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Integrating Green Human Resource Management and Green Supply Chain: A Systematic Literature Review in The Context of The Manufacturing Industry in Indonesia

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ABSTRACT

The manufacturing sector in Indonesia plays a critical role in national economic growth, contributing significantly to GDP. However, it is also a major contributor to environmental degradation through greenhouse gas emissions and industrial waste. Faced with this paradox, companies are required to undergo a sustainability transformation that is both technical and cultural. This research aims to map and synthesize existing literature on the integration of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) as key determinants of sustainable performance. Using the Systematic Literature Review (SLR) method with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol, this study examines relevant empirical articles to identify relationship mechanisms, methodological trends, and research gaps. The results of the review indicate that GHRM serves as the foundation for building employees' green capabilities and culture, which are then operationalized through GSCM practices to achieve holistic sustainability performance. This article makes a theoretical contribution by clarifying the role of GSCM as a mediator within the Ability-Motivation-Opportunity (AMO) framework and offers a framework for industry managers to align human resource policies with operational strategies. By integrating GHRM and GSCM, companies can achieve better environmental, economic, and social performance, ultimately fostering long-term sustainability. This study also highlights the challenges faced by the Indonesian manufacturing industry in implementing these practices and provides recommendations for overcoming these barriers through employee-driven innovation and strategic alignment.

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Introduction

Economic development in developing countries, including Indonesia, cannot be separated from the central role of the industrial sector. Industrialization is seen as the main path to accelerating economic growth, absorbing labor, and improving social welfare. Macroeconomic data shows that the manufacturing industry consistently remains the largest contributor to the national Gross Domestic Product (GDP), accounting for nearly one-fifth of the total economy and also dominates the structure of non-oil and gas exports (Fasta'sima et al., 2025). The strong investment flow into this sector further solidifies its position as a driving force for development. However, this economic success comes at a high price, with increasingly concerning ecological impacts (Fallah et al., 2025). The manufacturing industry is recorded as one of the largest contributors to greenhouse gas emissions in Indonesia, which is driving global climate change. Energy-intensive production processes, reliance on fossil fuels, and suboptimal waste management, particularly hazardous and toxic waste (B3), pose serious challenges. (Hartati & Elvira, 2024). Additionally, the problem of plastic waste from consumer industrial products is further exacerbating the environmental

burden. This paradox puts the manufacturing industry in a difficult position: it must continue to grow to sustain the economy but is forced to drastically reduce its environmental footprint for long-term sustainability. In an effort to balance these economic and environmental interests, the concept of Sustainable Performance becomes the ultimate goal pursued. This performance is not only measured by profitability, but also by environmental and social responsibility. To achieve this, manufacturing companies began adopting various modern management strategies. The two most prominent approaches are Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM). GHRM focuses on the "human" aspect of organizations, specifically how to recruit, train, and motivate employes to care about the environment. (Ahmad, 2024). Meanwhile, GSCM focuses on the "operational" and "technical" aspects of how to manage material flows, from raw material procurement to distribution, with minimal environmental impact. (Soda et al., 2015).

Although the literature on GHRM and GSCM has grown rapidly in the last decade, understanding of how these two concepts interact remains fragmented (Wongleedee, 2020)Many previous studies have examined GHRM and GSCM separately, as if they were independent functions in their respective silos. Research in the field of HR tends to overlook the technical aspects of the supply chain, while research in the field of operations management often neglects the human behavioral aspects. In fact, in practice, the success of green supply chain initiatives heavily depends on employe behavior (Ali et al., 2024). Conversely, the green culture built by HR requires an operational framework to have a real impact. The lack of a holistic understanding of this integration creates a significant knowledge gap. There haven't been many studies that systematically map how this integration mechanism works, particularly in the context of the manufacturing industry in Indonesia, which has unique characteristics including regulatory and infrastructure challenges. Research Objectives This article aims to fill this gap by conducting a systematic literature review. The main objectives are:

1. To identify and categorize current research trends regarding the relationship between GHRM, GSCM, and Sustainable Performance.
2. To analyze the theoretical mechanisms explaining how GHRM influences sustainable performance thru the mediation of GSCM.
3. To synthesize empirical findings to build an integrative conceptual framework that can guide future research and managerial practices.

Method

This research uses the Systematic Literature Review (SLR) method.(Deniswara & Sopiah, 2023; Lame, 2019). Unlike traditional literature reviews, which are narrative and often subjective, SLR uses explicit, transparent, and replicable procedures to identify, evaluate, and synthesize all relevant research works. To ensure accuracy and high reporting standards, this study adopts the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol. The PRISMA protocol provides a checklist and flowchart that guides researchers thru four main stages: Identification, Screening, Eligibility, and Inclusion.

The literature search process was conducted on major academic databases covering management, business, and environmental journals. The search strategy uses keywords compiled based on research variables. The keywords used include a combination of: "Green Human Resource Management", "Green HRM", "Green Supply Chain Management", "Green SCM", "Sustainable Performance", "Sustainability", "Manufacturing", and "Indonesia".

The search focused on articles published within the last ten years. This timeframe was chosen to ensure that the reviewed literature reflects the latest developments in management theory and dynamic global sustainability issues.

The identified articles were then screened based on title and abstract. The established inclusion criteria are:

1. The article must be strong empirical research (quantitative, qualitative, or mixed methods) or conceptual research.
2. The article must discuss the relationship between at least two of the three main variables (GHRM, GSCM, Sustainable Performance).
3. The research context is industry, with priority given to the manufacturing sector.
4. The article is available in full text and written in English or Indonesian.

Exclusion criteria were applied to exclude articles that:

1. Only discussed the technical aspects of the environment without any connection to management.
2. Were opinion pieces, editorials, or book reviews.
3. Lacked relevance to the industry context.

Eligibility and Data Analysis Articles that passed the screening stage were then read in full to assess their eligibility. Data from the selected articles were extracted using a standard form that included information about: the author, year of publication, country/location of the research, research method, variables studied, and key findings.

Data analysis was conducted using a thematic analysis approach and narrative synthesis. The articles are grouped based on emerging themes, such as "GHRM Dimensions," "GSCM Practices," "Mediation Mechanisms," and "Performance Impact." This synthesis aims to build a coherent narrative regarding the current state of knowledge.

Results and Discussion

This section presents the results of the synthesis from the literature that has been reviewed. The findings were grouped into several main themes that reflect the structure of the relationships between the variables.

Research Trends and Sectoral Context

The review results indicate that research on the integration of GHRM and GSCM in Indonesia has significantly increased in recent years. This is in line with the increasing global pressure on the issue of climate change. Most studies use a quantitative approach with questionnaire surveys and statistical analysis such as SEM-PLS. This indicates that researchers are currently working to test and validate existing theoretical models. Sectorally, research has largely focused on industries with high environmental impact, such as the textile industry, palm oil processing, and the chemical industry. This focus is relevant considering these sectors are major contributors to waste and emissions. However, there are also studies that are beginning to delve into the SME and creative industries sectors, although the number is still limited.

Theme 1: GHRM as the Foundation of Culture and Competence

Literature consistently positions Green Human Resource Management (GHRM) as the starting point for sustainability transformation. GHRM is not only seen as a personnel administration function, but as a strategic instrument for building an "Eco-Culture" or environmentally friendly organizational culture. The three dimensions of GHRM practices most frequently discussed in the literature are:

1. Green Hiring: The literature emphasizes the importance of recruiting individuals whose environmental values align with the company's. Companies that include environmental commitments in their recruitment process tend to attract more environmentally conscious candidates, which in turn reduces training costs and resistance to change.
2. Green Training and Involvement: This is the most dominant dimension. Training is considered vital to close the skills gap in handling green technology. Additionally, the aspect of involvement highlights the importance of empowering employes to contribute ideas for environmental innovation.
3. Green Performance Management: Literature suggests that employes' green behavior will persist if linked to performance appraisal and compensation systems. Incentives, both monetary and non-monetary, serve as positive reinforcement for behavior.

Theme 2: GSCM as Operational Implementation

If GHRM is the foundation, then Green Supply Chain Management (GSCM) is identified in the literature as the operational framework. GSCM encompasses a set of practices aimed at minimizing environmental impact throughout the value chain. Literature distinguishes GSCM practices into two broad categories: 1. Internal Practices: These include Eco-design (environmentally friendly product design) and internal environmental management. Studies show that internal practices are easier to adopt because they are under the direct control of company management. 2. External Practices: These include Green Purchasing and collaboration with customers and suppliers. This practice is considered more challenging because it involves negotiation and aligning standards with external parties.

Theme 3: Integration and Mediation

Mechanisms The most important finding from this review is the confirmation of the mediating role of GSCM. The majority of empirical studies find that GHRM has a positive influence on sustainability performance, but this influence is significantly stronger when mediated by GSCM. The mechanism described in the literature is as follows: GHRM prepares "human capital" (competent and motivated employees), while GSCM provides "procedures and technology" (logistics systems, product design). Without GHRM, GSCM practices will fail due to a lack of implementation capabilities. Without GSCM, employe competencies would not be directed toward tangible operational results. Therefore, GSCM acts as a bridge that transforms human resource potential into sustainable performance.

Relevance of the Ability-Motivation-Opportunity (AMO)

Theory The synthesis of these literature review results strengthens the relevance of the Ability-Motivation-Opportunity (AMO) theory in explaining the integration of GHRM and GSCM. This theory states that performance is a function of three components: Ability, Motivation, and Opportunity.

In the context of this research:

1) Ability is built thru Green Hiring and Green Training practices within GHRM. The company ensures employes have technical knowledge of waste management, energy efficiency, and environmental standards.
2) Motivation is driven thru Green Performance Management and compensation. Employes are motivated to adopt green behaviors because of rewards and recognition.
3) Opportunities are provided by GSCM practices. A green supply chain management system provides a framework, structure, and tools for employes to apply their skills. For example, the Green Purchasing policy provides an opportunity for procurement staff to select green vendors; the Eco-design policy provides an opportunity for engineers to design energy-efficient products. Without the "Opportunity" component provided by GSCM, the "Ability" and "Motivation" built by GHRM will not produce optimal performance impact (Carballo-Penela et al., 2023). This is why integrating these two concepts is so crucial.

Contextual Challenges in the Indonesian Manufacturing Industry

The discussion of the review findings also highlights the specific challenges faced by the manufacturing industry in Indonesia. As a developing country, Indonesia faces issues with uneven recycling infrastructure and dynamic regulations. Literature indicates that manufacturing companies in Indonesia often face the dilemma of initial costs (Scharmer et al., 2024). Implementing GSCM technology and GHRM programs requires a significant investment. However, empirical studies prove that in the long run, this integration results in significant cost efficiency (economic performance) thru energy and material savings, as well as enhancing the company's reputation (social performance), which impacts customer loyalty. Integrating GHRM and GSCM helps companies overcome these challenges by fostering internal innovation. Trained and motivated employes (GHRM) are able to find creative ways to achieve efficiency in the supply chain (GSCM) without always having to rely on expensive technology. For example, improving work procedures to reduce raw material waste or optimizing distribution routes.

Implications for Sustainability Performance

This review confirms that Sustainable Performance is a multidimensional concept encompassing economic, environmental, and social aspects. Integrating GHRM and GSCM has been proven to have a positive impact on all three:

1) Environmental Performance: Measurable reductions in emissions, waste, and energy consumption have been achieved.
2) Economic Performance: Cost efficiency, improved product quality, and mitigation of regulatory fines have been realized.
3) Social Performance: Increased employe health and safety (due to better handling of hazardous materials), as well as more harmonious relationships with the surrounding community.

Conclusion

Based on the systematic literature review using the PRISMA protocol, this article concludes that the integration of Green Human Resource Management (GHRM) and Green Supply Chain Management (GSCM) is a fundamental strategy for the manufacturing industry to achieve sustainability performance. GHRM acts as a catalyst, building the foundation of green culture and competence within the organization, while GSCM serves as the operational channel that transforms human resource competencies into process improvements across the value chain. The synergy between "people" (GHRM) and "processes" (GSCM) creates a sustainable competitive advantage that is difficult for competitors to replicate. This research also highlights that implementation challenges in Indonesia, such as cost and infrastructure constraints, can be overcome through an integrated approach, where employee-driven innovation plays a key role in operational efficiency. Overall, the integration of GHRM and GSCM not only enhances environmental performance but also supports better economic and social outcomes, which, in turn, can improve the company's competitiveness and long-term sustainability.

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