

From Organisational Environmental Management to Environmental Performance: The Role of Green Employee Involvement—A Literature Review

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Abstract

Environmental sustainability has become an important concern in organisational management, particularly in manufacturing contexts where organisational activities are closely associated with resource consumption, waste generation, and environmental impacts. This literature review examines the relationships among internal environmental management (IEM), green employee involvement (GEI), and environmental performance (EP) by bringing together insights from environmental management, green supply chain management, and green human resource management research. The review first clarifies the conceptual boundaries of the three constructs, distinguishing IEM as the formal organisational foundation for environmental management, GEI as an employee participation mechanism, and EP as an outcome-oriented dimension of environmental improvement. It then synthesises existing research concerning the relationships among these constructs. The literature generally indicates that IEM is associated with environmental performance, while employee participation can contribute to the implementation and improvement of environmental practices. However, the three research streams remain relatively fragmented, and the specific role of GEI in connecting organisational environmental management with environmental outcomes remains insufficiently integrated. Key research gaps concern conceptual integration, employee implementation mechanisms, contextual differences, measurement consistency, and levels of analysis. The review proposes future research directions including longitudinal and multilevel designs, cross-industry and cross-country comparisons, and more precise measurement of GEI. Overall, the review provides a literature-based perspective for understanding how organisational environmental management and employee participation can be considered together in relation to environmental performance.

Keywords: Internal Environmental Management, Green Employee Involvement, Environmental Performance, Green Supply Chain Management

Introduction

Environmental sustainability has become an increasingly important concern for organisations, particularly in manufacturing industries where production activities are closely associated with resource consumption, waste generation, emissions, and other environmental impacts. In response to growing environmental pressures, organisations have increasingly incorporated environmental considerations into their operational and managerial practices. Green supply chain management (GSCM) has consequently received considerable attention in the literature because it extends environmental considerations beyond individual organisational activities and emphasises the integration of environmental objectives into business and supply chain processes (Srivastava, 2007; Sarkis, 2012). Within this broader field, internal environmental management (IEM) represents an important organisational dimension because environmental improvement requires firms to establish environmental objectives, allocate responsibilities, coordinate different functions, and monitor environmental activities. Environmental performance (EP) is an important outcome through which the environmental consequences of organisational practices can be assessed. Unlike environmental policies, management systems, or organisational procedures, which describe what organisations establish to manage environmental issues, environmental performance focuses more directly on the environmental outcomes achieved. In manufacturing contexts, these outcomes may include reductions in air emissions, wastewater, solid waste, hazardous materials, and environmental accidents (Zhu & Sarkis, 2004; Zhu et al., 2008). The distinction between environmental management practices and environmental outcomes is important because the adoption of environmental policies or management systems does not necessarily guarantee improvements in actual environmental performance. Previous research has therefore examined whether organisational environmental management practices are associated with measurable environmental outcomes.

A substantial body of research has examined the relationship between internal environmental management and environmental performance. IEM generally refers to formal organisational arrangements through which firms establish environmental objectives, allocate environmental responsibilities, coordinate environmental activities, and monitor environmental improvement. Earlier studies highlighted the importance of management support, employee training, empowerment, teamwork, and organisational coordination in effective environmental management (Daily & Huang, 2001; Melnyk et al., 2003). Subsequent GSCM research positioned IEM as an important internal environmental practice and reported positive associations between internal environmental management and environmental performance (Zhu & Sarkis, 2004; Zhu et al., 2008). Systematic reviews and meta-analytic studies have also generally supported the importance of internal environmental management for environmental outcomes, although the strength of the relationship may vary across organisational and institutional contexts (Fang & Zhang, 2018; Fu et al., 2022; Galdos-Urbizu et al., 2024).

However, organisational environmental management does not operate independently of the people who implement environmental practices. Environmental objectives, procedures, and management systems ultimately need to be translated into everyday organisational activities. Employees are directly involved in production, purchasing, quality management, logistics, equipment operation, and other operational processes and may therefore possess practical knowledge that is relevant to identifying environmental problems and developing

improvement opportunities. Earlier environmental management research demonstrated the importance of employee involvement in environmental improvement. Hanna et al. (2000), for example, linked employee involvement with both operational and environmental improvement, while Ramus and Steger (2000) highlighted the role of supervisory support and environmental policies in encouraging employee ecological initiatives. Rothenberg (2003) and Boiral (2005) further emphasised the importance of employees' practical and contextual knowledge in identifying opportunities for environmental improvement.

This stream of research has contributed to growing interest in green employee involvement (GEI). GEI refers to the extent to which employees are provided with opportunities to participate in environmental management, environmental problem-solving, environmental communication, and environmental improvement activities within an organisation (Renwick et al., 2013; Tang et al., 2018; Paillé et al., 2020). GEI is related to, but conceptually different from, general employee engagement and individual green behaviour. General employee engagement concerns employees' psychological involvement in their work roles, whereas GEI focuses specifically on employees' opportunities to participate in organisational environmental activities. Similarly, individual green behaviour describes what employees actually do to protect the environment, while GEI emphasises the organisational opportunities and arrangements that enable employees to participate in environmental management.

The growing literature suggests that employee participation is relevant to environmental outcomes. Employees can contribute environmental knowledge, communicate environmental concerns, identify operational problems, provide improvement suggestions, and participate in environmental decision-making. Research has linked employee involvement and related employee-based environmental practices with environmental improvement and environmental performance (Hanna et al., 2000; Ramus & Steger, 2000; Boiral, 2005; Alt & Spitzack, 2016; Paillé et al., 2014; Paillé et al., 2020). More recent research has also highlighted the importance of employee engagement and green human resource management in supporting the implementation of environmental practices (Graham et al., 2023). Nevertheless, these studies have examined somewhat different constructs, including employee engagement, environmental citizenship behaviour, employee ecological initiatives, and green human resource practices. Consequently, the specific conceptual position of GEI within organisational environmental management remains less clearly integrated across the literature.

Taken together, the literature on IEM, GEI, and EP provides three complementary perspectives on organisational environmental improvement. IEM focuses on the formal organisational foundation through which environmental objectives, responsibilities, procedures, and coordination mechanisms are established. GEI focuses on employees' opportunities to participate in environmental management and improvement activities. EP represents the environmental outcomes associated with organisational environmental practices. These perspectives suggest that environmental improvement may involve both organisational arrangements and employee participation. Formal environmental management can provide direction and support for environmental activities, while employee involvement can contribute practical knowledge and participation in implementation. At the same time, environmental performance provides an outcome-oriented perspective for

assessing whether environmental management efforts are associated with actual environmental improvements.

Despite the development of these research streams, the existing literature remains fragmented. Studies of IEM have primarily focused on organisational environmental management practices and their relationship with environmental performance, while research on employee participation has developed across environmental management, green human resource management, and organisational behaviour perspectives. As a result, relatively limited attention has been given to considering IEM, GEI, and EP together within a common literature-based perspective. In particular, there is a need to clarify how these three concepts differ, how previous studies have connected them, and where the existing evidence remains limited or inconsistent. Such a synthesis is particularly relevant because understanding environmental management requires attention not only to the formal systems established by organisations but also to the employee participation through which environmental practices are implemented in daily operations.

Against this background, this review brings together the literature on internal environmental management, green employee involvement, and environmental performance. The review has three main purposes. First, it clarifies the conceptual foundations and boundaries of IEM, GEI, and EP. Second, it synthesises existing research concerning the relationships among organisational environmental management, employee participation, and environmental outcomes. Third, it identifies important gaps in the existing literature and proposes directions for future research, particularly regarding the integration of organisational and employee perspectives, the measurement of GEI, and differences across organisational and institutional contexts. Rather than testing a causal or mediation model, this review seeks to provide a clearer literature-based understanding of how organisational environmental management and employee participation can be considered together in relation to environmental performance.

The remainder of this paper is organised as follows. Section 2 reviews the literature on internal environmental management, green employee involvement, and environmental performance, followed by an integrated discussion of the relationships among these constructs and the major research gaps. Section 3 discusses the implications of the reviewed literature. Section 4 presents future research directions, and Section 5 concludes the review.

Literature Review

Internal Environmental Management

Internal environmental management (IEM) refers to the formal organisational arrangements through which firms establish environmental objectives, allocate environmental responsibilities, coordinate different functional departments, monitor environmental performance, and review environmental improvement activities. IEM is generally regarded as an important internal component of green supply chain management (GSCM), as environmental initiatives often require coordination among production, purchasing, quality, research and development, logistics, and other functional areas. Without clear environmental objectives, management support, responsibility allocation, and internal coordination, environmental activities may remain fragmented and difficult to implement effectively (Zhu & Sarkis, 2004; Zhu et al., 2008).

The concept of IEM has developed from the broader literature on corporate environmental management. Early studies emphasised the importance of managerial support and organisational arrangements in environmental management. Daily and Huang (2001), for example, argued that effective environmental management requires a combination of management support, employee training, empowerment, teamwork, performance evaluation, and rewards. Melnyk et al. (2003) further distinguished between simply possessing a formal environmental management system (EMS) and achieving actual organisational and environmental benefits through its implementation. These studies suggest that environmental management should not be understood merely as the existence of formal policies or certification. Instead, the effectiveness of environmental management depends on how environmental objectives and procedures are incorporated into organisational activities. Zhu and Sarkis (2004) subsequently positioned IEM as an internal dimension of GSCM and examined practices such as management commitment, cross-functional cooperation, environmental quality management, compliance, and environmental certification. Zhu et al. (2008) further validated IEM as one of the major dimensions of GSCM in manufacturing firms. Later studies continued to treat IEM as an independent organisational practice. Darnall et al. (2008), for example, suggested that EMS adoption and GSCM practices can complement each other rather than being substitutes. Zhu et al. (2013) also regarded internal GSCM practices as an organisational bridge through which institutional requirements can be translated into broader supply chain environmental practices. These studies indicate that IEM provides an internal organisational foundation for coordinating environmental activities.

A substantial body of empirical research has examined the relationship between IEM and environmental performance (EP). Zhu and Sarkis (2004), based on evidence from 186 Chinese manufacturing firms, found a strong association between IEM and environmental outcomes. Subsequent meta-analytic studies have generally reported a positive relationship between IEM and EP. Fang and Zhang (2018), based on 54 studies, identified IEM as one of the GSCM practices with a relatively strong association with environmental outcomes. Similarly, Fu et al. (2022), using 65 independent samples and 14,196 observations, reported that IEM showed the strongest average effect among the GSCM dimensions examined in their study. However, the strength of this relationship is not necessarily consistent across all research contexts. Galdos-Urbizu et al. (2024), for example, reported different relative effects across GSCM practices based on a much larger review of 166 articles. Such differences suggest that the environmental value of IEM may depend on research context, measurement approaches, and the specific environmental outcomes examined.

The literature also indicates that formal environmental management systems alone may not fully explain improvements in environmental performance. Tung et al. (2014) distinguished environmental management process effectiveness from environmental performance and showed that effective environmental management processes can play an important role in translating organisational conditions into environmental outcomes. Boiral (2009) similarly highlighted the limitations of relying exclusively on formal environmental systems and emphasised the importance of employee involvement, decentralised action, and organisational knowledge in environmental improvement. Therefore, IEM can be understood as an organisational foundation for environmental improvement, but its implementation may also depend on whether employees are given opportunities to participate in environmental activities.

This issue has encouraged researchers to pay greater attention to the human side of environmental management. Hanna et al. (2000) found that employee involvement teams could connect operational improvement with environmental improvement. Ramus and Steger (2000) showed that environmental policies and supervisory support could encourage employees to develop environmental initiatives. Daily and Huang (2001) further emphasised that training, empowerment, teamwork, performance evaluation, and rewards are important human-resource conditions for effective environmental management. Rothenberg (2003) and Boiral (2005) also demonstrated that employees possess valuable knowledge of daily production processes and can identify environmental problems and improvement opportunities that may not be fully captured by formal procedures.

Taken together, previous studies indicate that IEM represents more than a set of environmental policies or formal management systems. It provides the organisational direction, coordination mechanisms, responsibilities, and internal infrastructure necessary for environmental management. At the same time, the literature suggests that formal management arrangements need to be translated into employee-level participation and action if environmental objectives are to be realised in daily operations. This observation provides an important link between IEM and green employee involvement (GEI), which is discussed in the following section.

Green Employee Involvement

Green employee involvement (GEI) refers to the extent to which employees are provided with opportunities to participate in environmental management, environmental problem solving, and environmental improvement activities within an organisation. Unlike formal environmental management practices, which primarily establish organisational direction, responsibilities, procedures, and environmental objectives, GEI focuses on the role of employees in implementing and improving environmental practices. Employees may contribute by obtaining environmental information, exchanging ideas, identifying environmental problems, participating in environmental decision-making, and proposing improvements to organisational environmental practices (Renwick et al., 2013; Tang et al., 2018; Paillé et al., 2020).

The conceptual development of GEI can be traced to the broader literature on employee involvement and environmental management. Kahn (1990) conceptualised employee engagement as the extent to which individuals invest their physical, cognitive, and emotional resources in their work roles. However, employee engagement as a psychological state is conceptually different from GEI. GEI concerns the organisational opportunities and arrangements through which employees can participate in environmental issues. Therefore, the existence of employee involvement in environmental management cannot be inferred simply from employees' general psychological engagement with their jobs.

Early environmental management studies began to recognise the importance of employee participation before the term GEI became widely used. Hanna et al. (2000) examined employee involvement teams and showed that participatory programmes could connect operational improvement with environmental improvement. Ramus and Steger (2000) focused on employee ecological initiatives and found that environmental policies and supervisory support could encourage employees to develop environmental ideas and

initiatives. Daily and Huang (2001) further argued that effective environmental management requires human-resource practices such as training, empowerment, teamwork, performance evaluation, and rewards. These studies shifted attention from whether firms had formal environmental policies to how such policies could be implemented through employees.

Subsequent research further highlighted the importance of employees' practical knowledge in environmental improvement. Rothenberg (2003) found that employees possess contextual knowledge of production processes that can contribute to environmental improvement when combined with professional and external expertise. Similarly, Boiral (2005) showed that employee involvement could help identify pollution-prevention opportunities embedded in daily production activities. Boiral (2009) further emphasised the importance of voluntary and decentralised environmental behaviours, arguing that formal environmental management systems may not fully capture local knowledge and unexpected opportunities for environmental improvement. These studies suggest that employee participation can provide an important link between formal environmental management arrangements and environmental practices at the operational level.

The development of green human resource management (GHRM) provided a more systematic conceptual foundation for GEI. Renwick et al. (2013) used the ability–motivation–opportunity perspective to distinguish different functions of GHRM practices. From this perspective, employee involvement represents an opportunity-enhancing practice because it provides employees with opportunities to communicate environmental information, participate in problem-solving activities, provide suggestions, and contribute to environmental decision-making. Tang et al. (2018) subsequently developed and validated a multidimensional GHRM scale and identified green employee involvement as a distinct dimension alongside green recruitment and selection, green training, green performance management, and green rewards. This work helped establish GEI as a specific organisational practice rather than simply another expression of general employee engagement or green behaviour.

The literature also suggests that GEI should be distinguished from individual green behaviour. Employee green behaviour describes what employees actually do in relation to environmental protection, whereas GEI concerns the organisational opportunities and management practices that enable employees to participate in environmental activities. Similarly, organisational citizenship behaviour for the environment focuses on discretionary environmental behaviours, while GEI focuses more directly on the organisational arrangements that allow employees to communicate, participate, solve problems, and contribute to environmental improvement. This distinction is important because an organisation may encourage employee participation without every employee necessarily demonstrating the same level of individual green behaviour.

Recent studies have increasingly examined the relationship between employee participation and environmental outcomes. Alt and Spitzeck (2016) conceptualised employee participation capability as an organisational capability through which environmental citizenship behaviour can be developed at the organisational-unit level. Paillé et al. (2014) also showed that human-resource practices can influence environmental performance through employee attitudes and behaviours, supporting the importance of employee-based implementation mechanisms.

Paillé et al. (2020) further operationalised green involvement as a management practice that enables employees to contribute to environmental performance while distinguishing it from individual employee outcomes. These studies collectively indicate that employee involvement is relevant not only to employee-related outcomes but also to the environmental performance of organisations.

However, the existing literature does not always use the term GEI consistently. Some studies examine employee environmental behaviour, environmental citizenship behaviour, employee ecological initiatives, or general employee engagement rather than GEI itself. For example, Graham et al. (2023) examined the mediating role of general employee engagement in the relationship between GSCM practices and environmental performance. Their findings provide evidence for an employee-based implementation mechanism, but general employee engagement is not identical to organisational-level GEI. Therefore, the existing evidence should be interpreted carefully when discussing the specific role of GEI.

Overall, the literature indicates that GEI has gradually developed from the broader employee involvement and environmental management literature into a more clearly defined component of green human resource management. Four elements repeatedly appear in the conceptualisation of GEI: access to environmental information, opportunities for communication and mutual learning, participation in environmental problem solving or decision-making, and opportunities to provide suggestions and assume environmental responsibilities. In this sense, GEI represents an organisational mechanism through which employees can contribute their knowledge and experience to environmental management.

Importantly, GEI is conceptually related to, but distinct from, IEM. IEM establishes the formal organisational direction and management infrastructure for environmental activities, whereas GEI concerns the participation opportunities through which employees contribute to environmental implementation and improvement. The distinction between these two concepts allows the literature to consider not only whether firms establish environmental management arrangements, but also how these arrangements are translated into employee participation and daily environmental practices. This relationship provides a basis for further examining the connection between IEM, GEI, and environmental performance.

Environmental Performance

Environmental performance (EP) refers to the extent to which an organisation achieves improvements in its environmental outcomes. In the manufacturing context, EP is commonly reflected in observable reductions in environmental impacts, such as air emissions, wastewater, solid waste, and the use of hazardous or toxic materials, as well as reductions in environmental accidents (Zhu & Sarkis, 2004; Zhu et al., 2008). Compared with environmental management practices, which describe what organisations establish and implement to manage environmental issues, EP focuses more directly on the environmental results achieved by organisational activities.

The conceptualisation of EP has developed considerably in the environmental management and GSCM literature. Ilcinich et al. (1998) viewed corporate environmental performance as a multidimensional construct involving organisational systems, stakeholder relationships, regulatory compliance, and environmental impacts. This broad conceptualisation reflects the

complexity of corporate environmental performance and recognises that environmental outcomes are influenced by both organisational processes and external relationships. However, the broad use of the term EP has also resulted in substantial variation in how the construct is defined and measured across studies.

Zhu and Sarkis (2004) adopted a more outcome-oriented approach in the manufacturing context and associated environmental performance with reductions in emissions, wastewater, solid waste, hazardous materials, and environmental accidents. Zhu et al. (2008) subsequently operationalised EP as a distinct outcome construct and separated it from economic and operational performance. This approach has been widely used in GSCM research because it allows researchers to examine whether environmental management practices are associated with actual environmental improvements rather than simply the adoption of environmental policies or management systems.

A particularly important distinction in the literature is between environmental management performance and environmental operational performance. Trumpp et al. (2015) argued that corporate environmental performance contains at least two different dimensions. Environmental management performance concerns organisational policies, management systems, processes, and related activities, whereas environmental operational performance focuses on the actual environmental consequences of organisational operations. Ahi and Searcy (2015) similarly noted that environmental performance measures used in green and sustainable supply chain research are highly diverse and can range from management-related indicators to environmental outcomes such as emissions, resource consumption, and waste.

This distinction is particularly relevant when examining the relationship between IEM and EP. IEM represents the organisational processes and management arrangements established to address environmental issues, while EP represents the environmental outcomes associated with these activities. If environmental policies, management systems, or certification are included in both constructs, the conceptual distinction between the antecedent and outcome becomes less clear. Therefore, an outcome-oriented definition of EP provides a clearer basis for examining how internal environmental management and employee involvement are associated with environmental improvement.

The measurement of EP has also received considerable attention in the literature. Different studies have adopted different environmental indicators depending on their research context and data availability. In manufacturing research, commonly examined indicators include reductions in air emissions, wastewater discharge, solid waste, hazardous or toxic material consumption, and environmental accidents (Zhu & Sarkis, 2004; Zhu et al., 2008). These indicators focus on observable environmental consequences of production activities and therefore provide a relatively direct assessment of environmental improvement.

ISO 14031:2021 further emphasises that environmental performance evaluation should be based on relevant indicators and continual improvement rather than on a single universal performance threshold. This perspective recognises that environmental performance is organisation-specific and may vary according to the nature of business activities, environmental aspects, operational conditions, and organisational objectives. Consequently,

EP should be assessed using indicators that are relevant to the environmental impacts of the organisation under investigation.

The literature on GSCM has increasingly examined EP as an important organisational outcome. Previous studies have generally found that green supply chain practices are associated with improvements in environmental outcomes, although the magnitude of the relationship differs across practices and research contexts. Meta-analytic evidence reported by Fang and Zhang (2018) and Fu et al. (2022) indicates that different GSCM practices are positively associated with environmental performance. However, these studies also show that the effects of individual practices are not necessarily identical. This suggests that environmental performance is influenced by multiple organisational practices and implementation processes rather than by a single environmental management activity.

Employee involvement has also received increasing attention in discussions of environmental performance. Earlier studies showed that employees can contribute environmental knowledge, identify operational problems, and initiate environmental improvements (Ramus & Steger, 2000; Rothenberg, 2003; Boiral, 2005). More recent research has further examined the role of employee-related mechanisms in explaining environmental outcomes. Paillé et al. (2014), for example, highlighted the role of employee attitudes and behaviours in linking human-resource practices with environmental performance, while Alt and Spitzack (2016) examined employee participation capability and its relationship with environmental citizenship behaviour and environmental performance. These studies suggest that environmental outcomes may depend not only on formal organisational systems but also on how employees participate in environmental activities.

Overall, the literature shows that EP can be understood from either a broad management-oriented perspective or a narrower outcome-oriented perspective. For research focusing on the relationship between internal environmental management, green employee involvement, and environmental performance, the outcome-oriented perspective provides a clearer conceptual boundary. Under this approach, EP refers primarily to improvements in the environmental consequences of organisational operations, including reductions in emissions, wastewater, solid waste, hazardous or toxic material use, and environmental accidents.

Accordingly, environmental performance should be viewed not simply as the presence of environmental policies or management systems, but as the environmental improvement that results from organisational efforts. This distinction also helps connect the three central concepts examined in this review: IEM provides the organisational foundation for environmental management, GEI represents an important employee participation mechanism, and EP reflects the environmental outcomes associated with these organisational efforts.

Relationships among Internal Environmental Management, Green Employee Involvement and Environmental Performance

The literature reviewed above suggests that internal environmental management (IEM), green employee involvement (GEI), and environmental performance (EP) represent three closely related but conceptually distinct aspects of organisational environmental

management. IEM concerns the formal organisational arrangements established to manage environmental issues, GEI concerns employees' opportunities to participate in environmental activities, and EP concerns the environmental outcomes achieved by the organisation. Examining the relationships among these three constructs provides a more integrated understanding of how environmental management practices may be translated into environmental outcomes.

Existing literature suggests that internal environmental management, green employee involvement and environmental performance represent interconnected but conceptually distinct aspects of organisational environmental management. IEM provides the organisational foundation, GEI reflects employee participation in environmental management and implementation, while EP captures the environmental outcomes associated with these practices. Figure 1 summarises this literature-based perspective and provides an organising structure for the discussion that follows.



Figure 1. An integrated literature-based perspective on internal environmental management, green employee involvement and environmental performance.

Note: The figure synthesises relationships identified in the reviewed literature. It represents a literature-based perspective rather than an empirically confirmed causal or mediation model.

Internal Environmental Management and Environmental Performance

A substantial body of research has examined the relationship between IEM and EP. Early GSCM studies treated IEM as an important internal environmental practice and generally reported a positive association between internal environmental management and environmental outcomes. Zhu and Sarkis (2004), using data from 186 Chinese manufacturing firms, found a strong relationship between IEM and environmental performance. Zhu et al. (2008) subsequently confirmed IEM as an independent dimension of GSCM and demonstrated its relevance to environmental performance in manufacturing settings.

Evidence from subsequent meta-analyses has generally supported this relationship. Fang and Zhang (2018), based on 54 studies, identified IEM as one of the GSCM practices showing a relatively strong association with environmental performance. Fu et al. (2022), using 65 independent samples and 14,196 observations, also reported a positive association between IEM and EP. These findings suggest that organisational arrangements such as management

commitment, environmental objectives, cross-functional coordination, and environmental monitoring can be relevant to environmental improvement.

Nevertheless, the literature does not indicate that the relationship is uniform across all contexts. Galdos-Urbizu et al. (2024), based on a review of 166 articles, reported differences in the relative importance of individual GSCM practices. Such variation indicates that the relationship between environmental management practices and EP may be affected by industry characteristics, measurement approaches, organisational conditions, and the specific environmental outcomes considered. Therefore, although the literature generally supports a connection between IEM and EP, the strength and form of this relationship may vary across contexts.

Another important finding is that formal environmental management arrangements do not automatically guarantee environmental improvement. Tung et al. (2014) distinguished environmental management process effectiveness from EP and found that effective environmental management processes can serve as an important mechanism linking organisational factors with environmental outcomes. Similarly, Boiral (2009) highlighted the limitations of formal environmental systems and emphasised the importance of employee participation, local knowledge, and decentralised environmental activities. These findings suggest that IEM may provide an organisational foundation for environmental improvement while requiring effective implementation within everyday organisational activities.

Internal Environmental Management and Green Employee Involvement

The relationship between IEM and GEI can be understood from the implementation role of employees in environmental management. IEM establishes environmental objectives, responsibilities, procedures, and organisational support, while GEI provides opportunities for employees to contribute to environmental activities. Therefore, formal environmental management arrangements may create an organisational context in which employee participation becomes possible and meaningful.

Early studies provide evidence supporting this connection. Ramus and Steger (2000) found that environmental policies and supervisory support were associated with employee ecological initiatives. Daily and Huang (2001) similarly argued that effective environmental management requires employee training, empowerment, teamwork, performance evaluation, and rewards. These findings suggest that environmental management is not limited to formal systems but also requires organisational arrangements that enable employees to participate in environmental improvement.

Later studies further emphasised the importance of organisational support and employee participation. Rothenberg (2003) showed that employees possess contextual knowledge of production processes that can contribute to environmental improvement when appropriately integrated with organisational and professional knowledge. Boiral (2005) also found that employee participation could reveal pollution-prevention opportunities arising from everyday operational activities. These findings provide an important explanation for why formal environmental management may be associated with employee involvement: environmental objectives and management systems can provide direction, legitimacy, resources, and opportunities for employees to contribute.

However, the existing literature has not consistently examined IEM and GEI as two directly connected organisational constructs. Much of the earlier research focused on employee ecological initiatives, employee environmental behaviour, or the human-resource conditions required for environmental management. More recent GHRM research has conceptualised GEI more explicitly as an organisational practice, but the empirical literature linking specific GSCM practices, particularly IEM, directly to GEI remains relatively limited. Therefore, the IEM–GEI relationship represents an area where the environmental management and green human-resource-management literatures can be further integrated.

Green Employee Involvement and Environmental Performance

The relationship between GEI and EP reflects the potential contribution of employee knowledge, participation, and problem-solving to environmental improvement. Employees are directly involved in production, purchasing, quality management, logistics, equipment operation, and other organisational activities. Their participation may therefore help organisations identify environmental problems and implement environmental improvements in daily operations.

Evidence from earlier environmental management research supports this general relationship. Hanna et al. (2000) linked employee involvement teams with both operational and environmental improvement. Ramus and Steger (2000) found that environmental policies and supervisory support could encourage employees to develop ecological initiatives. Rothenberg (2003) and Boiral (2005) further demonstrated the value of employees' contextual knowledge in identifying environmental improvement opportunities. These studies did not always use the term GEI, but they provide an important foundation for understanding why employee participation may be associated with environmental outcomes. More recent studies have provided more direct evidence. Alt and Spitzeck (2016) conceptualised employee participation capability as an organisational capability that can support environmental citizenship behaviour and, in turn, environmental performance. Paillé et al. (2014) also showed that employee attitudes and behaviours can serve as an important pathway through which human-resource practices influence environmental performance. Paillé et al. (2020) specifically examined green employee involvement and reported a positive relationship between green employee involvement and individual environmental performance, although the psychological pathway examined in that study depended on employees' environmental satisfaction.

These findings suggest that employee participation can contribute to environmental outcomes, but the evidence should not be interpreted as demonstrating a single universal mechanism. Studies have examined different forms of employee participation, environmental behaviour, employee engagement, and environmental performance at different analytical levels. For example, Graham et al. (2023) found that general employee engagement mediated the relationship between most of the GSCM practices examined and EP among manufacturing firms. However, general employee engagement is conceptually different from GEI because it represents a broader employee–work relationship rather than an environmental-specific organisational participation practice.

Integrating IEM, GEI and Environmental Performance

Taken together, the literature suggests a potential organisational process linking environmental management arrangements, employee participation, and environmental outcomes. IEM establishes environmental direction, responsibilities, coordination mechanisms, and organisational support. These arrangements can create opportunities for employees to obtain environmental information, communicate ideas, participate in environmental problem solving, and contribute to environmental improvement. GEI therefore represents a possible implementation mechanism through which formal environmental management can be translated into operational environmental activities. The resulting activities may contribute to improvements in EP.

This interpretation is consistent with the distinction between management processes and environmental outcomes established in the environmental management literature. IEM belongs primarily to the organisational management process, GEI represents an employee participation mechanism, and EP represents the environmental outcome. The three constructs therefore occupy different positions in the environmental management process rather than measuring the same phenomenon.

However, the existing literature remains fragmented. Some studies have directly examined IEM and EP, while others have examined employee participation and environmental outcomes. A separate stream of GHRM research has investigated GEI and employee-related environmental outcomes. Evidence from these different research streams is broadly consistent with the importance of employee involvement, but relatively few studies have systematically brought IEM, GEI, and organisational-level EP together within a single analytical framework.

The available evidence should therefore be interpreted as suggesting a potential relationship among the three constructs rather than as establishing a universally confirmed causal sequence. Existing studies provide relatively strong evidence for the relevance of IEM to EP, growing evidence concerning the contribution of employee participation to environmental outcomes, and conceptual support for the role of organisational environmental management in creating conditions for employee participation. However, direct evidence concerning GEI as the specific mechanism connecting IEM with organisational environmental performance remains limited. The literature therefore provides a useful basis for further discussion of research gaps and future research directions.

Research Gaps and Future Research Directions

The literature reviewed in the previous sections provides substantial evidence concerning internal environmental management (IEM), green employee involvement (GEI), and environmental performance (EP). However, the existing literature remains fragmented across different research streams. IEM has been extensively examined as an organisational environmental practice, while GEI has developed mainly within the environmental management and green human resource management literature. Environmental performance has also been measured using different management-oriented and outcome-oriented approaches. Bringing these research streams together provides several opportunities for further research.

Limited Integration of Internal Environmental Management, Green Employee Involvement and Environmental Performance

The first research gap concerns the limited integration of IEM, GEI, and EP within a common analytical perspective. Previous GSCM studies have established IEM as an important internal environmental practice and have generally reported a positive relationship between IEM and EP (Zhu & Sarkis, 2004; Fang & Zhang, 2018; Fu et al., 2023). At the same time, environmental management studies have increasingly recognised the importance of employee participation, while GHRM research has conceptualised GEI as an organisational practice that provides employees with opportunities to contribute to environmental activities.

However, these research streams have often developed separately. Studies of IEM have tended to focus on organisational systems, managerial commitment, environmental objectives, coordination, and environmental outcomes. Studies of GEI have more often examined employee participation, environmental behaviour, and employee-related outcomes. As a result, the relationship between formal environmental management arrangements and employee participation has not received the same level of systematic attention as the direct relationship between environmental management practices and environmental performance.

Existing evidence provides some basis for connecting these constructs. Environmental policies, management support, training, empowerment, teamwork, and employee participation have all been associated with environmental initiatives and outcomes (Ramus & Steger, 2000; Daily & Huang, 2001; Hanna et al., 2000; Boiral, 2005). Nevertheless, the literature does not yet provide a sufficiently integrated account of how internal environmental management may create opportunities for green employee involvement and how such involvement may be related to environmental outcomes. Future research can therefore pay greater attention to the interaction and sequential relationship between organisational environmental arrangements, employee participation, and environmental performance.

Insufficient Attention to the Employee Implementation Mechanism

The second gap concerns the role of employees in translating formal environmental management practices into actual environmental improvements. A considerable proportion of GSCM research focuses on organisational practices and their direct effects on environmental performance. Although this approach provides useful evidence concerning the value of GSCM, it may provide less information about how environmental practices are implemented in everyday organisational activities.

Earlier studies have already demonstrated the importance of employee involvement. Hanna et al. (2000) linked employee involvement teams with environmental improvement, while Ramus and Steger (2000) showed that environmental policies and supervisory support could encourage employee ecological initiatives. Rothenberg (2003) and Boiral (2005) further highlighted the importance of employees' contextual knowledge of production processes. More recent studies have also linked employee participation and environmental behaviour with environmental outcomes (Alt & Spitzbeck, 2016; Paillé et al., 2020).

However, different studies use different concepts to represent the employee mechanism. These include employee involvement, employee ecological initiatives, environmental citizenship behaviour, employee green behaviour, and general employee engagement. Such conceptual diversity makes it difficult to determine whether these constructs represent the same mechanism. Graham et al. (2023), for example, examined general employee engagement as a mechanism linking GSCM practices with environmental performance, but general employee engagement is broader than GEI and does not specifically represent organisational opportunities for participation in environmental management.

Future research could therefore distinguish more carefully between employee psychological states, employee environmental behaviours, and organisational practices that create opportunities for environmental participation. This distinction would help clarify the specific contribution of GEI to environmental management research.

Need for Greater Attention to Contextual and Industry Difference

The third research gap concerns differences across organisational and industry contexts. Existing evidence has been generated from a range of manufacturing industries and national settings. For example, previous studies have examined Chinese manufacturing firms, Australian manufacturing organisations, Mexican manufacturing firms, and other industrial contexts. Meta-analytic studies have also shown that the relationships between different GSCM practices and environmental performance can vary across studies (Fang & Zhang, 2018; Fu et al., 2023; Galdos-Urbizu et al., 2024).

Such variation indicates that environmental management practices should not necessarily be expected to produce identical outcomes across all organisational contexts. Differences in production processes, environmental impacts, regulatory requirements, employee roles, organisational structures, and environmental priorities may influence the implementation and effectiveness of environmental practices.

This issue is particularly relevant for manufacturing industries in which environmental management must be integrated with strict production, quality, safety, and operational requirements. Future research could therefore examine IEM, GEI, and EP in more specific industry settings rather than relying exclusively on aggregated manufacturing samples. Such research may provide a clearer understanding of how sector-specific operational characteristics influence employee participation and environmental outcomes.

Differences in Measurement and Levels of Analysis

The fourth gap concerns the measurement of the three constructs and differences in analytical levels. Environmental performance has been conceptualised in both broad management-oriented and narrower outcome-oriented ways. Some studies combine environmental management systems, organisational processes, compliance, and environmental outcomes, whereas others focus specifically on observable environmental improvements such as reductions in emissions, wastewater, waste, and hazardous material use. Trumpp et al. (2015) and Ahi and Searcy (2015) highlighted this diversity in environmental performance measurement.

Similar differences exist in research on employee-related environmental mechanisms. Some studies examine individual employees and their environmental behaviours, whereas others investigate organisational practices or organisational-unit capabilities. GEI, however, primarily concerns organisational opportunities and arrangements for employee participation. Therefore, differences in the level at which IEM, GEI, and EP are measured may affect the interpretation of their relationships.

Future research would benefit from clearer alignment between conceptual definitions, measurement indicators, and analytical levels. In particular, researchers should distinguish organisational environmental management practices from individual employee psychological states and behaviours, while also distinguishing environmental management processes from actual environmental outcomes. A consistent measurement approach would improve the comparability of findings across studies.

Future Research Directions

Based on the gaps identified above, several directions can be considered for future research. First, future studies could further integrate organisational environmental management and employee-related perspectives by examining how IEM creates conditions for employee participation in environmental activities. This would provide a more complete explanation of the process through which formal environmental management may be translated into environmental improvement.

Second, future research could examine GEI more explicitly as an environmental-specific organisational practice. Rather than using general employee engagement or general green behaviour as substitutes, researchers could focus on environmental communication, employee participation in environmental problem solving, environmental suggestion mechanisms, and opportunities to assume environmental responsibilities. This would provide a clearer understanding of the specific role of GEI in environmental management.

Third, future research could examine the relationships among IEM, GEI, and EP across different industries and organisational contexts. Comparative studies could determine whether the importance of employee participation differs according to production characteristics, environmental impacts, organisational size, or institutional conditions. Such studies would also help explain the variation reported in previous meta-analytic research.

Finally, future studies could employ longitudinal or multi-level research designs to examine the development of environmental management practices and employee participation over time. Existing evidence is often based on cross-sectional organisational surveys or studies conducted at a single analytical level. Longitudinal research could provide stronger evidence concerning the development of environmental management practices, employee participation, and environmental outcomes, while multi-level designs could distinguish organisational practices from individual employee behaviours.

Overall, the existing literature provides a strong foundation for understanding IEM, GEI, and EP, but these constructs have often been examined in separate research streams. A more integrated perspective can help clarify how formal internal environmental management, employee participation, and environmental outcomes are connected. Future research that

brings these perspectives together may contribute to a more complete understanding of the organisational processes through which environmental management practices are translated into environmental performance.

Taken together, the research gaps identified above point to the need for a more integrated understanding of organisational environmental management, employee involvement and environmental outcomes. Future research should move beyond examining these dimensions in isolation and pay greater attention to how organisational arrangements and employee participation are connected across different contexts and levels of analysis. Longitudinal and multilevel research, cross-industry and cross-country comparisons, and more consistent measurement of GEI may provide a stronger basis for understanding these relationships. Figure 2 summarises the major research gaps identified in the existing literature and maps them onto corresponding directions for future research.

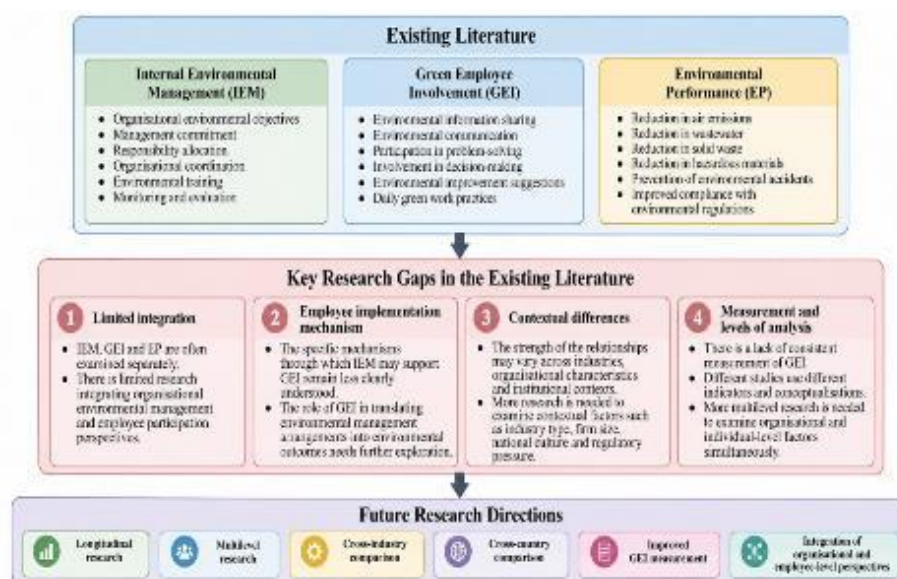


Figure 2. Research gaps and future research directions in the IEM–GEI–EP literature. Note: The figure summarises the major research gaps and future research directions identified from the reviewed literature.

Discussion

The literature reviewed in this study indicates that internal environmental management provides an important organisational foundation for improving environmental performance. Rather than representing a single environmental practice, internal environmental management involves a set of organisational arrangements through which environmental objectives are established, responsibilities are allocated, environmental activities are coordinated, and environmental performance is monitored and reviewed. In this sense, IEM determines how environmental considerations are incorporated into organisational routines and managerial processes.

Previous studies generally report a positive relationship between internal environmental management and environmental performance. Research in manufacturing contexts has shown that organisations with more developed internal environmental management practices tend to achieve better environmental outcomes, particularly in relation to waste

reduction, pollution prevention, resource efficiency and environmental compliance. Meta-analytic evidence also suggests that internal environmental management is among the organisational practices that can contribute to improved environmental performance, although the magnitude of the relationship varies across studies and contexts.

However, the literature also suggests that formal environmental management arrangements should not be interpreted as sufficient conditions for environmental improvement. Environmental policies, procedures and monitoring systems establish organisational expectations, but their implementation ultimately depends on organisational members. Environmental objectives need to be translated into daily operational activities, and employees often have direct knowledge of production processes, resource consumption, waste generation and potential environmental problems. Consequently, the effectiveness of IEM may depend partly on whether employees are given opportunities to participate in environmental management.

This observation provides an important link between organisational environmental management and employee involvement. IEM can establish the formal structure within which environmental activities take place, while employee involvement can influence how effectively these arrangements are implemented in practice. The relationship therefore extends beyond a simple management-system-to-outcome perspective and requires greater attention to the role of employees.

Green Employee Involvement as an Employee Implementation Mechanism

Green employee involvement provides a useful perspective for explaining how organisational environmental objectives can be translated into employee participation and operational activities. The literature reviewed in this study indicates that GEI generally involves employees' opportunities to receive environmental information, communicate environmental concerns, participate in environmental problem-solving and decision-making, and contribute suggestions for environmental improvement.

This perspective is important because employees are not simply passive recipients of environmental policies. In many manufacturing activities, employees directly interact with production equipment, materials, energy systems and waste streams. Their practical knowledge may therefore allow them to identify environmental problems and improvement opportunities that are not always visible at the managerial level. Employee participation can also facilitate communication between management and operational employees, helping organisations identify environmental issues and develop solutions that are more closely connected to actual work processes.

The literature further indicates that GEI should be distinguished from broader concepts such as employee engagement, organisational citizenship behaviour for the environment and general green behaviour. These concepts may overlap, but they address different aspects of employee involvement. GEI focuses specifically on employees' participation in organisational environmental management and improvement activities. This distinction is particularly relevant for the integration of GEI with IEM because it allows employee participation to be considered as part of the organisational environmental management process rather than merely as an individual behavioural outcome.

At the same time, the literature remains relatively fragmented. Some studies examine employee participation in environmental management, whereas others focus on green behaviour, environmental engagement or broader human resource management practices. Consequently, there is still a need to develop a more consistent understanding of GEI as an organisational mechanism connecting environmental management arrangements with environmental outcomes.

Environmental Performance as the Organisational Outcome

Environmental performance represents the outcome dimension of the framework. The literature commonly defines EP in terms of actual environmental consequences, including reductions in emissions, wastewater, solid waste, hazardous materials, environmental accidents and resource consumption. This outcome-oriented perspective distinguishes EP from the existence of environmental policies or management systems.

The distinction is important for interpreting the relationship among the three constructs. IEM describes the organisational arrangements used to manage environmental issues, whereas GEI describes employees' participation in these activities. EP, in contrast, reflects whether these organisational and employee-level activities are ultimately associated with improved environmental outcomes.

The literature generally provides evidence of positive relationships between environmental management practices and EP. However, environmental performance is influenced by organisational and contextual conditions, meaning that the relationship is unlikely to be uniform across all organisations. Differences in industry characteristics, production processes, regulatory environments, organisational resources and measurement approaches may contribute to variations in observed effects.

Employee involvement may represent one factor that helps explain these differences. Where employees have opportunities to contribute environmental knowledge and participate in problem-solving, environmental management practices may be more closely connected with operational activities. Nevertheless, the existing literature does not yet provide sufficient evidence to conclude that GEI consistently explains the relationship between IEM and EP across different organisational contexts.

An Integrated Perspective on IEM, GEI and Environmental Performance

Taken together, the literature suggests that IEM, GEI and EP represent three complementary dimensions of organisational environmental management. IEM reflects the formal organisational foundation, GEI represents an employee participation mechanism, and EP represents the environmental outcomes associated with organisational activities.

The integration of these three dimensions provides a more complete perspective than considering environmental management practices and environmental outcomes separately. IEM can establish environmental objectives, responsibilities and procedures, while GEI can provide opportunities for employees to participate in implementing and improving these arrangements. Environmental performance can then be considered in terms of the environmental outcomes associated with these organisational and employee activities.

Importantly, the literature does not yet provide sufficiently consistent evidence to treat the complete IEM–GEI–EP relationship as an established causal chain. Evidence supporting IEM and EP is comparatively well developed, while research connecting environmental management with employee participation and research examining employee participation in relation to environmental outcomes are more fragmented. This means that the integrated framework should be regarded as a useful synthesis of existing literature rather than as an empirically confirmed mediation model.

This perspective also helps clarify the complementary roles of management systems and employees. An organisation may establish comprehensive environmental policies and procedures, but their practical value may depend on how these arrangements are understood and implemented by employees. Conversely, employee willingness to participate in environmental activities may have limited organisational impact when formal environmental objectives, responsibilities and supporting systems are absent. IEM and GEI can therefore be viewed as complementary components of environmental management, with EP representing the outcome dimension through which their organisational significance can be assessed.

Future Research Directions

Based on the literature reviewed and the integrated discussion of internal environmental management, green employee involvement and environmental performance, several directions can be identified for future research.

Integrating Internal Environmental Management and Green Employee Involvement

Future research could further integrate organisational environmental management and employee involvement perspectives. Existing studies have largely examined internal environmental management and employee environmental behaviour as relatively separate research areas. Although the literature suggests that formal environmental management arrangements can provide organisational support and opportunities for employee participation, the relationship between these two dimensions has not been examined consistently.

Future studies could therefore investigate how internal environmental management practices influence the opportunities and conditions for green employee involvement. Particular attention could be given to environmental communication, employee training, participation in environmental decision-making, environmental problem-solving and mechanisms for submitting environmental improvement suggestions. This would help clarify how organisational environmental arrangements are translated into employee participation in environmental activities.

Developing More Precise Measures of Green Employee Involvement

A second direction concerns the measurement of green employee involvement. Existing studies have used related but conceptually different constructs, including employee engagement, green work behaviour, organisational citizenship behaviour for the environment and employee participation in environmental management. Although these concepts are related, they do not necessarily capture the same phenomenon.

Future research could therefore develop and validate measurement scales that more specifically reflect employees' involvement in organisational environmental management. Such measures could consider employees' access to environmental information, participation in environmental problem-solving and decision-making, communication with management regarding environmental issues, and opportunities to contribute environmental improvement suggestions.

Greater consistency in measurement would facilitate comparisons across studies and contexts. It could also help distinguish GEI from individual green behaviour, thereby strengthening the conceptual development of employee involvement within environmental management research.

Considering Industry and Contextual Differences

Future research should also pay greater attention to contextual differences. The effectiveness of internal environmental management and employee involvement may vary according to industry characteristics, organisational size, production processes and institutional environments. Manufacturing organisations with substantial resource consumption or pollution emissions may face different environmental management challenges from service organisations or less resource-intensive industries.

In addition, national and regional institutional environments may influence how organisations develop environmental management practices and how employees participate in environmental activities. Comparative research across industries, regions and countries could therefore provide a more comprehensive understanding of the conditions under which IEM and GEI are associated with environmental performance.

Such research would also help address the heterogeneity identified in existing studies. Rather than assuming that the relationships among IEM, GEI and EP are uniform, future research could examine whether organisational and institutional conditions strengthen, weaken or otherwise influence these relationships.

Adopting Longitudinal and Multilevel Research Designs

Another important direction concerns research design. Much of the existing literature relies on cross-sectional data, which provide useful evidence of relationships among environmental management practices, employee involvement and environmental performance but provide limited information about how these relationships develop over time.

Longitudinal research could examine whether improvements in internal environmental management are followed by changes in employee involvement and, subsequently, environmental performance. Such designs would provide a stronger basis for understanding the temporal development of organisational environmental initiatives.

Multilevel research could also be valuable because the three constructs operate across different levels of analysis. IEM is primarily an organisational-level construct, whereas GEI may involve individual- and team-level participation, and EP is generally assessed at the organisational level. Future studies could therefore combine organisational-level environmental management data with employee-level or team-level information. This

approach could provide a more detailed understanding of how organisational environmental arrangements are translated into employee participation and environmental outcomes.

Examining the Conditions Under Which Employee Involvement Contributes to Environmental Performance

Finally, future research could examine the conditions that influence whether employee involvement contributes to environmental performance. Employee participation does not necessarily produce environmental improvements automatically. Its effectiveness may depend on whether employees have sufficient environmental knowledge, whether management responds to employee suggestions, whether employees have appropriate decision-making opportunities, and whether environmental responsibilities are incorporated into daily work processes.

Future studies could therefore investigate organisational conditions that facilitate meaningful employee involvement. For example, researchers could examine the roles of environmental training, management support, internal communication, employee empowerment and organisational environmental culture. This would move the literature beyond the question of whether employee involvement is related to environmental performance and towards a more detailed understanding of how and under what conditions such involvement can contribute to environmental improvement.

Overall, future research would benefit from bringing together organisational environmental management and employee participation perspectives while maintaining clear distinctions among internal environmental management, green employee involvement and environmental performance. Greater conceptual clarity, more consistent measurement, attention to contextual differences, and stronger longitudinal and multilevel research designs could provide a more comprehensive understanding of how organisations translate environmental management arrangements into environmental outcomes.

Conclusions

This review examined the relationships among internal environmental management, green employee involvement and environmental performance by bringing together literature from environmental management, green supply chain management and green human resource management. The review was motivated by the need to better understand how organisational environmental management practices can be connected with employee participation and, ultimately, environmental outcomes.

The literature indicates that internal environmental management provides an important organisational foundation for environmental improvement. Through environmental objectives, responsibilities, procedures, coordination and monitoring, organisations can incorporate environmental considerations into their operational and managerial processes. Existing research generally reports a positive association between internal environmental management and environmental performance, although the strength of this relationship varies across organisational and institutional contexts. This suggests that the contribution of IEM should be considered in relation to the conditions under which environmental management practices are implemented.

Green employee involvement provides an additional perspective by focusing on the role of employees in environmental management. Employees can participate in environmental problem-solving, communicate environmental concerns, contribute improvement suggestions and become involved in environmental decision-making. The literature suggests that such participation can help connect formal environmental objectives with daily organisational activities. However, GEI remains conceptually fragmented across related areas of research, and it is sometimes represented through broader constructs such as employee engagement or green behaviour. Greater conceptual clarity is therefore needed.

Environmental performance represents the outcome dimension of the framework. Unlike environmental policies or management systems, EP focuses on actual environmental consequences, such as reductions in emissions, waste, wastewater, hazardous materials and environmental incidents. Considering EP as the outcome helps distinguish between an organisation's environmental management efforts and the environmental results associated with those efforts.

The review further suggests that IEM, GEI and EP should be considered as complementary dimensions of organisational environmental management. IEM provides the formal organisational foundation, GEI reflects employee participation in environmental activities, and EP represents the resulting environmental outcomes. This integrated perspective provides a more comprehensive way to understand environmental management than examining organisational practices or employee behaviours in isolation. At the same time, the existing literature does not provide sufficient evidence to regard the complete IEM–GEI–EP relationship as an established causal chain. The evidence remains stronger for some individual relationships than for the integrated process.

This review also identifies several areas requiring further investigation. Future research could examine more explicitly how organisational environmental management creates opportunities for employee involvement, develop more precise measures of GEI, and investigate differences across industries and institutional contexts. Longitudinal and multilevel research could further improve understanding of how organisational environmental management is translated into employee participation and environmental outcomes over time and across different levels of analysis.

Overall, the literature reviewed in this study highlights the importance of connecting organisational environmental management with the human side of environmental improvement. Understanding environmental performance requires attention not only to formal management systems but also to how employees participate in environmental activities. Further integration of these perspectives may contribute to a more comprehensive understanding of the organisational processes through which environmental management can support environmental improvement.

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