on cross-sectional data. Future study should broaden its geographical scope, incorporate a variety of companies, investigate higher-order capacities, integrate reflective and formative structures, and perform case studies to attain a more profound understanding of the interplay between digital technologies, GHRM, and sustainability. (Bhardwaj, 2016) |

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The impact of green human resource management and green supply chain management practices on sustainable performance: An empirical study

The research examines the influence of GHRM and GSCM practices on sustainable performance, utilizing data from 121 companies in pollution-intensive industries in Palestine. Distinct surveys for HR and supply chain management guaranteed clarity and mitigated prejudice. We used SmartPLS 3.2.7 to analyze the data and test assumptions about GHRM, GSCM, and sustainability's Triple Bottom Line. Discriminant validity, validated by HTMT, guarantees resilient findings that enhance green management research.

The study shows that GHRM directly improves sustainable performance, while GSCM does this indirectly. Internal practices improve overall outcomes, while external practices mostly help environmental performance. It shows that people don't know enough about the larger benefits of external GSCM and, since it's the first study of its sort in Palestine, it stresses the necessity for green training to improve sustainable practices.

The study points out limitations, like how it can't be used in other situations, how it depends on managers' ideas, and how it focuses on environmental rather than social aspects of sustainability. It suggests that more study be done in a wider range of countries, taking into account the views of employees, outside audits, and social programs. It is recommended to conduct longitudinal research and investigate specific HR interventions for supply chain employees, as well as explore alternative theoretical frameworks to enhance the knowledge of GHRM, GSCM, and sustainability performance.

(Jabbour & de Sousa Jabbour, 2016)
- 13

Role of green policy on sustainable supply chain management: A model for implementing corporate social responsibility (CSR)

The authors created a model for a sustainable strategy combining resource-based theory and value chain analysis. They gathered and examined data to pinpoint the primary factors influencing sustainability, utilizing regression and correlation analysis for the review.

The paper examines contemporary GSCM literature, classifying it into adoption, dissemination, and outcomes, while delineating major research inquiries. It emphasizes environmental legislation, Green Human Resource Management (GHRM) via training, and sustainability criteria in supplier selection as the primary catalysts of GSCM, all of which improve sustainability outcomes.

The study has problems with limited generalizability, a narrow emphasis on essential factors, and long-term insights. It proposes expanding sustainability drivers, examining diverse firms and regions, doing longitudinal studies, and addressing implementation challenges. Qualitative methodologies and theories will enhance comprehension, whereas social and environmental ramifications will evaluate the sustainability of GSCM.

(Gedam et al., 2023)
- 14

Green Human Resource Management and Green Supply Chain Management: Linking two emerging agendas

The research employs a conceptual methodology to amalgamate Green Human Resource Management (GHRM) with Green Supply Chain Management (GSCM), formulating a framework via literature synthesis. It underscores research deficiencies, accentuating HRM's significance in SCM efficacy and the necessity for interdisciplinary methodologies. Subsequent research ought to authenticate the framework using both qualitative and quantitative methodologies, yielding real

The research suggests the amalgamation of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) to improve sustainability. It emphasizes the significance of HR practices in facilitating organizational change and aligning with green principles to enhance environmental performance. The results indicate a need for additional research to confirm the framework and

The study highlights deficiencies in the integration of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM), particularly the scarcity of empirical evidence and human resource-related obstacles to GSCM implementation. It suggests qualitative studies (case studies, interviews) and quantitative research (empirical data, simulations) to corroborate the proposed framework. Future research ought to concentrate on pragmatic applications and the resolution of HRM obstacles to

(Muduli et al., 2020)

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| | | ramifications for sustainable supply chains. | investigate its practical applicability. | enhance GHRM-GSCM integration for the establishment of more sustainable supply chains. | |
| 15 | Critical human and behavioral factors on the adoption of sustainable supply chain management practices in the context of automobile industry | The research employs Interpretive Structural Modeling (ISM) to examine the causal linkages among essential human and behavioral factors (HBFs) in the adoption of sustainable supply chain practices within the automotive sector. The Decision-Making Trial and Evaluation Laboratory (DEMATEL) method is also used to find connections between HBFs by using information from specialists in academia, the automobile industry, and consultancy. | The report finds that sustainable supply chain cost is a critical component for the automobile industry to embrace sustainable practices, and it tells managers to make it a priority. It also shows how important it is to improve both hard and soft human and behavioral factors (HBFs), like IT infrastructure and employee training, to make integration easier and get companies to share information. | The study emphasizes a deficiency in comprehending the influence of essential human and behavioral factors (HBFs) on the adoption of sustainable supply chains within the vehicle sector. It suggests putting end-to-end sustainable supply chain costs first to improve information sharing and spending money on both hard and soft HBFs, like IT infrastructure and employee training, to help with effective integration and sustainability. | (Stefanelli et al., 2021) |
| 16 | Environmental management and the “soft side” of organisations: Discovering the most relevant behavioural factors in green supply chains | The study performs an empirical analysis utilizing survey data from 101 respondents, with data processed with AMOS 4.0 to investigate and demonstrate causal relationships among significant factors. This method facilitates a thorough analysis of the interconnections within the research setting. | For green supply chain management (GSCM) to work, it needs support from the top and a desire to go green. These traits help the firm reach its goals and make the supply chain more sustainable. Behavioral factors including how employees feel about their jobs, how well they are trained, and how involved they are can also affect the success of GSCM by promoting green practices and getting stakeholders involved. Management support and behavioral factors are essential for sustained supply chain results. | There is a deficiency of studies examining the behavioral factors that affect Green Supply Chain Management (GSCM), while the majority of research concentrates on structural elements. Support from top management and a desire to become green are two of the most important factors that lead to GSCM adoption. They affect the culture of the firm and how engaged employees are. Additional study is necessary to investigate these behavioral factors to enhance GSCM effectiveness. | (Thakur & Mangl, 2019) |
| 17 | Unleashing proactive low-carbon strategies through behavioral factors in biodiversity-intensive sustainable supply chains: Mixed methodology | The study used a mixed-methods approach, integrating both quantitative and qualitative research methodologies. A survey is utilized for quantitative analysis, employing structural equation modeling to evaluate hypotheses regarding the impact of human and behavioral elements on low-carbon management | The most important things that affect how low-carbon products are managed by people, followed by processes and logistics. Quantitative analysis validated three hypotheses, each with distinct branch coefficients. The qualitative case study indicates that human success | The research underscores deficiencies in comprehending human elements in low-carbon management, particularly throughout various levels of organizational development within the biodiversity sector. It asks for long-term and sector-specific research, as well as training for organizations and incentives in policies to | (Agyabeng-Mensah et al., 2020) |

- practices. The qualitative component entails a multiple-case study in Brazil, examining various phases of organizational maturity in the adoption of low-carbon management methods.
 - determinants are more pronounced in companies employing advanced low-carbon management approaches.
 - encourage more people to embrace sustainable practices.
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- 18 Change management for sustainability: Evaluating the role of human, operational and technological factors in leading Indian firms in home appliances sector
The analysis begins with a literature review and expert consensus to pinpoint essential sustainability variables derived from research and expert viewpoints. Then, it uses the Fuzzy-Based Analytic Hierarchy Process (AHP) to rank these elements in order of importance. The Decision-Making Trial and Evaluation Laboratory (DEMATEL) method also looks at cause-and-effect relationships between known elements to learn more about how they depend on each other.
Sustainable operations management brings together people, processes, and technology to make sure there are no errors and the least amount of harm to the environment. To make their operations fit with sustainability aims, businesses need to use change management practices. This report stresses the need for responsible consumption, sustainable production, and the use of clean energy as key areas of focus for making supply chains more sustainable.
The study points out that there are gaps in how human, operational, and technology aspects work together in sustainable supply chains and that they need to be tested in different industries. It suggests that managers use structured change management, that there be more study in the business, and that policies be put in place to encourage sustainability. (Benjamin et al., 2023)
 - 19 Examining the influence of internal green supply chain practices, green human resource management and supply chain environmental cooperation on firm performance
The study used a quantitative research methodology, collecting survey data from HR and supply chain managers of 139 manufacturing companies spanning diverse sectors, including food, beverage, textiles, agrochemicals, and plastics. The SmartPLS 3.2.8 program is used to analyze the data using Partial Least Squares Structural Equation Modeling (PLS-SEM).
The study reveals that the exclusive implementation of internal green supply chain practices (IGSCP) may adversely impact market and financial performance. But when green human resource management (GHRM) and supply chain environmental cooperation (SCEC) are combined, this effect is lessened, making the favorable effect of IGSCP on firm performance (FP) even stronger. Using IGSCP, GHRM, and SCEC together makes a company work better overall.
The report proposes for more investigation into the synergistic impacts of IGSCP, GHRM, and SCEC on corporate performance across various industries, as well as the enduring benefits of green supply chain policies. It recommends that companies implement these practices for sustainability and performance, while urging policymakers to promote green projects. Subsequent research ought to analyze various businesses and investigate enduring effects. (Ma et al., 2023)
 - 20 Sequential Impact of Green Supply Chain Initiatives on Sustainable Performance: Food and Beverage Processing SMEs in Australia
The research used a quantitative methodology, gathering cross-sectional survey data from 168 SMEs in Australia's Food and Beverage industry, with the analysis conducted by Structural Equation Modeling (SEM).
The research indicates that GHRM practices and external pressures positively impact Green Supply Chain Initiatives (GSCIs), subsequently improving environmental performance and, in turn, influencing social and
The study identifies deficiencies in comprehending the synergistic impacts of GHRM practices and external constraints on GSCIs, as well as the ambiguous relationships among the triple bottom line sustainability components. To enhance GSCIs and

			economic performance. Nonetheless, social performance does not substantially influence economic performance. Furthermore, GSCIs facilitate the connection between GHRM practices, external influences, and environmental performance.	sustainability, companies must use GHRM processes and adjust to external influences. To enhance the comprehension of GHRM, external pressures, and sustainability, subsequent research should investigate these dynamics across other industries.	
21	Enhancing Sustainable Performance: The Innovative Strategy of Digital Transformation Leading Green Collaborative Management	The research utilized PLS-SEM to analyze data from 450 Chinese manufacturing enterprises, investigating the interrelations among digital transformation (DT), green human resource management (GHRM), green supply chain management (GSCM), and sustainable development performance.	The results indicate that GHRM and GSCM partially mediate the relationship between DT and sustainable development performance. Their collaboration is essential for optimizing digital transformation advantages and improving organizational performance, highlighting the necessity of incorporating sustainability into supply chain management.	The research identified constraints in evaluating digitization and sustainable development, especially in East Asia. The cross-sectional design and limited sample size impede generalizability and causal analysis. Future research could enhance comprehensive models by expanding industrial and geographic scope, integrating longitudinal data to capture dynamic interactions, and examining novel green management techniques.	(Zhu & Yang, 2021)
22	The effect of green marketing, green supply chain and green human resources on business performance: balanced scorecard approach	The research employed an empirical design with a questionnaire survey administered to 113 managers from the manufacturing and service sectors in the UAE, applying simple random sample methodology. It analyzed the influence of green marketing, green supply chain management, and green human resource management on business performance via balanced scorecard dimensions.	The research indicated that green marketing improved customer performance, GHRM facilitated learning and development, and GSCM had a substantial effect on financial performance and internal procedures.	The study's cross-sectional approach with 113 managers constrains the understanding of long-term relationships. Subsequent research ought to implement a longitudinal methodology, examine the manufacturing and service sectors independently, and investigate supplementary dimensions of green management to achieve a thorough comprehension of the impacts on business performance.	(Khurosa ni et al., 2021)
23	Big data analytics for improving financial performance and sustainability	The study surveyed 317 workers from 37 banks in six Asian countries to evaluate sustainability and the integration of big data. We used PLS-SEM in Smart PLS 3.0 to analyze the data since it is reliable for working with smaller samples and more complicated models.	The research indicated that big data analytics enhanced banks' internal operations and financial outcomes. Green innovation techniques improved both environmental and economic results. Internal and external GSCM practices, on the other hand, improved both	The study's dependence on a single-source survey and a constrained sample size may result in bias and limit generalizability. Subsequent research ought to enlarge the sample to encompass additional Asian banks and integrate qualitative methodologies for enhanced insights. Policymakers should encourage the use of big data to improve	(Wahdian a et al., 2022)

			sustainability and financial performance.	rules for corporate governance and sustainable finance.	
24	The role of green human resource management in creating green supply chain culture in a service industry	The research employed a quantitative methodology via purposive sampling, gathering data from 145 respondents through structured questionnaires. We used SEM-PLS to look at how GHRM affects the green work environment.	The results indicated that a green corporate culture favorably affects green behavior, which has a substantial effect on the green work environment. But its direct effect on the workplace was good, but not very strong. Individual green values had a favorable impact on the green work environment but did not influence the interaction between culture and environment.	The study found that there were gaps in the effects of a green organizational culture and obstacles to getting employees to participate in green activities. It suggested that the green culture be strengthened by training staff, encouraging environmental activities, and getting employees involved in choices about sustainability.	(Olekan ma et al., 2024)
25	The mediating role of environmental sustainability between green human resources management, green supply chain, and green business: A conceptual model	The research employed Smart-PLS for data analysis, evaluating construct validity via Cronbach's alpha, CR, and AVE scores. We used bootstrapping approaches to see how constructs and assumptions were related.	The research revealed that environmental sustainability mediates the connection between Green Supply Chain Management (GSCM) and green business outcomes, with GSCM exerting a beneficial effect on sustainability, which subsequently affects business practices. Hypotheses were evaluated utilizing T-values and P-values to determine the significance of these correlations.	The study's restricted demographic range necessitates further extensive research across many businesses and cultures. Future research should broaden the sample size, investigate supplementary variables, and employ longitudinal methodologies to evaluate the enduring effects on business performance and sustainability.	(Ahmed et al., 2024)
26	Small- and medium-sized enterprises' carbon footprint reduction initiatives as a catalyst for green jobs: A systematic review and comprehensive business strategy agenda	The research performed a comprehensive literature evaluation of 70 publications (2012-2022) from various databases to examine the carbon footprint reduction strategies of SMEs and their effects on green employment. Bibliographic cluster analysis with VOSviewer and InfraNodus revealed three primary clusters: green job efforts, green innovation, and carbon footprint reduction.	The research revealed that SMEs are implementing initiatives to reduce their carbon footprint, including green supply chain practices, energy conservation, waste minimization, and recycling. These programs promote sustainability and provide green employment by necessitating specialized skills.	The research indicated that the majority of literature employed quantitative methodologies and lacked explicit theoretical frameworks, hence constraining comprehensive knowledge. It advocates for the utilization of mixed or qualitative methodologies, integrating theoretical frameworks with empirical evidence, and developing systems to monitor green employment and carbon footprint mitigation for small and medium-sized enterprises (SMEs).	(Pratikno et al., 2023)

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| 27 | Entrepreneurial Pathways to Sustainability: A Theoretical Paper on Green Human Resource Management, Green Supply Chain Management, and Entrepreneurial Orientation | The research employs a theoretical framework that integrates Green Human Resource Management (GHRM), Green Supply Chain Management (GSCM), and Triple Bottom Line (TBL) performance, based on Resource Orchestration Theory (ROT) and Dynamic Capabilities Theory (DCT). A literature review delineates research deficiencies, guiding the formulation of the conceptual model. | The research indicates that the integration of GHRM and GSCM enhances organizational sustainability by promoting a comprehensive framework. It underscores the recruitment of environmentally aware individuals to enhance social, environmental, and economic outcomes, positing that organizations with elevated environmental orientation are more inclined to implement creative green human resource management techniques, hence improving green supply chain management activities. | The study emphasizes the absence of empirical data validating the suggested model and the inclination to analyze performance factors in isolation. It suggests experimentally verifying the framework through quantitative and qualitative techniques, examining its applicability across sectors and countries, and researching additional mediators such as organizational learning to further the understanding of the linkages between GHRM and TBL performance. | (Ali et al., 2020) |
| 28 | The integrated green supply chain and human resource management for sustainability | The research contacted 323 managers of small and medium enterprises in Indonesia, obtaining 291 valid replies for analysis by Partial Least Squares (PLS). Confirmatory Factor Analysis (CFA) was performed to validate the questionnaire and ensure its dependability. Structural Equation Modeling (SEM) was utilized to evaluate hypotheses, measuring effect sizes and error rates for sample adequacy. | The research indicated that GSCM had a favorable effect on environmental, operational, and social performance, although it did not significantly affect economic performance. Green transformational leadership significantly influenced the implementation of GHRM methods. Moreover, the successful application of GSCM promoted green innovation among SMEs. | The research identified discrepancies in the influence of GSCM on social and financial success, as well as an absence of strategic emphasis on green HRM. Future research ought to investigate cultural and socioeconomic determinants, while SMEs should use GHRM within a framework of transformational leadership to bolster green activities. Enhancing Green Supply Chain Management may foster innovation and sustainability. | (Hubais et al., 2022) |
| 29 | Does big data analytics enhance sustainability and financial performance? The case of ASEAN banks | The research utilized a self-administered survey to gather data from 319 participants across 35 banks in six ASEAN nations, investigating the relationship between BDA, GSCM, and sustainable capabilities. Nevertheless, dependence on a singular data source was identified as a constraint. | The research indicated that banks' oversight of client data improves operational efficiency and sustainability. Green innovation strategies enhance environmental and economic outcomes via improved human resources training. Both internal and external GSCM practices have a good effect on the environment and the bottom line, showing that efforts to be more | The study identified deficiencies in the literature about the application of big data analytics for sustainability in banking, with the majority of research concentrated on manufacturing. Subsequent research ought to employ mixed methodologies, broaden the sample across ASEAN nations, and incorporate qualitative interviews to enhance comprehension of the interplay among big data, green supply chain management, and green | (Faster & Growth, 2013) |

			sustainable can lead to financial success.	human resource management in banking institutions.
30	To explore the relation between green human resource management (GHRM) and the green supply chain (GSCM): Empirical evidence from industrial companies in Dhofar reign, Oman	The research adopts a positivist approach, employing an explanatory design to evaluate hypotheses on the relationships between GHRM and GSCM. Data was gathered via a survey of 305 employees from industrial firms in Dhofar, Oman, encompassing 29 items across many variables. Statistical analysis utilized Partial Least Squares (PLS) to evaluate the hypotheses.	The research revealed that many GHRM practices substantially affect GSCM, with green recruitment, green training, green performance appraisal, and green encouragement all exerting a favorable influence on GSCM.	The study identified a research deficiency in the integration of GHRM and GSCM, especially in Oman, characterized by a scarcity of empirical investigations. It advocates for the adoption of GHRM techniques, such as green training, to improve GSCM efficacy and to equip employees with environmentally sustainable abilities. Additional research is required across diverse businesses and environments.

(Ministry of Health & Family Welfare, Government of India, 2018)

4. Analysis

4.1 The Role of Green HRM in Advancing SDGs in India

Green Human Resource Management (GHRM) incorporates ideas of environmental and social sustainability into human resource practices, hence enhancing essential success factors for efficient Green Supply Chain Management (GSCM). In India, GHRM helps to achieve a number of Sustainable Development Goals (SDGs), especially those that have to do with decent work and economic growth (SDG 8), responsible consumption and production (SDG 12), gender equality (SDG 5), and good health and well-being (SDG 3). By promoting a culture of sustainability through focused green training, ecologically friendly hiring, and performance evaluation methods, GHRM instills sustainable ideals into the way the organization works and how employees act. Nonetheless, despite its increasing significance, the efficacy of GHRM in promoting SDG attainment in India has not been adequately scrutinized, particularly concerning the impact of specific HR initiatives such as green training, reward systems, or performance management. This research gap corresponds with the Resource-Based View (RBV), which asserts that strategically cultivated human resources represent a distinctive and irreplaceable asset that can yield competitive advantage and enduring sustainability. Consequently, there exists a pressing necessity for empirical studies that specifically assess the impact of certain GHRM practices on the achievement of SDGs within the Indian industrial framework. Table 2 shows a summary of earlier research that is related to this topic.

Table 2. GHRM and Sustainability Development

Sr. No.	Title	Methodolgy	Findings	Gaps and Recommendations	Ref.
1	Green human resource management and work engagement: Linking HRM performance attributions	This research employed a cross-sectional exploratory strategy to evaluate the influence of GHRM on employee outcomes within the manufacturing sector. Cluster and purposive sampling focused on HR managers and employees within the industrial areas of Haryana, Delhi, and Rajasthan. A systematic questionnaire was used to obtain data from 362 respondents between January and June 2023. SEM examined the interrelations of GHRM, management support, HRM performance attributions, and work engagement.	The research indicated that GHRM practices improve work engagement, with management support and HRM performance attributions serving as mediators.	The study underscores constraints in generalizability owing to its emphasis on manufacturing and the cross-sectional methodology, which limits causal inferences. Future study should utilize longitudinal methodologies and encompass a variety of sectors and cultural situations to yield more comprehensive insights. It is advisable to investigate supplementary mediators, including organizational culture and regulatory influences, to enhance the comprehension of GHRM's effects on employee outcomes across various industries.	(Kaur et al., 2024)
2	Green human resource management, personal moral norms and green employee creativity: evidence from Indian eco-tourist hotels and resorts	The research employed a quantitative, cross-sectional, multi-level methodology to investigate the influence of GHRM on green employee creativity, mediated by personal moral norms. We got information from 46 HR managers and 315 employees in India's hotel business over 11 weeks (Feb–Apr 2023). Mplus 8.6's Multi-level SEM (MSEM) looked at effects within and between groups, making sure the results were statistically strong by using Monte Carlo methods.	The research indicated that Green Human Resource Management (GHRM) positively affects green employee innovation, with personal moral norms serving as a partial mediator. It highlighted the significance of GHRM in promoting creativity, particularly inside eco-tourist hotels and resorts.	The study found a gap in assessing GHRM as a single construct, which means that future research should use a multi-dimensional method. Its emphasis on eco-tourist hotels may further restrict generalizability. Recommendations encompass examining the larger aspects of GHRM, incorporating elements such as green psychological climate and work engagement, and promoting eco-tourist establishments to adopt creativity-driven initiatives and environmentally friendly regulations to improve sustainability.	(Pooja & Bhavan i, 2025)
3	Bibliometric analysis of research trends in Green Human Resource Management and sustainable development	The research employed a systematic review utilizing the PRISMA methodology to ensure transparency and reproducibility. A search on Scopus found 147 documents, however only 68 were used for bibliometric analysis. Descriptive and network analysis scrutinized the research landscape of GHRM and sustainable development.	The research indicates that GHRM and sustainable development studies are predominantly focused in Asia and developing nations, with a notable increase in publications since 2020. Central themes encompass sustainable organizational performance and the management of supply	The study pointed out that GHRM definitions are not clear, there isn't enough research from industrialized nations, and there is only one database. It suggested creating frameworks for long-term performance, looking into the function of CSR, giving policy incentives for GHRM adoption, and doing bibliometric studies every so often to keep an eye on research growth.	(Mahmood & Ahmed , 2025)

			chains. The text underscores the absence of a universally accepted definition of GHRM, indicating that earlier studies associated it with environmental management, whereas more recent research interprets it as a strategy to improve organizational performance.	
4	Greening sustainability! unraveling the nexus of green human resource management practices, green dynamic capabilities, and employee engagement in the presence of innovative climate	The study used a post-positivism approach, recognizing the complexity of social phenomena and employing multiple methods. A two-stage sampling method was used to collect data via an online survey from 374 respondents across various management tiers in telecom organizations in Pakistan.	The study found a positive link between GHRM practices and sustainability in telecom organizations, with green dynamic capabilities and employee engagement mediating the relationship. However, the innovative climate did not significantly moderate the impact of GHRM practices on sustainability.	The study fills gaps in GHRM research in Pakistan's telecom sector and introduces institutional theory. It recommends enhancing green capabilities and employee engagement for better sustainability, while adopting sustainable policies to support SDGs and improve competitiveness. (Upadhyay & Sehgal, 2024)
5	EXAMINING RELATIONSHIP BETWEEN GREEN HUMAN RESOURCE MANAGEMENT PRACTICES, GREEN PERFORMANCE, AND ORGANIZATIONAL CITIZENSHIP BEHAVIOR AT TOUR OPERATORS	The study employed a mixed technique, commencing with a survey of 276 tour operator employees to evaluate hypotheses, subsequently followed by qualitative research on particular situations. We used PLS-SEM to test our hypotheses, and AVE, CR, and Cronbach's alpha coefficients made sure that the results were reliable and valid. We got data from hotel workers in Phuket, Thailand, who had worked in the tourism industry for at least a year.	The research indicated that GHRM practices substantially influence green performance and OCBE, highlighting the importance of training programs in improving environmental awareness. It was observed that management's dedication to environmental policies positively impacts employees' eco-friendly actions.	The paper identifies a research gap regarding the influence of GHRM on OCBE and environmental performance in tourism, highlighting the absence of comprehensive green activity frameworks. To create a culture that cares about the environment, GHRM should reward employees for their environmental work, give them training on how to be more environmentally aware, and push management to be more sustainable. (Duah et al., 2025)
6	Green human resource management and organizational efficiency among local assemblies: role of process	The research project employed a quantitative framework utilizing structural equation modeling (SEM) to examine data gathered from 227 employees across 20 MMDAs in the Ashanti region of Ghana, obtained via questionnaires.	The research revealed that GHRM indirectly influences organizational efficiency via process innovation, with knowledge sharing mitigating the	It was pointed out that there isn't enough research on how knowledge sharing and process innovation work in public institutions, especially in Ghana. It proposed using GHRM methods to make things more efficient and said that more research should be

	innovation and knowledge sharing		connection between process innovation and efficiency in the MMDAs.	done on cross-country studies, other types of innovation, and other things that affect GHRM's effect on efficiency.	
7	Artificial intelligence and green human resource management: Navigating the challenges	AI integration in Green Human Resource Management is examined qualitatively in this paper. It addresses adoption issues, links AI with sustainability goals, and emphasizes AI's strategic role in improving company environmental practices.	The study shows that AI makes things more sustainable by cutting down on waste and automating HR tasks to encourage people to act in ways that are good for the environment. More and more businesses are using green technology, but problems like a lack of AI knowledge make it hard to put them into practice.	The survey finds that AI adoption for GHRM is not happening as quickly as it could be because people don't grasp what AI can do, they don't know how it will affect their finances, and they aren't paying enough attention to employee attitudes and societal values. To solve these problems, it suggests making stakeholders more aware of AI, training IT and HR staff, and adding human factors to GHRM to help reach sustainability goals.	(Mahmood & Nasir, 2023)
8	Impact of green human resource management practises on sustainable performance: serial mediation of green intellectual capital and green behaviour	The research employed a quantitative methodology utilizing simple random sampling to gather data from 320 HR representatives and senior management within Pakistan's hospitality industry. A self-administered 5-point Likert scale questionnaire concentrated on GHRMP, GIC, and GB. We utilized SEM and confirmatory factor analysis to look at how the constructs were related to each other.	The research revealed that GIC and GB serve as intermediaries in the connection between GHRMP and sustainable performance, indicating that environmentally friendly practices enhance sustainability within the hotel industry. Out of 16 hypotheses, 12 were validated, however four pertaining to green training programs were not. The results indicate that GHRMP has a beneficial impact on sustainability, however green hiring does not directly effect sustainability components.	The study emphasizes deficiencies in comprehending the influence of GIC and GB on sustainability in developing nations and advocates for the prioritization of effective GHRMP initiatives, the investigation of moderating factors, and the encouragement of environmentally friendly behavior to elevate environmental performance and boost the sector's reputation.	(Islam et al., 2020)
9	Exploring challenges and solutions in applying green human resource management practices for the sustainable workplace in the ready-made garment	The study employed qualitative methodologies, including semi-structured interviews with 12 managers from diverse departments within RMG companies in Dhaka, Bangladesh. Thematic analysis was used to manually evaluate the data, and participants were chosen by convenience	The study revealed problems in implementing GHRM, such as insufficient employee understanding, absence of legislation, limited managerial motivation, high implementation costs, and high	The study acknowledged constraints stemming from the limited sample size and recommended subsequent research with larger, more diverse populations and quantitative methodologies. It also asked the government and businesses to work together to solve problems and encourage long-term habits.	(Liu & Zhang, 2022)

	industry in Bangladesh	sampling. All of them had at least five years of experience in the field as a manager.	turnover. Some of the suggested remedies were stricter rules, better training, university courses on GHRM, and cash rewards to encourage GHRM practices.	
10	Linking environmental management accounting to green organisational behaviour: The mediating role of green human resource management	The research employed a covariance-based structural equation model to examine data from 383 questionnaires filled out by HR and accounting managers within the Chinese hospitality sector.	The research identified a substantial favorable impact of EMA on green HRM, demonstrating robust correlations for both monetary and physical EMA. Green HRM acted as a middleman between EMA and green organizational behavior (OB), and the mediation effects were statistically significant. This study provides additional empirical evidence regarding the relationship between EMA and green organizational behavior via green human resource management.	The study revealed deficiencies, including a small sample size and a narrow emphasis on hotel managers in China, which impacted the generalizability of the results. It suggested that future research should encompass a wider range of industries, geographical regions, and additional mediating variables such as leadership styles and workplace climate. (Aust et al., 2024)
11	Achieving sustainable development goals through common-good HRM: Context, approach and practice	The research effort promotes the utilization of several empirical methodologies to investigate Common-Good Human Resource Management (CGHRM) in the context of Sustainable Development Goals (SDGs). It offers methodologies like participatory action research, ethnographic studies, and in-depth case studies with grounded theory, advocating an open-minded, inductive approach that analyzes indigenous behaviors separate from Western norms.	The study emphasizes the growing focus on firms' performance in relation to SDGs and the increasing research on sustainable HRM. It indicates that firms can either facilitate or obstruct sustainability through their HRM practices.	The research advocates for the incorporation of common good theory into expansive frameworks and the execution of cross-national comparisons to enhance the comprehension of HRM's influence on SDGs. It suggests questioning current sustainability measures, teaching workers how to be more sustainable, and encouraging cooperation among all parties involved to reach the SDGs. (Bilder back, 2024)
12	Integrating training for organizational sustainability: the application of Sustainable Development Goals globally	The study employed a systematic review to evaluate 36 pertinent papers on organizational sustainability and the Sustainable Development Goals (SDGs), sourced from sources such as Scopus and	The results show that firms that combine sustainability training with the SDGs gain by improving their sustainability practices, employee	The report recommends that firms incorporate SDGs into training, performance evaluations, and incentives, emphasizing quantifiable objectives and frequent assessments to guarantee the successful execution of (Alnajdi, 2024)

		Google Scholar, and integrated United Nations data to substantiate the conclusions.	satisfaction, and reputation, while also having less of an impact on the environment. To be competitive and adaptable, you need to do regular reviews and set long-term goals.	sustainable programs. It also points out that there aren't many real-world examples of problems that come up during implementation.	
13	The Impact of GHRM Practices on Sustainable Development Goals	The research employed a quantitative methodology to analyze the influence of GHRM on Sustainable Development Goals within the Al Manaseer Group in Jordan. A questionnaire was used to collect data, and 302 people answered it (81.6% of the time). We used SmartPLS 4 to do PLS-SEM analysis to test the hypotheses and check the model's validity and reliability.	The study shows that GHRM practices have a big impact on how people treat the environment. Green Training & Development (T&D), Performance Appraisal (PA), and Compensation & Rewards (C&R) had a beneficial effect on community practices. However, Green Recruitment & Selection (R&S) did not show a significant benefit. The hypothesis concerning the influence of GHRM on environmental and community practices were validated, demonstrating differing degrees of significance.	The study found that there isn't enough research on how GHRM practices relate to Sustainable Development Goals, especially in underdeveloped countries like Jordan. It suggested incorporating community objectives into recruitment procedures and doing additional study on the extensive effects of GHRM on sustainability across various businesses and environments.	(Sarkar et al., 2023)
14	Role of Environmental, Social, and Governance in achieving the UN Sustainable Development Goals: A special focus on India	The research employs a review methodology to analyze ESG issues in the attainment of SDGs in India. It looks at literature, business practices, and sustainability reports while also looking at ESG disclosures from 50 firms in 12 different industries to see how they affect sustainable development.	The study reveals that integrating ESG into business practices makes it easier to reach the SDGs, be more competitive, and get more people involved. Good corporate governance makes sustainability reporting better, but there is still a gap between ESG policy disclosure and actual implementation in India.	The analysis shows that there is a gap in linking ESG activities to specific SDGs and not enough research on how ESG disclosures affect sustainability. It suggests that companies should work more to involve stakeholders, improve corporate governance to better line with the SDGs, and create strong ESG reporting systems that connect business activities directly to SDG goals.	(Pramo et al., 2023)
15	Sustainability Management Accounting in Achieving	The research used a quantitative methodology, gathering survey data from 325 participants within Indonesia's industrial	The research identifies a robust positive correlation among SMA, EMS, and OP,	The study highlights deficiencies, notably its concentration on Indonesia's publicly listed manufacturing sector, the	(Guerra et al., 2022)

	Sustainable Development Goals: The Role of Performance Auditing in the Manufacturing Sector	sector. It uses covariance-based SEM (CB-SEM) for analysis and confirmatory factor analysis (CFA) to look at correlations and reduce measurement error.	with EMS serving as a pivotal intermediary in enhancing OP via the use of SMA in manufacturing.	possibility of response bias, and the insufficient examination of obstacles to EMS and SMA implementation. It suggests that more research be done on problems with sustainability, supply chain integration, and the role of government policies in encouraging sustainability in developing nations like Indonesia.	
16	Sustainable development goals and ethics: building "the future we want"	The research employed a qualitative methodology featuring an integrative literature review on sustainable development and ethics. It used certain keywords to search databases including Science Direct, Web of Science, and Scopus. It also used inclusion and exclusion criteria and looked at UN publications for more information.	The research underscores the necessity of harmonizing economic, social, and environmental dimensions for sustainable growth. It shows how important it is for stakeholders like the Church, the government, and schools to work together to solve problems. Ethical agendas exhibit similarities throughout writings; nonetheless, additional research is necessary for a more profound comprehension.	The study identifies a deficiency in research about the ethical implications of sustainable development, "Laudato Si'," and the Gaia theory. It proposes interdisciplinary ethical collaboration and empirical research to evaluate theoretical concepts in addressing sustainability challenges at both local and global levels.	(Liu et al., 2022)
17	Catalytic Effect of Green Human Resource Practices on Sustainable Development Goals: Can Individual Values Moderate an Empirical Validation in a Developing Economy?	The study adhered to a positivist research philosophy, employing a quantitative methodology with a logical framework to evaluate hypotheses. We sent out survey questionnaires to 465 textile companies in Pakistan, and 42.3% of them (197 usable surveys) answered. We used PLS-SEM to look at the data and see if the instrument was valid and reliable.	The research shown that GHRM practices positively affect employees' environmental attitudes, ethical labor practices, and sustainable consumption and production behaviors. Employee green attitudes somewhat mediate the relationship between GHRM and decent employment, whereas both employee green attitudes and skills fully mediate the connection between GHRM and sustainable consumption and production behavior.	The study's emphasis on Pakistan's high-tech industry constrains its generalizability. Subsequent study ought to investigate specific GHRM practices, validate the model across many contexts, perform longitudinal studies, incorporate more SDGs, and analyze factors such as green climate and culture.	(Camp os-García et al., 2024)

18	Human resource management and sustainability: Bridging the 2030 agenda	The research employed bibliometric analysis and a systematic literature review to investigate HRM and sustainability studies from 1996 to 2023. It used VOSviewer and SciMat to look at 556 relevant publications and find important patterns and areas for future research.	The survey indicated that since the 2030 Agenda came out in 2015, there has been more research on HRM and sustainability. It stresses how important HRM is for the economy, society, the environment, and the growth of human capital. Research should be done on mental health (SDG 3), gender equality (SDG 5), and climate action (SDGs 12 and 13).	The literature on sustainable HRM is disjointed, with conceptual inconsistencies hindering its clarity and implementation. To tackle this issue, the report suggests improving sustainable HRM principles, creating a targeted research agenda for less-studied SDG areas, and taking a comprehensive strategy to make sure that HRM practices are in line with sustainability.	(Duarte et al., 2023)
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GHRM encompasses a range of HR practices designed to cultivate a workforce actively engaged in and committed to environmental sustainability. This goes beyond simply incorporating "green" initiatives; it necessitates a fundamental shift in organizational culture and employee mindsets. Several key areas underpin successful GHRM implementation.

4.1.1 Employee Engagement in Sustainability Initiatives

Employee engagement is essential for efficient Green Human Resource Management. Engaging employees in sustainability activities improves program efficacy by cultivating ownership and accountability, hence increasing dedication to environmentally friendly behaviors. Effective communication, constructive comments, acknowledgment, and inclusive initiatives are vital. These strategies ensure transparency, trust, and shared responsibility. Programs should consider diverse workforce needs, spreading knowledge on sustainability issues and benefits to ensure informed and effective contributions. This participatory approach maximizes participation across all organizational levels (Barakat et al., 2023; Alshammrei, S. et al., 2023; Das & Dash, 2023).

4.1.2 Green Performance Management: Integrating Environmental Considerations

Incorporating environmental considerations into performance management is essential for effective GHRM, necessitating a fundamental reorientation of organizational goals and evaluation criteria rather than merely supplementing existing metrics. This process must ensure fairness, transparency, and alignment with organizational objectives (Tang et al., 2018; Abiwu & Nunoo, 2021). Key steps include setting clear environmental targets, developing measurable indicators linked to sustainability goals, and embedding these into appraisals to incentivize eco-conscious behaviors (Sabah et al., 2024). Effective systems incorporate feedback mechanisms, recognize contributions, and reward sustainable practices (Mezeh, 2023). Regular reviews ensure relevance and effectiveness in driving environmental improvements, while connecting individual actions to broader organizational sustainability outcomes.

4.1.3 Green Recruitment and Selection: Attracting Environmentally Conscious Individuals

Green recruitment and selection are pivotal in shaping an organization's environmental ethos by attracting environmentally conscious individuals. This involves incorporating environmental awareness and values into selection criteria, beyond technical skills and experience. Candidates are screened based on their commitment to sustainability and alignment with the organization's green goals (Abiwu & Nunoo, 2021; Das & Dash, 2023). Effective strategies include highlighting green initiatives in job postings, targeted advertising, and environmental-related interview questions. Background checks or assessment tools can ensure alignment with the organization's sustainability vision, fostering a workforce that actively supports sustainability objectives.

4.1.4 Green Training and Development: Enhancing Employees' Competencies for Sustainable Practices

Effective green practices require a skilled workforce. Comprehensive training programs are essential, providing practical skills and knowledge beyond basic awareness. The curriculum should encompass environmental regulations, sustainable practices, and targeted green initiatives, with content tailored to the specific responsibilities and roles within the organization. Regular updates and refresher courses are crucial to keep employees informed about the latest sustainability developments and best practices (Fredershausen et al., 2022). Training should be interactive and engaging, with regular evaluations to ensure effectiveness in improving environmental performance.

4.1.5 The Role of Green SCM in Advancing SDGs in India

Green Supply Chain Management (GSCM) has demonstrated a beneficial impact on financial performance by enhancing return on assets and equity via the use of environmental management systems. In the Indian context, GSCM facilitates the attainment of Sustainable Development Goals (SDGs) 12 and 13 by promoting responsible consumption and reducing greenhouse gas emissions. Fundamental tactics, like the implementation of cleaner energy sources and waste minimization activities, are essential to these endeavors. However, difficulties such as insufficient inventory management can hinder the proper execution of GSCM processes. The shift to a circular economy is crucial for achieving these goals. Further research is warranted to examine the contextual factors influencing GSCM adoption across various Indian industries, ensuring that sustainable practices are effectively integrated with economic growth and environmental stewardship. This approach is consistent with broader sustainability imperatives. Summaries of relevant prior literature are presented in Table 3.

Table 3. GSCM and Sustainability Development

Sr. No.	Title	Methodology	Findings	Gaps and Recommendations	Ref.
1	Green Supply Chain Practices: Toward A Sustainable Industry Development	The research employed Scopus and Web of Science to examine pertinent material. To identify more relevant materials, we performed targeted keyword searches and snowballing. The major topics of the evaluation were green supply chain methods and how they may help the industry grow in a way that is good for the environment, especially when it comes to the SDG 9 targets.	The study showed that there is a strong correlation between green supply chain practices and reaching SDG 9. This shows how important they are for encouraging innovation and sustainable industrialization. It also stressed how important it is to build infrastructure to meet several SDGs, especially those that have to do with creating jobs and making sure people can live sustainably.	The study identified a deficiency in connecting green supply chain strategies to SDG 9 and advocates for additional research on their effects. It suggests that companies use green technologies, make their operations more energy-efficient, and follow the rules while thinking about how their actions affect people. More research should make the link between these practices and SDG 9 stronger.	(Rashid et al., 2024)
2	Achieving sustainability through multifaceted green functions in manufacturing	The study utilized a deductive, quantitative methodology inside a positivist research framework, gathering data from 293 supply chain professionals in manufacturing companies. A causal study approach was employed to evaluate hypotheses and examine the correlations among variables. Because there was no sampling frame, purposive sampling was used to choose individuals based on traits that were important.	The research validated all six direct hypotheses, demonstrating a beneficial effect of green supply chain policies on essential variables. Nonetheless, one of the four mediation hypotheses lacked support. A sequential mediation effect was discovered between green supply chain environmental cooperation and green human resource management, highlighting their interrelated function in sustainability.	The study identified a research deficiency in the incorporation of sustainability variables, specifically GHRM, inside Pakistan's manufacturing sector. It suggests broadening the framework to include additional variables, larger samples, and cross-sectoral analysis. Future research should investigate its applicability in both developing and established economies for enhanced understanding.	(Jum'a, 2023)
3	The impact of green supply chain management practices on sustainable development goals: The case of mining sector in Jordan	The research gathered primary data from managerial personnel at Jordanian mining companies through an online survey. Convenience sampling was utilized, resulting in 362 answers from June to September 2021. The data were statistically examined by Partial Least Squares Structural	The results indicated that all Green Supply Chain Management (GSCM) activities, with the exception of green purchasing and investment recovery, had a beneficial effect on community and environmental behaviors. Eco-design was the most important GSCM activity for both, while green purchasing had a smaller effect.	The study identified drawbacks such as non-probability sampling and its concentration on the Jordanian mining sector, recommending more extensive research across other contexts. The absence of moderator or mediator variables was also highlighted, with a recommendation to employ probability sampling, investigate other Sustainable Development Goals (SDGs),	(Wang & Ge, 2022)

		Equation Modeling (PLS-SEM).		and incorporate behavioral aspects to enhance the adoption of Green Supply Chain Management (GSCM).	
4	Development of a Sustainable Collaborative Management Strategy for Green Supply Chains in E-Business: Collaborative Management Strategy of Green Supply Chain Considering Sustainable Development	The research employs a conceptual framework to formulate a collaborative management strategy (CMS) that includes foreign and domestic e-businesses, government entities, customers, and suppliers, with the objective of enhancing environmental performance and advancing Sustainable Development Goals (SDGs) in developing nations. It uses deep learning algorithms to digitize and automate Green Supply Chain Management (GSCM) procedures, which is necessary to reach sustainability targets.	The research revealed that supplier greening enhances environmental performance via supply chain integration, with collaborative solutions being crucial to company performance. GSCM practices improve a company's performance, and getting back money from investments is a middleman between green actions and business results.	The study shows that there isn't enough information on how well green innovation works in supply chains, especially in wealthy countries. It also shows that more research is needed on how to work together in poor countries. It advises e-businesses to concentrate on GSCM principles, engage in collaboration with small enterprises, and pursue governmental assistance for sustainability initiatives. It is also proposed that further research be done on collaborations between international and local businesses that are good for the environment in the long term.	(Raman et al., 2023)
5	Green Supply Chain Management Research Trends and Linkages to UN Sustainable Development Goals	The research employed bibliometric analysis and science mapping methodologies to investigate the correlation between Green Supply Chain Management (GSCM) and the United Nations Sustainable Development Goals (SDGs). Network analysis pinpointed essential research domains, whereas co-citation and co-word analysis illustrated interconnections among disciplines. We looked at 7,009 publications from 2013 to 2022 to see how well they fit with the 17 SDGs.	There are three primary ideas in Green Supply Chain Management (GSCM): Industry 4.0 and Sustainable Supply Chains, GSCM Coordination, and Managing Sustainable Environmental Policy. SDGs 9, 12, and 17 were the ones that were most often mapped. It demonstrated a tendency toward making supply chains more environmentally friendly and using technology, such as AI and digital transformation.	The study acknowledged limitations, including the exclusion of grey literature and a concentration solely on publications post-2013. It suggests that future study should focus on experimental evaluations of GSCM's influence on SDGs, the investigation of closed-loop supply networks, and the fortification of supply chain resilience to tackle geopolitical and climate change issues for sustainable sourcing.	(Jan et al., 2024)
6	Can blockchain technologies enhance environmental sustainable	The research introduces an innovative framework comprising five first-order and 15 second-order	The research revealed that Blockchain Technology (BCT) has the potential to revolutionize supply chain	The study shows that there are problems with adopting Blockchain Technology (BCT) to make manufacturing more	(Singh et al., 2023)

	development goals performance in manufacturing firms? Potential mediation of green supply chain management practices	antecedents for the adoption of blockchain technology (BCT) in manufacturing enterprises. This architecture provides a foundation for subsequent research aimed at creating innovative data collecting scales for BCT. It intends to employ content analysis methodologies to collect data, with the objective of statistically validating the model and developing a scale that connects BCT to environmental SDGs, facilitated by Green Supply Chain Management Practices (GSCMPs).	management by fostering environmentally sustainable behaviors through transparent data exchange, hence advancing environmental Sustainable Development Goals (SDGs). It emphasized the intermediary function of Green Supply Chain Management Practices (GSCMPs) in improving sustainability results within industrial enterprises.	sustainable and that there aren't any frameworks that combine BCT with Green Supply Chain Management Practices (GSCMPs). It suggests testing the proposed framework, promoting the use of BCT in manufacturing, and coming up with new ways to quantify its effect on sustainability.	
7	Post-COVID green supply chain management of used products: a study towards awareness for vaccination	The research utilized an online survey to gather data on the most reliable communication channels concerning COVID-19 vaccination among various age demographics in India. The poll, which was meant to take roughly five minutes, had a questionnaire that asked about societal factors and family views for three age groups: 60 and older, 44 to 60, and under 44. Statistical analysis was undertaken using SPSS, utilizing descriptive statistics, chi-square tests, and ANOVA to examine the data.	The research revealed that younger demographics favored digital channels for COVID-19 vaccine information, but older demographics exhibited greater trust in local health clinics. About 59% of the people who took part preferred digital communication. This shows how well it works to cut down on plastic and paper waste, which helps with green supply chain management. People over 60 were more likely to trust local health centers, with 13.36% of this group saying they did.	The study found that there were gaps in clear directions and knowledge about how to utilize media resources in a way that is good for the environment, which could cause problems in the future. It suggests creating a green supply chain structure to better manage the waste from awareness materials. It also stresses the importance of strategic planning and collaboration across sectors to promote vaccination programs. It is also proposed that improving digital communication techniques can help build public trust and help reach the Sustainable Development Goals (SDGs).	(Ilyas et al., 2020)
8	Unleashing the role of top management and government support in green supply chain management and sustainable development goals	The research employed structural equation modeling (SEM) to evaluate a suggested model utilizing cross-sectional data from 313 Pakistani SMEs, specifically targeting manufacturing companies in Islamabad and Rawalpindi with 20 to 250 employees. To make sure the data was accurate, we	The research indicated that TMS has a substantial effect on GSCM, which partially mediates its influence on environmental and community-oriented SDGs. It was also discovered that government backing made the link between TMS and GSCM stronger.	The study found that there wasn't much written about how small and medium-sized businesses (SMEs) in emerging countries, especially Pakistan, are committed to the Sustainable Development Goals (SDGs). It focused on specific industries (steel, marble, and furniture), which made it harder to generalize. It suggested that small and medium-sized businesses	(Centobelli et al., 2020)

		tested for common method bias (CMB) using the Harmon One-factor test and the common latent factor technique. We found that CMB was not a big problem.	(SMEs) should actively participate in green supply chain practices and the Sustainable Development Goals (SDGs), with assistance from the government to make this easier. Subsequent research ought to investigate sustainable practices in more sectors and employ longitudinal data for enhanced understanding.	
9	Pursuing supply chain sustainable development goals through the adoption of green practices and enabling technologies: A cross-country analysis of LSPs	The research included a thorough evaluation and content analysis of logistics service providers' (LSPs) websites, environmental reports, and industry publications to collect data on sustainable practices and technology. The research examined 1,275 logistics service providers (LSPs) from Germany, Italy, and the UK through a six-step methodology, encompassing content analysis, NVivo software utilization, and interviews, to evaluate their environmentally friendly practices and sustainability initiatives.	The research revealed differing degrees of commitment to environmentally friendly technology and practices across logistics service providers (LSPs) in Germany, Italy, and the UK, with certain LSPs demonstrating greater adherence to sustainability. It also showed that there are cheap and scalable options that can help businesses cut down on emissions and reach their climate action goals.	The research revealed a deficiency in the alignment of green initiatives between logistics service providers (LSPs) and their clients, as well as an absence of a comprehensive taxonomy for the implementation of green practices. It suggests more research on how to improve this alignment, how sustainability initiatives affect LSP performance, and how to use circular economy principles to help reach sustainable development goals. (Bashar et al., 2023)
10	Adoption of green supply chain management in developing countries: role of consumer cooperation, eco-design, and green marketing	The research employed a survey methodology utilizing a questionnaire to gather data from 250 employees in small and medium-sized firms as well as multinational manufacturing sectors in Bangladesh. We used Smart PLS and PLS-SEM to look at measurement and structural models in the data analysis.	The research indicated that consumer collaboration, eco-design, and green marketing exert a beneficial influence on innovation, which serves as a mediator in the link between these elements and the implementation of GSCM. Adopting GSCM methods has been proved to boost the performance of organizations and have positive effects on the economy, society, and the environment.	The research revealed constraints, such as a common technique bias and a limited sample size, which influenced the generalizability of the results. It suggested that subsequent research should include various managers from each firm and employ objective metrics for GSCM. It was also proposed that looking at other performance areas, such economic and operational performance, and doing long-term research would help people understand GSCM and green innovation better. (Chaker & Damak, 2024)
11	Greening industry 4.0: The synergy between sustainable supply	The research used a holistic methodology, incorporating literature	The research indicates that Industry 4.0 technology can augment sustainable	The report points out that there are gaps in how to deal with the real-world problems of using (Lerman et al., 2023)

	chains and smart manufacturing	reviews, case studies, and theoretical frameworks, to investigate the correlation between Industry 4.0 and Green Supply Chain Management (GSCM).	practices, enhancing environmental efficiency and minimizing waste. When combined with GSCM, these technologies can encourage responsible sourcing and make the supply chain more robust and ecologically friendly.	Industry 4.0 technology and that there isn't enough practical data to back up theoretical frameworks. It suggests that companies combine these technologies with their attempts to be more environmentally friendly, look into how they could be used in other fields, and come up with plans that balance the use of new technology with their overall aims for sustainability.	
12	Smart green supply chain management: a configurational approach for reaching sustainable performance goals and decreasing COVID-19 impact	The research employs a configurational methodology to investigate Smart Green Supply Chain Management (Smart GSCM) and its influence on environmental performance. It uses regression techniques to look at data from 473 manufacturing organizations to see how digital transformation, GSCM, and green performance are related.	The research indicates that effective supply chain procedures enhance environmental performance by overseeing both external (green relationships) and internal (green operations) GSCM activities. It shows that both have some mediating impacts, which means that digital transformation alone isn't enough to improve green performance without a good GSCM setup to help.	The study points out gaps, include the need for multi-tier supplier data, long-term research, and a comparison of GSCM methods between developed and developing countries. It suggests looking at digital technologies for working with suppliers, looking at how markets are different, and getting more people involved in future studies to learn more about how GSCM works.	(Le, 2023)
13	The association of corporate social responsibility and sustainable consumption and production patterns: The mediating role of green supply chain management	The research utilized a quantitative methodology, employing a questionnaire-based survey to gather data from managers in designated firms. We used SmartPLS (version 3.3.2) to look at 466 valid replies and see if the relationships between the variables were as we thought they would be.	The research indicated that both internal and external CSR have a beneficial impact on GSCM and SCPP. GSCM also improves SCPP, which shows how important CSR is for making supply chain operations more sustainable. This study offers empirical evidence about the relationships among CSR, GSCM, and SCPP.	The research recommends the use of qualitative methodologies for enhanced understanding and the examination of several markets and organizational scales to assess the differential benefits of CSR and GSCM. It suggests that corporations support SCPPs, align with SDGs, and compare policies amongst economies to learn more about what affects sustainability.	(Nguyen et al., 2023)
14	Moderating role of green knowledge sharing and employee green behavior among the relationship of green supply chain management, green entrepreneurship, and sustainable development goal: evidence from Vietnam textile sector	The study employed a quantitative research approach utilizing survey questionnaires to examine causal links. It was aimed at managers of textile companies in Vietnam and had 384 respondents. Data collection using a systematic survey methodology within a cross-sectional design.	The research revealed that GSCM and green entrepreneurship favorably impact environmental sustainability, with green information exchange and employee green behavior serving as significant moderators that enhance these connections.	The study emphasizes its limits by concentrating on merely five facets of GSCM and being confined to Vietnam, which may not accurately represent industrialized economies. It suggests that textile firms spend money on green education and that the government encourage recycling by giving people money. Subsequent studies	(Taghavi et al., 2021)

				should investigate supplementary GSCM components and analyze advanced economies for comparative insights.	
15	Identifying and prioritizing the effective factors in the implementation of green supply chain management in the construction industry	The research employs a comprehensive methodology that integrates FDEMATEL and FANP techniques to discern and rank aspects essential for the implementation of GSCM within the construction sector. FDEMATEL shows how criteria are related to each other, and FANP finds the local weights of these criteria based on cause-and-effect correlations.	The research identifies external elements, such as awareness and culture of GSCM, stakeholder pressure, supplier collaboration, eco-friendly design, and governmental influences, as the most critical in shaping the GSCM strategy.	The study delineates deficiencies, notably the absence of research about GSCM implementation within Iran's construction sector, the intricacy of GSCM standards in emerging nations, and constraints in extrapolating findings beyond the Iranian framework. It suggests that future study should examine the Best-Worst Method (BWM) for criterion weighting, utilize alternative MCDM approaches for comparative analysis, and undertake more extensive investigations that account for a wider array of factors affecting GSCM across various contexts.	(Gelagay & Werke, 2024)

Green Supply Chain Management (GSCM) integrates environmental factors at every phase of the supply chain, including raw material procurement, product distribution, and end-of-life management. GSCM represents a fundamental shift in supply chain management, prioritizing environmental sustainability with economic efficiency rather than merely functioning as an ancillary measure. The primary elements of GSCM comprise:

4.2 Green Procurement: Sourcing Sustainable Materials and Services

Green procurement, vital to GSCM, focuses on sourcing sustainable materials/services across supply chains. It evaluates environmental impacts of materials, manufacturing, and transportation, extending beyond compliance to assess suppliers' energy use, waste, and emissions. Organizations employ life cycle assessments (LCA) to align procurement decisions with sustainability goals (Infosys BPM, 2026). Collaboration with suppliers drives adoption of sustainable practices, while transparency and traceability ensure verifiable environmental claims (Precog, 2022; Neural Concept, 2024; Green.org, 2024).

4.3 Sustainable Production: Minimizing Environmental Impact during Manufacturing

Sustainable production techniques aim to reduce environmental effect through the systematic assessment of energy consumption, water usage, waste generation, and emissions. Essential

initiatives encompass the implementation of cleaner technologies, optimization of processes to minimize waste, and the deployment of energy-efficient equipment. Moreover, the integration of circular economy principles—such as designing products for increased durability and recyclability—contributes to the reduction of environmental impacts. Continuous monitoring of environmental performance indicators is crucial for ensuring improvement, as it enables the attainment of sustainability goals through the establishment of precise metrics and comprehensive monitoring systems, which are routinely evaluated to uncover opportunities for further advancement (Corporate Vision, 2024; Greenly, 2024; United Nations, 2025; Our World in Data, 2023).

4.4 Green Manufacturing and Packaging: Adoption of Environmentally Sustainable Materials and Processes

Green manufacturing and packaging advance sustainability objectives through the utilization of environmentally friendly materials and processes. This involves selecting materials like recycled content, biodegradable materials, or sustainably sourced timber. Optimizing packaging design minimizes material use, reduces weight, and enhances recyclability. Eco-friendly processes reduce water and energy consumption while implementing waste reduction strategies. Transparency and labeling are crucial for communicating environmental benefits to consumers, fostering trust and demand for sustainable products by providing clear information on materials, processes, and recyclability (United Nations Regional Information Centre, 2026; BNZ Green Blog, 2024; European Environment Agency, 2026; Greenly, 2023; Cargill, 2024).

4.5 Green Logistics: Optimizing Transportation for Environmental Efficiency

Green logistics minimizes environmental impact by optimizing transportation and distribution. Strategies include selecting efficient modes, optimizing routes to reduce fuel consumption, and using alternative fuels or technologies to lower emissions. Investing in fuel-efficient vehicles, route optimization software, and consolidating shipments are key. Collaboration with logistics providers encourages sustainable practices. Monitoring transportation emissions provides data for continuous improvement, informing decisions on mode selection, route optimization, and technology adoption to reduce environmental impact (Shahid et al., 2025; Gandhi & Vasudevan, 2020; Setyaningrum & Muafi, 2023).

4.6 The Relationship between Green Practices and the Achievement of Sustainable Development Goals

The adoption of comprehensive green practices makes a direct contribution to the advancement of multiple Sustainable Development Goals (SDGs), thereby underscoring the substantial societal impact of organizational sustainability initiatives. This section examines the specific links between green practices and the most relevant SDGs:

4.7 SDG 8: Decent Work and Economic Growth

Green practices help the economy thrive by creating jobs in fields like renewable energy, green building, and sustainable farming. They also encourage new ideas in sustainable industries. Improvements in resource efficiency and less waste lead to lower costs and more profits, which helps both the environment and the economy. The growth of green jobs not only helps the economy grow, but it also helps society by making working conditions better and promoting social justice. Aligning economic objectives with environmental sustainability bolsters SDG 8 and other pertinent SDGs, underscoring the necessity of integrating both economic and environmental aspects in sustainable development (Shahid et al., 2025; Gandhi & Vasudevan, 2020; Khan et al., 2022; Renwick et al., 2013; Setyaningrum & Muafi, 2023).

4.8 SDG 12: Responsible Consumption and Production

By reducing waste, making better use of resources, and using materials that are good for the environment, green practices help create a circular economy by making consumption and production more sustainable. This method makes things more durable, easier to fix, and easier to recycle, which is good for the environment. Sustainable supply chain techniques make sure that the environment is followed during the whole production process. When businesses be open and honest with customers about the environmental benefits of their products and services, it increases demand for them. This is in line with SDG 12's aims of responsible consumption and production. This all-encompassing strategy helps the environment and makes the future more sustainable. (Shahid et al., 2025; Gandhi & Vasudevan, 2020; Khan et al., 2022; Renwick et al., 2013; Setyaningrum & Muafi, 2023).

4.9 SDG 13: Climate Action

Green practices are vital for climate action by reducing emissions and enhancing energy efficiency. Organizations contribute to global climate efforts by investing in renewable energy, reducing fossil fuel reliance, and adopting efficient technologies. Sustainable transportation practices, such as promoting public transport or cycling, minimize emissions. Carbon offsetting programs compensate for unavoidable emissions. A holistic approach integrating environmental considerations across product lifecycles is essential for meaningful progress towards SDG 13, as emphasized by the need for comprehensive strategies to mitigate climate change effectively (Shahid et al., 2025; Gandhi & Vasudevan, 2020; Khan et al., 2022; Renwick et al., 2013; Setyaningrum & Muafi, 2023).

4.10 Case Studies and Empirical Evidence from India

While the literature review highlights the potential of GHRM and GSCM in achieving SDGs in India, empirical evidence specific to the Indian context is limited. Several studies have explored the adoption of sustainable practices in Indian industries (Madaan et al., 2023), but more research is needed to establish direct causal links between GHRM/GSCM practices and SDG outcomes.

The existing research often focuses on individual SDGs, rather than the interconnectedness of the goals. A comparative analysis of different industries in India, examining the specific GHRM/GSCM practices adopted and their impact on various SDGs, is needed. Quantitative studies using robust methodologies, such as panel data analysis, are crucial to establish causal relationships and assess the effectiveness of different interventions (Yadav & Jain, 2023).

4.11 Research Gaps and Expected Research Methods

Several research gaps need to be addressed:

- Lack of India-specific studies: There is a notable paucity of studies tailored to the Indian context, underscoring the need for further research that addresses the country's distinct socio-economic and environmental challenges.
- Limited empirical evidence: Quantitative studies with robust methodologies are needed to establish causal links between GHRM/GSCM practices and SDG outcomes.
- Interconnectedness of SDGs: Research should explore the interconnectedness of different SDGs and the synergistic impact of GHRM/GSCM practices on achieving multiple goals simultaneously.
- Contextual aspects: Additional study is required to identify and examine the contextual factors affecting the adoption and efficacy of GHRM/GSCM practices across various industries and locations in India.
- Assessing impact: The development of appropriate metrics and procedures for evaluating the influence of GHRM/GSCM activities on SDG outcomes is crucial.
- Policy implications: Research should examine the policy implications of enhancing GHRM and GSCM practices in India to promote the attainment of the SDGs. This entails a critical analysis of the efficacy of existing governmental laws and legislation related to CSR and environmental sustainability.

Future study ought to employ mixed-methods approaches that amalgamate quantitative and qualitative data collecting and analysis to obtain a holistic comprehension of the intricate interconnections among GHRM, GSCM, and the realization of SDGs in India. These studies may encompass case assessments of firms that have successfully adopted GHRM and GSCM processes, concentrating on their tactics, encountered hurdles, and ensuing outcomes.

5. Conclusion

This analysis highlights the crucial importance of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) in promoting sustainable development, especially within the framework of India's changing business and legislative environment. The two approaches are not only complementary but also mutually reinforcing; GHRM cultivates the skills,

beliefs, and behaviors essential for sustainability, whereas GSCM converts these competences into operational and strategic results throughout the supply chain. They directly contribute to the attainment of various Sustainable Development Goals (SDGs), including decent work (SDG 8), responsible consumption and production (SDG 12), climate action (SDG 13), gender equality (SDG 5), and health and well-being (SDG 3).

This review's aggregated research demonstrates that businesses implementing combined GHRM and GSCM strategies are more effectively equipped to cultivate a culture of sustainability, foster green innovation, and enhance both economic and environmental performance. Nonetheless, despite these encouraging results, deficiencies persist in the empirical investigation of how particular interventions—such as green recruiting, training, supplier involvement, and waste reduction—directly affect the achievement of the Sustainable Development Goals (SDGs). This gap underscores the necessity for more sophisticated inquiries that encompass industry-specific dynamics and contextual factors, including institutional frameworks, country culture, and the rate of technology advancement.

Furthermore, the results indicate the essential need for a comprehensive and systematic approach in the implementation of sustainable practices. Independent initiatives are improbable to provide lasting outcomes; rather, firms must synchronize their human resource policies, supply chain tactics, and organizational culture to have significant and persistent influence. Policymakers and business leaders must acknowledge the strategic importance of these practices and cultivate supportive environments through incentives, legislation, and capacity-building efforts.

In conclusion, the combined efforts of GHRM and GSCM constitute a thorough approach via which organizations can significantly advance global sustainability goals. By integrating sustainable practices into their fundamental mission and strategic plans, companies reinforce their competitiveness and resilience and significantly contribute to the creation of a more sustainable, inclusive, and ecologically responsible future.

5.1 Implication and Recommendations

This review's findings indicate that Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) are interrelated and mutually supportive processes that together augment an organization's ability to advance the Sustainable Development Goals (SDGs). Their integration fosters a sustainability-focused workplace culture, promotes green innovation, and guarantees strategic alignment between business goals and global sustainability initiatives. The effectiveness of this integration is contingent upon context, shaped by institutional forces, cultural norms, and the rate of technical progress.

From a managerial standpoint, firms ought to integrate GHRM and GSCM principles into their fundamental strategy frameworks, invest in robust sustainability assessment systems, and emphasize extensive employee training and engagement initiatives to cultivate lasting green

behavior. Policymakers may enhance these initiatives by establishing supporting regulatory frameworks, fiscal incentives, and knowledge-sharing platforms that facilitate the dissemination of sustainable business practices across various sectors. This synergy between organizational commitment and regulatory assistance might expedite the transition to environmentally sustainable and resilient company models.

Due to the intricate and context-dependent characteristics of GHRM–GSCM connections, a standardized implementation strategy may not produce uniform results across various industries. Managers must thus customize green initiatives to align with sector-specific characteristics, personnel capabilities, and regulatory conditions. Future research should enhance this discourse with mixed-method empirical studies that combine quantitative evaluations with qualitative insights. Comparative and longitudinal research could elucidate how contextual variables influence the link between GHRM, GSCM, and sustainability outcomes. Empirical evidence from successful enterprises in emerging economies such as India would provide practical insights into effective methods, problems faced, and the enduring sustainability advantages of integrated green management techniques.

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