Received: 22 May 2023 | Revised: 26 October 2023 | Accepted: 9 December 2023

DOI: 10.1002/bse.3668

RESEARCH ARTICLE

Business Strategy and the Environment

WILEY

Sustainability isomorphism in buyer–supplier relationships: The impact of supply chain leadership

Zahra Ahmadi-Gh | Alejandro Bello-Pintado

INARBE—Institute for Advanced Research in Business and Economics, Public University of Navarre, Pamplona, Spain

Correspondence
Zahra Ahmadi-Gh, Faculty of Economics and Business Administration, Public University of Navarre, Campus de Arrosadia, s/n, Pamplona, Navarre 31006, Spain.
Email: zahra.ahmadi@unavarra.es

Funding information
Ministerio de Ciencia, Innovación y Universidades, Grant/Award Number: PID2020-115018RB-C31; European Regional Development Fund, Grant/Award Number: AEI/FEDER, UE; Ministerio de Ciencia e Innovación, Grant/Award Number: PID2019-105001GB-I00; Ministerio de Asuntos Económicos y Transformación Digital, Gobierno de España, Grant/Award Number: ECO 2017-86305-C4-4-R

Abstract

Within the framework of institutional theory, this study explores how the proactiveness of focal (or buying) manufacturing firms, demonstrated through the adoption of various sustainability practices, influences the sustainability performance of suppliers. Additionally, it examines how the leadership capability of buying firms, particularly in terms of supply chain leadership, can play a crucial role in this link. Through empirical analysis of a sample taken from the fourth round of the High-Performance Management (HPM) project, our study reveals compelling evidence indicating that buying firms, by adopting diverse sustainability practices, such as internal initiatives, monitoring efforts and collaborative approaches with suppliers, are able to create distinct institutional pressures. These pressures serve as a conduit for the diffusion of a shared set of sustainability goals, values and norms among suppliers, ultimately contributing to the development of sustainability competences and improving their overall sustainability performance. Furthermore, our findings suggest that when buying firms undertake a leading position, they can effectively translate isomorphism pressures into sustainability improvements on the supplier side. Overall, this study sheds light on important and understudied aspects of sustainability practices in buyer–supplier relationships and underscores the critical role that supply chain leadership can play in promoting sustainable practices across the entire supply chain.

KEYWORDS
isomorphism pressures, supplier collaboration, supplier monitoring, supplier sustainability performance, supply chain leadership

1 | INTRODUCTION

The mitigation of environmental burdens from industrial production and supply chain activity has become a growing concern on the global scale (Singh et al., 2022). This concern is particularly pronounced due to the substantial energy consumption of industrial activities and their considerable contribution to environmental impacts (Huo et al., 2021). To address this issue, manufacturing firms are progressively more focused on adopting sustainable operations in their production and logistics processes (Dai et al., 2021). However, implementing sustainable operations in global supply chains is challenging and highly complex (Koberg & Longoni, 2019), particularly under conditions of

Abbreviations: ESPc, external collaboration practices with suppliers; ESPm, external monitoring practices with suppliers; HPM, High-Performance Management; ISP, internal sustainability practices; SCL, supply chain leadership; SSCM, sustainable supply chain management.

growing uncertainty (Flynn et al., 2016), risks and disruptions (Birkie & Trucco, 2020). In addition, maintaining collaborative relationships with suppliers while ensuring accountability to stakeholders (Gualandris et al., 2015) and implementing sustainability-focused monitoring poses significant challenges for buying firms (Shafiq et al., 2017; Wolf, 2014).

In this context, companies face increasing pressure from various stakeholders to demonstrate greater environmental awareness and promote sustainability initiatives throughout their supply chains (Bello-Pintado et al., 2023). According to institutional theory (DiMaggio & Powell, 1983), these pressures take the form of coercive, normative and mimetic pressures, which may drive companies to adopt best practices (Hoejmose, Grosvold, & Millington, 2014; Ketchen & Hult, 2007) and emulate supplier relationship management strategies used by their competitors (Dubey et al., 2019). Theoretically, companies in the same industry, including both buying firms and their suppliers, are becoming similar or isomorphic in organizational practices (DiMaggio & Powell, 1983).

The sustainable supply chain management (SSCM) model, introduced by Seuring and Müller (2008), integrates sustainability goals (i.e., economic, environmental and social goals) into supply chain management enabling buying firms to pass those isomorphic pressures to their suppliers. Beyond this, SSCM serves as an approach for buying firms to manage sustainability concerns with suppliers in the form of supplier evaluation for risk and performance (Hossan Chowdhury & Quaddus, 2021). To assess sustainability performance of suppliers, the most common tools suggested to buying firms are certifications, sustainability report and codes of conduct (Naffin et al., 2023). However, implementing SSCM requires more than just supplier evaluation. Within this perspective, different managerial/organizational practices including supplier monitoring (i.e., the post-selection assessment of suppliers in terms of their compliance to sustainability mandates) and supplier collaboration are proposed to the buying firms to develop suppliers' sustainability capability (Dubey et al., 2019) and to ensure that their suppliers are accountable to the environment and society (Gualandris & Kalchschmidt, 2016).

Despite considerable academic efforts made to examine the outcome of SSCM practices, the question still remains unclear that how the sustainability proactiveness of buying firms through adopting and implementing of diverse SSCM practices can be translated into suppliers' green behaviours (Allenbacher & Berg, 2023; Hoejmose, Roehrich, & Grosvold, 2014; Koberg & Longoni, 2019). Moreover, those practices are expected to enhance sustainability performance of both suppliers and buying firms, but their consequences are not clear yet, with mixed results on suppliers' sides (Bai & Satir, 2022). In this regard, Ahmed and Shafiq (2022) revealed that the legitimacy of buying firms as an indicator of their commitment to sustainability is a crucial factor for suppliers' sustainability performance. However, the authors did not explain how buying firms put their legitimacy into action to impact suppliers' sustainability performance. Similarly, Sancha et al. (2019) studied the effect of supplier assessment and collaboration practices on supplier performance, but they did not examine how these activities can improve sustainability performance. The existing literature indicates a knowledge gap in understanding the factors that motivate suppliers to enhance their sustainability performance (Belotti Pedroso et al., 2021; Chen & Chen, 2019; Liu et al., 2018), emphasizing the need for further empirical research in this domain (Allenbacher & Berg, 2023; Jia et al., 2021). The lack of comprehensive empirical studies in this area poses challenges for decision-makers in achieving their sustainability objectives within supplier relationships (Giannakis et al., 2020).

This paper aims to contribute to the field by conducting an analysis of the impact of buying firms on the sustainability-related behaviours of their suppliers. The primary research question addressed in this study is how the proactive efforts of buying firms can enhance the sustainability performance of their suppliers. Specifically, the focus is on how the adoption and implementation of diverse SSCM practices by buying firms (i.e., internal and external supplier monitoring and external supplier collaboration) can improve the sustainability performance of their suppliers in terms of supplier's engagement and reputation to sustainability as well as their environmental certifications. By considering the existence of institutional pressures that promote institutional isomorphism in buyer–supplier relationships (DiMaggio & Powell, 1983), this proposal builds on and extends previous studies (Ahmed & Shafiq, 2022; Allenbacher & Berg, 2023; Liu et al., 2019; Sancha et al., 2019).

Additionally, based upon the notion that leadership in supply chain is essential for facilitating the supply chain orientation (Rintala, 2023), this paper addresses the role of supply chain leadership (SCL), provided by sustainability-oriented firms, in shaping and aligning the sustainability initiatives of supply chain members. To achieve sustainability goals, all organizations involved in a supply chain must work together in a cohesive manner (Seuring & Müller, 2008), requiring commitment, coordination and information sharing (Awasthi & Grzybowska, 2014). Thus, SCL is crucial for achieving desired sustainability objectives. Despite this, few studies have examined the relationship between sustainability in supplier relationship management, leadership in the supply chain and supplier performance (Fontoura & Coelho, 2020; Mokhtar et al., 2019a). A literature review conducted by Mokhtar et al. (2019b) identified the role of SCL in improving supplier performance as a significant research gap in the field. In our opinion, SCL can enhance isomorphism in buyer–supplier relationships.

This paper proposes four hypotheses to be tested empirically, drawing on the perspectives of SSCM and SCL and using the theoretical lens of institutional theory. Three constructs were developed for sustainability practices adopted and initiated by buying firms: internal as well as two external SSCM practices with suppliers termed supplier monitoring and supplier collaboration. These two mechanisms are contradictory in nature and produce different outcomes and responses from suppliers (Klassen & Vachon, 2003). While the majority of sustainability practices in this study focus on environmental concerns, social practices are also included, and the general concept of sustainability practices is used (Ahmadi-Gh & Bello-Pintado, 2022; Bello-Pintado et al., 2023; Danese et al., 2019). Sustainable supplier evaluation of performance refers to the buying firm's perception of

the supplier's sustainability improvement through post-selection evaluation of the major suppliers by means of certification, reputation and the application of sustainability initiatives. The paper, further, developed one construct for sustainable supplier evaluation of performance and one construct for SCL. Using data collected from the fourth round of the High-Performance Management (HPM) project, a sample of 325 manufacturing firms was analysed using PLS-SEM to test the proposed hypotheses.

This study provides contributions to the literature in several ways. First, by extending the previous research, this study addresses often-overlooked connection between a buying firm's sustainability practices and the sustainability performance of its suppliers, thus shifting attention from the buyer to the supplier (Allenbacher & Berg, 2023; Jia et al., 2021). Moreover, by employing theoretical framework of institutional theory, this study explains how the proactive approaches of buying focal firms can lead to isomorphism within buyer–supplier relationship, which, in turn, serves to enhance the sustainability performance of their key suppliers. Second, it sheds light on the efficacy of monitoring approaches and collaborative approaches in improving supplier sustainability performance and thus enriches the understanding of the role of sustainable supplier management practices in supplier development. In this context, both mechanisms (monitoring and collaboration) act as potent tools for effectively disseminating institutional pressures to suppliers by addressing institutional requirements for sustainability. Despite of being often perceived as less effective in comparison to collaborative mechanisms, this study underscores the significance of the monitoring mechanisms as vital components of focal firms' proactive approaches. Third, it contributes to the understanding of the role of SCL in enhancing suppliers' sustainability performance, bridging the gap between SSCM and SCL literatures. Finally, by drawing on a multi-country, multi-industry HPM project, this study provides valuable insights into how leading sustainability-oriented firms can improve the sustainability performance of their key suppliers.

After this introduction, Section 2 provides a review of the research literature; Section 3 states how the hypotheses are grounded; Section 4 explains how the samples were collected and describes the measures that were used; Section 5 presents the methodology and analysis; Section 6 discusses the findings against the reviewed literature; and, finally, Section 7 summarizes the theoretical and practical contributions, acknowledges the limitations of the research and indicates potential research directions.

2 | LITERATURE BACKGROUND

2.1 | Institutional isomorphism and sustainability in supply chains

Institutional theory provides insight into how firms interact with their suppliers on sustainability issues to maintain legitimacy, organizational visibility and reputation (Blome et al., 2014; Koberg & Longoni, 2019). Firms often look to accepted practices and industry norms for guidance on supply chain activities, resulting in homogeneity within institutional fields over time (Ketchen & Hult, 2007). This process of institutional isomorphism, as defined by DiMaggio and Powell (1983), is driven by three types of pressures: coercive, normative and mimetic. Previous research has shown that these institutional drivers impact firm behaviour, but their effects vary depending on the type of pressure exerted (Hoejmose, Grosvold, & Millington, 2014; Tachizawa et al., 2015).

Coercive pressure is derived from the power of governmental regulators or other organizations with which companies have a partnership to force them to conform to sustainability requirements (Hoejmose, Roehrich, & Grosvold, 2014; Varsei et al., 2014). Some examples are reducing certain toxic materials in their products or encouraging manufacturers to apply sustainability initiatives, such as green packaging or reverse logistics, to achieve competitive advantages (Zhu et al., 2013). Suppliers are coerced not only by regulatory pressures in their local environment but also by the powerful proactive buying firms (Ahmed & Shafiq, 2022), which force them to exercise the demanded sustainability practices (Chen & Chen, 2019; Wilhelm et al., 2016). For example, buying firms usually exert coercive pressures on suppliers by defining sustainability metrics or applying third-party certification in the selection or assessment of suppliers (Nath et al., 2019). In addition, buying firms usually undertake the role of regulators and impose pressures on suppliers to adopt more sustainable behaviour in the form of a code of conduct for buyers (Subramaniam et al., 2020).

Normative pressure occurs from the professionalization of educated employees or the cognitive legitimation developed by universities and other professional or social groups that cause firms to seek legitimacy and positive reputations (DiMaggio & Powell, 1983; Kauppi, 2013). Suppliers may undertake effort to improve their sustainability performance, for instance, by acquiring ISO certificates under normative pressures exerted from buying firms' legitimacy and sustainability commitments (Ahmed & Shafiq, 2022). Furthermore, they usually adopt sustainability practices if they identify that rivals within the industry are engaged in sustainability initiatives (Sancha et al., 2015; Tate et al., 2011).

Mimetic pressure motivates companies to imitate the successful strategies implemented by competitors to overtake them (Sancha et al., 2015). Mimetic pressure induces buying firms to imitate the supplier relationship management approaches undertaken by competitors and customers to overcome uncertainty (Khurshid et al., 2021; Sancha et al., 2015). Moreover, suppliers usually undertake fast learning approaches by imitating the good or advanced practices of supply chain members (buying firm and peer suppliers) as they are considered as the main source of sustainability knowledge for suppliers (Liu et al., 2019).

Under SSCM, a buying firm responds to collective institutional pressures by intending to enhance its own processes through the adoption of different socially focused practices and environmentally focused practices, which are referred to internal SSCM (Dai et al., 2021; Wang & Dai, 2018). SSCM acts also as a tool for buying firms to manage institutional isomorphic pressures by facilitating the

diffusion of sustainability concerns throughout their supply chain (Zeng et al., 2017). At the heart of SSCM practices lies the practice of imposing pressure on suppliers through the integration of sustainability objectives into supplier relationship management (Zimon et al., 2020).

The extension of sustainability requirements to suppliers, which are referred to external SSCM (Gualandris & Kalchschmidt, 2016), is conducted by buying firms to manage their suppliers' behaviours towards society and the environment by pushing them to engage with sustainability requirements and improve their sustainability performance (Yang & Zhang, 2017). The literature has distinguished between different sustainability initiatives with suppliers (Subramaniam et al., 2020). Monitoring strategies which aim to ensure the basic compliance of suppliers through activities such as supplier evaluation and assessment, are one category. Another category, collaborative approaches focuses on developing suppliers' technical and financial capabilities to implement proactive initiatives through joint efforts (Chen & Chen, 2019; Koberg & Longoni, 2019; Sancha et al., 2019).

Managing buyer–supplier relationship regarding sustainability requires measuring and evaluating the sustainability performance of their suppliers to be able to develop appropriate sustainability norms and codes of conduct (Varsei et al., 2014). Hence, the identification of sustainability metrics is crucial to improve decision making regarding the supplier selection and performance evaluation process (Giannakis et al., 2020; Gualandris et al., 2015; Zimmer et al., 2016) as well as to achieve the goal of a long-term (collaborative or monitoring) relationship with suppliers (Govindan et al., 2021). The evaluation of suppliers' sustainability performance embraces different criteria by integrating three objectives of sustainability (i.e., economic, social and environmental) and sustainability policies (Coşkun et al., 2022; Khan et al., 2018) into traditional indicators of performance (i.e., price, quality, etc.). The extant literature has outlined the evaluation process as a continuous assessment of suppliers in terms of their compliance with standards and minimum requirements as well as an evaluation of the improvement in their sustainability performance through different measures, including certification and audits (León Bravo et al., 2022; Zimmer et al., 2016).

2.2 | Leadership in supply chains

SCL focuses on the inter-organizational level of leadership (Mokhtar et al., 2019a). SCL is defined as the capability to motivate, influence and guide the behaviour, actions and commitment of supply chain members to improve supply chain performance (Chen et al., 2021; Defee et al., 2009). Lockstrom et al. (2010, p. 275) defined SCL as 'the ability to influence one's own organisation and the suppliers' organisations in order to establish and accomplish common goals and objectives'. From Defee et al.'s (2009) point of view, a leader in a supply chain is a party who identifies the necessary changes and determines a vision for a better future for the whole chain. Other scholars consider the leading firm as the buying firm that has the leadership ability to improve the relationship with suppliers, orchestrate their actions and enhance their commitment (Lockstrom et al., 2010; Mokhtar et al., 2019b).

The literature in the field has paid attention to two main forms of SCL: transactional leadership and transformational leadership (Chen et al., 2021; Defee et al., 2009). The former refers to management-by-expectation and contingent rewards behind leader–follower interactions, while the latter includes the behaviours of inspiration, intellectual stimulation and individual consideration (Gosling et al., 2016). Through 'transformational' SCL, which emphasizes the inspiring role of leaders, followers' self-interests can be transformed to align with collective interests, thus enhancing followers' compliance performance (Jia et al., 2019). In the literature, this style of leadership has a greater impact (than transactional leadership) on the management of green strategies within buyer–supplier relationship (Birasnav et al., 2015; Huo et al., 2021) by facilitating the learning of sustainability initiatives (Gosling et al., 2016) and also by promoting continuous training and coaching for their suppliers (Mokhtar et al., 2019b). Recognizing the complementary characteristics of these two leadership styles, scholars have noted that a one-size-fits-all approach to leadership is not universally applicable (Mokhtar et al., 2019b), proposing a combination of these two styles to achieve superior performance (Chen et al., 2021). In this study, SCL encompasses both transformational and transactional leadership aspects; however, the emphasis remains on aligning with the transformational SCL style.

In the efforts to conceptualize SCL, previous studies have underlined the role of power in driving suppliers to adopt sustainability measures (Fontoura & Coelho, 2020; Sharif & Irani, 2012), considering that the power of leaders is determinant of the suppliers' commitment (Defee et al., 2009; Gosling et al., 2016). By highlighting the voluntary characteristic of SSCM (Ahi & Searcy, 2013), other scholars have emphasized the collaborative behaviour of SCL, pointing out that suppliers may adopt sustainability when motivated by a supply chain leader's vision of it (Gosling et al., 2016). Thus, leaders should constantly improve sustainability in their supplier relationship management to maintain a leading position through the evaluation of their own and their suppliers' sustainability performance before its impact can be understood by the public (Leppelt et al., 2013).

3 | HYPOTHESIS DEVELOPMENT

3.1 | The effect of internal sustainability practices

According to institutional theory, the adoption of internal sustainability practices can be derived for two main reasons: the coercion of law and regulation and the incentives to exercise the best as possible environmental and social practices (Saeed et al., 2018). To be environmentally and socially responsible, firms must adopt sustainable practices in their in-house operations. This includes initiatives such as implementing an environmental management system, conducting a life cycle analysis, incorporating eco-design, establishing a health system and improving the workforce's environment (Wang &

Dai, 2018). Once sustainability becomes a core consideration in the procurement function, buying firms seek out suppliers who share this vision and are committed to sustainability for collaborative purposes (Blome et al., 2014). It leads buying firms to develop technical competencies and knowledge that facilitate the implementation of sustainable supplier management mechanisms, such as monitoring and collaboration (Ahmadi-Gh & Bello-Pintado, 2021; Gualandris & Kalchschmidt, 2016).

Zhu et al. (2013) asserted that successful adoption and implementation of sustainability initiatives within firms necessitate coordination among all organizational functions inside firms, as well as with external organizations within the supply chain to influence supply chain managers to adopt sustainable practices. This proactive stance adopted by buying firms can act as a coercive force on suppliers pushing them to be involved in sustainability-related activities and boost their sustainability performance (Nath et al., 2019). Without internal implementation of sustainability initiatives, a buying firm is unable to evaluate and support the sustainability performance of their suppliers (Gualandris & Kalchschmidt, 2016).

Sustainable buying firms use both coercive and normative pressures to influence their suppliers' sustainability practices (Ahmed & Shafiq, 2022). For example, Dai et al. (2021) found that normative pressures from customers are a significant driving force behind the adoption of SSCM practices by Chinese manufacturers certified with ISO 14001 certificates. Similarly, Blome et al. (2014) identified a positive relationship between green procurement practices and supplier performance by setting appropriate environmental standards and promoting green initiatives. Additionally, firm's own proactiveness can create mimetic pressures through sustainability-oriented managers and employees that demand competitive benchmarking of supplier collaboration practices adopted by successful companies in the industry (Andalib Ardakani et al., 2022). Collaborative approaches, then, lead uncertainty-avoided suppliers to imitate sustainability practices of proactive buying firm through inter-organizational exchanges (Liu et al., 2019). Accordingly, we propose the following hypothesis:

> **Hypothesis 1.** The adoption of internal sustainability practices is positively associated with the sustainability performance of suppliers.

3.2 | The effect of external sustainability practices: Supplier monitoring and supplier collaboration

Buyers use monitoring and collaboration mechanisms to manage sustainability in their relationships with suppliers, according to Gimenez and Tachizawa (2012). Monitoring practices include evaluation, assessment and control of suppliers' performance with respect to social and environmental criteria (Gualandris et al., 2014). Nath et al. (2019) indicated that buyers use coercive pressures in terms of codes of conduct or third-party auditing as well as mimetic pressures from the best sustainability practices of competitors to push suppliers towards sustainability. The authors observed that the buying firms directly applied assessment practices through their internal codes of conduct to evaluate the suppliers' performance.

Nevertheless, while incorporating sustainability monitoring practices is an effective way to manage sustainability risk in the supply chain (Shafiq et al., 2017), coercive pressures through monitoring did not show significant effects on sustainability outcomes (Sancha et al., 2016). For instance, Tachizawa et al. (2015) studied 71 purchasing managers from Spain to explore the relationship between supplier monitoring practices and environmental outcomes. They found that simply monitoring suppliers' environmental footprint in response to government regulations did not improve their sustainability performance. Similarly, Subramaniam et al. (2020) conducted a study on 141 multinational companies in Malaysia and observed that regular assessment and control of suppliers' compliance with buyers' codes of conduct did not enhance their social sustainability performance. Likewise, it seems that the attempts by buying firms to exert regulatory pressures or impose international trade barriers on suppliers through monitoring and certification activities do not necessarily improve suppliers' social and environmental performance. For instance, compliance with a buyer's code of conduct, acquiring certificates or self-assessments may not produce reliable data and may only indicate compliance requirements rather than actual performance levels. Studies by Wu (2017) and Yang and Zhang (2017) support these findings. Moreover, Akamp and Müller (2013) found no significant relationship between supplier performance and social and environmental reviews through ISO 14000 and SA8000 certifications.

In this line, Sancha et al. (2019) demonstrated that evaluation and assessment practices were insufficient in improving supplier sustainability performance (compliance with standards). Bearing the cost and efforts of monitoring activities by suppliers may cause coercive institutional pressures that negatively impact on their performance (Sancha et al., 2019). Such monitoring activities merely serve to satisfy buying firms' requirements and improve their public image without necessarily leading to better performance in supplier side (Akamp & Müller, 2013; Subramaniam et al., 2020).

Despite several contradictory findings in the literature, we believe that extending institutional isomorphism, which involves pressuring suppliers to meet sustainability standards and codes of conduct, may be effective in enhancing their sustainability performance. Within the context of institutional theory, monitoring activities exert coercive pressures to suppliers directly from the expectations of buying firms and third-party certifications and indirectly from customers' sustainability requirements and/or buying firms' perceived regulatory pressures (Nath et al., 2019). In addition, these types of activities create mimetic pressures due to the uncertainty behind sustainability requirements and competitive conditions between peer suppliers. Collectively, those pressures push suppliers to follow the buying firms' codes of conduct and obtain required standards and certifications. However, monitoring practices also provide an opportunity for suppliers to receive feedback from their buying firms on their

inefficiencies, protentional social and environmental risks and alignment/non-alignment with expectations (Gualandris et al., 2015; Yang & Zhang, 2017), through which buying firms are able to diffuse sustainability values, norms and knowledge to their suppliers (Gualandris & Kalchschmidt, 2016; Lee et al., 2014). Hence, monitoring acts as a start-point of supplier's performance improvement (Akamp & Müller, 2013). Therefore, we posit the following hypothesis:

> **Hypothesis 2a.** The adoption of sustainability monitoring practices is positively associated with the sustainability performance of suppliers.

Supplier collaboration practices typically require a significant level of involvement from buying firms to develop a cooperative approach with their suppliers. However, implementing sustainability requirements can be challenging due to a lack of capabilities, knowledge and technological advancements on the supplier side (Kumar & Rahman, 2015). According to institutional theory, manufacturing firms facing strong competitive pressure often imitate the collaborative approaches of other firms in the industry with their suppliers (Khurshid et al., 2021). Alternatively, under normative pressure from customers, NGOs or civil society, buying firms may invest heavily in developing relationships with their suppliers (Ahmed & Najmi, 2018; Saeed et al., 2018). Nath et al. (2019) found that normative pressure, such as that various institutions form an alliance, is an effective approach for encouraging buying firms to adopt collaborative development practices with key suppliers and improve their sustainability awareness through training.

Moreover, undertaking a collaborative strategy in sustainable supplier management can have a positive impact on the sustainability capabilities of suppliers. Collaborative approaches involve sharing information, promoting a common understanding of sustainability risks and working together to solve problems and address sustainability issues (Gualandris et al., 2014; Sancha et al., 2019; Wu et al., 2014). By fostering a trusting and committed relationship, collaborative efforts can generate and transfer knowledge between two parties and thereby enrich sustainability learning (Gosling et al., 2016).

Collaboration is also essential for suppliers to shorten their learning curve and implement sustainability practices effectively (Sancha et al., 2019). Adopting collaboration strategies can provide suppliers with access to training, technology, standards and knowledge related to environmental issues, thus enabling them to produce more environmentally friendly products and improve operational efficiency (Tachizawa et al., 2015; Yang & Zhang, 2017). Sancha et al. (2016) indicated that a buying firm's involvement in solving the social issues of suppliers through a collaborative attitude could enhance the social outcomes of suppliers' sustainability performance in Spanish manufacturers. Other scholars also found a positive link between collaboration and supplier sustainability performance (Kumar & Rahman, 2016; Vanalle et al., 2017). It suggests that isomorphic pressure may enhance the sustainability performance of suppliers by driving buying firms to adopt a collaborative approach to managing sustainability practices with suppliers. Thus, we propose the following hypothesis:

> **Hypothesis 2b.** The adoption of supplier collaboration practices is positively associated with the sustainability performance of suppliers.

3.3 | The interaction effect of SCL

Blome et al. (2014) emphasized that organizational sustainability behaviour cannot be solely explained by legitimacy from an institutional perspective. Rather, buying firms in supply chains hold significant power to drive environmental and social responsibility practices in their buyer–supplier relationships, as evidenced by Defee et al. (2009). By highlighting the voluntary nature of sustainability initiatives in SSCM, prior studies have outlined that the power of leading firms is not the sole influential factor, but their sustainability vision is also influencing followers in supply chains to adopt sustainability initiatives (Ahi & Searcy, 2013; Gosling et al., 2016).

In the context of supply chain sustainability, a sustainable leader who develops policies, goals and a code of conduct can leverage their power to apply institutional pressures on suppliers or motivate them to undertake sustainability initiatives and engage in corporate social responsibility practices. To improve suppliers' compliance and sustainability behaviour, it is crucial for leading firms to develop the capability of their suppliers through supportive mechanisms as proposed by Birasnav et al. (2015) and Mokhtar et al. (2019b).

Leadership in supply chains requires buying firms to individually consider their suppliers and provide them with consultancy, coaching and incentives to be proactive. Joint efforts should be made to promote trust and commitment in their interactions, as noted by Lockström and Lei (2013). In this regard, SCL may act as a facilitator of collaborative relationship between supply chain members as proposed by Rintala (2023). In their qualitative case study, Jia et al. (2019) affirmed the importance of buying firms' vision of sustainability in stimulating suppliers to find sustainable solutions. Through the application of appropriate mechanisms (e.g., monitoring vs. collaboration) in different ties, buying firms can assist and support their suppliers by giving them individualized consideration, such as financing, training and the provision of information and lessons based on experience (Jia et al., 2019).

Research in this area has provided evidence that buying firms' SCL has a positive impact on the sustainability performance of suppliers by facilitating information exchange between buyers and suppliers through the implementation of sustainability initiatives in supply chains (Birasnav et al., 2015; Chen et al., 2021). SCL provides buying firms with a tool to motivate their suppliers either by creating an incentive/sanction system based on performance assessment or by collaborating with suppliers to develop a shared sustainability mission that focuses on learning and improving sustainability practices

(Gosling et al., 2016). Aligned with institutional theory perspective, Ahmed and Najmi (2018) demonstrated that the achievement of a leadership position by Pakistani buying firms that have obtained ISO 14000 certificates promotes green collaboration with suppliers by developing sustainability policies and helping them to implement sustainability initiatives in their plant. Additionally, Mokhtar et al. (2019a) observed that the adoption of SCL by buying firms contributed to better reverse supply chain performance of suppliers because of the monitoring of their compliance performance as well as the encouragement and training of suppliers to adopt sustainability initiatives and achieve sustainable goals cooperatively. We thus posit the following hypothesis:

> **Hypothesis 3.** SCL moderates the link between buying firms' internal and external sustainability practices and suppliers' sustainability performance.

The structural model of this study is presented graphically in Figure 1.

4 | RESEARCH METHODOLOGY

4.1 | Sampling

This study used data from the fourth HPM project, which were collected by 25 international research teams across the world from May 2012 to February 2016. This dataset has been used in the authors' previous studies to examine other relationships in the context of SSCM in manufacturing (Ahmadi-Gh & Bello-Pintado, 2021, 2022). The HPM is a large-scale, multi-country and multi-industry project that was conducted to investigate the operation of manufacturing plants and their associated performance. This project was initially launched by Schroeder and Flynn in 1991 and regularly updated and developed through different rounds (Bello-Pintado et al., 2023; Schroeder & Flynn, 2001).

Using a survey response method, the data were collected from manufacturing plants in three industries (i.e., mechanics, electronics and transportation equipment) in each country. These industries were selected because they are in continuous transition and facing intense global competition (Schroeder & Flynn, 2001). The sample plant was chosen randomly from the master list of manufacturing plants with at least 100 employees in each country (Flynn et al., 2016). The local research team in each country was responsible for contacting the sample plant, performing the research and supporting the respondents during the survey. The questionnaires were first developed in English, then translated into the local language by the national research team of each country and back-translated into English by different team members to ensure the cohesion and reliability of the translation (Flynn et al., 2016). The questionnaires consisted of a set of 12 sections, each of which was related to a specific function of the plant, such as upstream/downstream supply chain management, supervision, quality management or sustainability management. Two individuals responsible for each of these functions acted as respondents for their respective questionnaires (Danese et al., 2019). Collecting responses from more than one knowledgeable informant for each section of the questionnaire in each plant helped reduce the risk of item non-response bias (Li et al., 2021). For example, for the section related to environmental practices, both the Environmental Affairs Director and the Environmental Affairs Manager answered the questions.

Different methods such as having two respondents for the same item, using a mix of item types in each questionnaire section or pilot testing the items to assure their reliability, validity and clarity have been applied to reduce the risk of common method bias (Danese et al., 2019). Finally, after cleaning up the data by a global coordinator, the surveys were collected from the sample of 330 plants with a response rate that was approximately 65% in each country; thus, there was no need to check for non-response bias (Danese et al., 2019). The dataset included 325 sample firms from 16 countries. Table 1 reports the data distribution according to the sector and country.

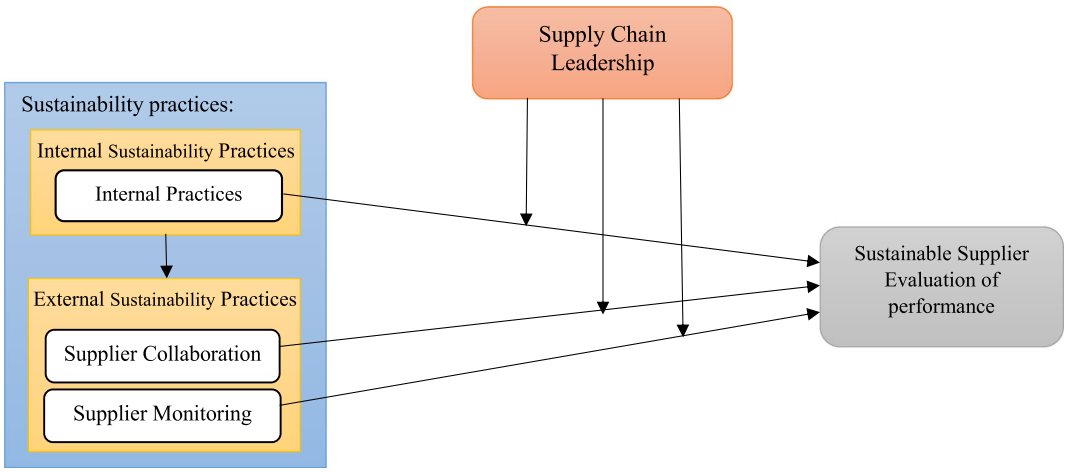


FIGURE 1 Structural model.

TABLE 1 Data distribution according to the sector and country.

Country	Electronics	Mechanical	Transportation equipment	Total	*GDPP*	*GHGP*
Austria	1	6	1	8	42,600	9.15
Brazil	5	7	11	23	11,700	5.03
China	10	17	3	30	9100	8.49
Spain	7	7	10	24	30,100	6.57
Finland	6	6	5	17	35,800	11.69
Germany	6	13	9	28	38,700	11.00
Israel	18	5	0	23	33,900	11.46
Italy	7	17	5	29	29,800	7.05
Japan	6	7	9	22	35,900	10.55
Korea	8	5	13	26	31,900	13.43
Sweden	4	4	1	9	40,300	5.29
Switzerland	2	0	1	3	44,900	6.34
Taiwan	19	10	1	30	38,400	9.16
UK	4	5	4	13	36,600	8.45
USA	5	7	3	15	51,700	19.9
Vietnam	10	7	8	25	3800	2.81
Total	118	123	84	325		

4.2 | Measures

All the constructs in this study are multi-items based on 5-point Likert-type scales from 1 (strongly disagree) to 5 (strongly agree). Given the focus of this study, only the environmental affairs and upstream supply chain management questionnaire sections were considered. In line with the previous studies, three constructs for sustainability practices were created to distinguish between different sustainability practices as independent variables based on SSCM literature (Danese et al., 2019; Wang & Dai, 2018). The respondents were requested to list several activities related to environmental issues in response to the item 'Please indicate the degree to which your plant is engaged in the following initiatives/practices'. These constructs were named *ISP* (internal), *ESPc* (external collaborative) and *ESPm* (external monitoring; Danese et al., 2019). The literature affirmed the positive association between the adoption of internal sustainability practices and external sustainability practices (Ahmadi-Gh & Bello-Pintado, 2021).

The questionnaire also contained items to form SCL (Min et al., 2007) as a moderator variable. In this case, the upstream supply chain managers were requested to indicate 'the extent to which the plant is perceived to be the leader with its supply chains'. In addition, the HPM project suggested items to develop the evaluation of the strategic key suppliers' sustainability performance as a dependent variable labelled *SSEP* by asking the respondents to indicate whether 'We are satisfied with the performance of our key suppliers on the following criteria'. In this study, the *SSEP* scale was developed through the implementation of sustainability initiatives, sustainability reputation and the adoption of environmental management system practices through ISO 14001 certification. Previous literature has revealed that those metrics are positively related to supplier sustainability performance (Naffin et al., 2023; Yang & Zhang, 2017; Zimmer et al., 2016).

All constructs were treated as reflective measures. The measurement properties of the constructs are presented in Table 2.

Control variables capture the effect of the sector and firm size as two commonly used control variables at firm level. In this study, the firm size was presented by the logarithm of the number of people employed by the sample plants. The manufacturing sector to which a firm belongs was incorporated through the creation of dummy variables (ind1 for the electronics, ind2 for the mechanical and ind3 for the transportation equipment sector). Moreover, other variables such as region can act as influencer of the link between sustainability practices, SCL and suppliers' performance (Chen et al., 2021; Dubey et al., 2015). Thus, *gross domestic product per capita* (*GDPP*) as a proxy for national wealth and metric tons of CO_2 per capita (*GHGP*) as an indicator for the national level of gross greenhouse gas (GHG) emission were considered as control variables at country level. The information for both variables has been extracted from the World Bank webpage related to year 2013, which coincides with the implementation date of the fourth round of HPM project (please see Table 1).

5 | DATA ANALYSIS

PLS-SEM analysis technique is an appropriate tool for studies with exploratory characteristics and given conditional process models (mediation and moderation models) (Peng & Lai, 2012; Sarstedt et al., 2020). Furthermore, variance inflation factor (VIF) collinearity in PLS-SEM modelling is more sufficient to realize the problem of common method variance (Kock, 2015). Therefore, PLS-SEM, by using

TABLE 2 Constructs and items description.

Variables	Items	Description	Mean	Standard deviation	Factor loading	*t* statistic	Cronbach's alpha	Composite reliability	*AVE*
Please indicate the degree to which your plant is engaged in the following initiatives/practices									
ISP							.894	.914	.543
	S_Isp01	Water efficiency	3.646	0.896	.669	18.479			
	S_Isp02	Reducing waste in internal processes (e.g., improving yield or efficiency)	3.991	0.745	.727	23.202			
	S_Isp03	Improving the workforce environment (e.g., indoor air quality)	4.062	0.745	.725	24.030			
	S_Isp04	Pollution prevention (eliminating emissions or waste)	4.069	0.777	.803	34.620			
	S_Isp05	Pollution control (scrubbing and waste treatment)	4.126	0.912	.687	19.345			
	S_Isp06	Decreasing the likelihood or impact of an environmental accident	3.936	0.797	.791	34.861			
	S_Isp07	Complying with an industry-wide code of conduct	3.908	0.910	.743	24.199			
	S_Isp08	Environmental improvements in the disposition of your organization's scrap or excess material (re-use, recycling, etc.)	4.044	0.764	.721	18.750			
	S_Isp09	Environmental improvements in the disposition of your organization's equipment	3.678	0.860	.754	26.933			
ESPc							.868	.910	.716
	S_Espc01	Encouraging suppliers to improve the environmental performance of their processes	3.194	1.057	.877	60.927			
	S_Espc02	Providing design specification to suppliers in line with environmental requirements (e.g., green purchasing and blacklist of raw materials)	3.281	1.119	.797	32.869			
	S_Espc03	Co-development with suppliers to reduce the environmental impact of the product (e.g., eco-design, green packaging and recyclability)	3.064	1.018	.846	32.490			
	S_Espc04	Involvement of suppliers in the re-design of internal processes (e.g., remanufacturing and reduction of by-products)	2.911	1.023	.863	46.226			
ESPm							.795	.857	.549
	S_Espm01	Requesting that your suppliers sign a code of environmental conduct	2.928	1.273	.774	30.514			
	S_Espm02	Visiting suppliers' plants or ensuring that they are not using sweatshop labour	3.012	1.176	.793	30.915			
	S_Espm03	Ensuring that suppliers comply with child labour laws	3.238	1.388	.782	27.301			
	S_Espm04	Using a third party to monitor working conditions at supplier facilities	2.322	1.172	.548	9.371			
	S_Espm05	Incorporating environmental consideration in evaluating and selecting suppliers	3.304	1.029	.780	33.234			

(Continues)

TABLE 2 (Continued)

Variables	Items	Description	Mean	Standard deviation	Factor loading	*t* statistic	Cronbach's alpha	Composite reliability	*AVE*
Please indicate the extent to which the plant is perceived to be the leader with its supply chains									
SCL							.804	.86	.507
	S_Scl01	In our supply chains, our plant provides supply and/or demand forecasting, which is critical to other members' supply chains	3.898	0.946	.682	15.061			
	S_Scl02	Our plant sets the standards that all of our supply chain members are expected to follow	3.938	0.903	.744	22.109			
	S_Scl03	Our plant acts as a consultant for our supply chain partners' practices	3.366	1.030	.701	14.498			
	S_Scl04	In our supply chains, our plant establishes rules for sharing information about product orders, shipments and inventory	3.818	0.899	.739	25.885			
	S_Scl05	Our plant maintains an integrated database and access methods to facilitate information sharing with other supply chain members	3.269	1.164	.629	12.394			
	S_Scl06	Our plant transfers knowledge to our supply chain members	3.640	0.900	.813	25.934			
We are satisfied with the performance of our key suppliers on the following criteria									
SSEP							.717	.837	.631
	S_Ssep01	Environmental certification, such as ISO 14001	3.775	0.906	.826	21.524			
	S_Ssep02	Reputation for corporate social responsibility	3.537	0.860	.782	16.271			
	S_Ssep03	Use of sustainability practices	3.577	0.821	.774	13.162			

Note: Bold emphasis indicates the specific question in each section of the questionnaire related to the developed scales.

SmartPLS 4.0 software, was conducted to examine the effect of sustainability practices (Hypotheses 1, 2a and 2b) as well as the moderation effect of SCL (Hypothesis 3).

Although there are no established measures for goodness-of-fit in PLS-SEM, some scholars considered the ability to predict the endogenous constructs as a measure of its goodness-of-fit (Hair et al., 2014). For the predictive power of the models, Shmueli et al. (2019) proposed to consider the coefficient of determination (R^2) demonstrating the proportion of the variance for each dependent construct explained by its indicators as well as the Stone–Geisser's Q^2 value reporting cross-validated redundancy values for all endogenous constructs (i.e., *ESPm*, *ESPc* and *SSEP*). The R^2 values of this study showed a good predictive power of the predictors on the predicted variables (40.20%, 43.10% and 35.40%, respectively). Stone–Geisser's Q^2 values in both models were above zero (0.210, 0.298 and 0.194, respectively), indicating that all these constructs had predictive relevance. A common rule of minimum sample size for robust PLS-SEM is 10 times the largest number of indicators used to measure one construct (Hair et al., 2014), suggesting that the minimum sample size of 90 was sufficient for this study. Therefore, a sample size of 325 in this study was appropriate to test the hypotheses using PLS-SEM.

Following Hair et al. (2016), PLS-SEM model of this study also embraced two stages: the assessment of the measurement model and the evaluation of the path (structural) model.

5.1 | Measurement model results

The reflective constructs are preliminarily assessed by using a metric known as internal consistency, convergent validity, indicator reliability and discriminant validity (please see Table 3). Internal consistency reliability of the constructs is evaluated through composite reliability (*CR*) and Cronbach's alpha (Sarstedt et al., 2016). Both values for all reflective constructs were above the criteria of .7, indicating that strong reliability exists for the constructs.

As for convergent validity, the item loadings (except *S-Isp01* = .669, *S-Isp05* = .687, *S_Espm04* = .548, S-Scl01 = .682 and S-Scl05 = .629) were higher than .7, significant at .000 and have a *t* value higher than 1.96. The five indicators with factor loading less than .7 were kept in the model because the elimination of them could not contribute significant improvement to the *CR* and average variance extracted (*AVE*) values (Hair et al., 2016). Moreover, *AVE* results of all reflective constructs were above the minimum value of .5, confirming that convergent validity existed at the indicator level (Peng & Lai, 2012).

Finally, discriminant validity was examined through the Fornell–Larcker criterion by comparing the square root of *AVE* value of each construct with the correlation between all possible pairs of constructs in the model (Hair et al., 2016). Accordingly, the square root of the *AVE* values of all constructs was greater than their correlation with other constructs in the model. Hence, the results support discriminant validity among the constructs (please see Table 3).

TABLE 3 Fornell–Larcker criterion.

Main variables	*SSEP*	*ISP*	*ESPc*	*ESPm*	SCL
SSEP	**.799**				
ISP	.172	**.737**			
ESPc	.287	.656	**.846**		
ESPm	.280	.635	.774	**.741**	
SCL	.536	.180	.305	.280	**.712**

Note: The square roots of the *AVE* are presented on the diagonal bold. The numbers below the *AVE* values are the correlation between the relevant construct with another construct in the model.

5.2 | Structural model results

The evaluation of structural model relies on the *bootstrapping* procedure aimed to test the hypothesized relationship between constructs in terms of sign, magnitude and significance. To assure the multicollinearity issues, scholars suggested considering *VIF* values for all sets of predictor constructs. Accordingly, the observed values including outer and inner models were below the threshold of 3.3, indicating that multicollinearity is not critical in the model (Shmueli et al., 2019). The results of the PLS-SEM analyses by *bootstrapping* of 5000 samples are summarized in Table 4.

The test was performed with two models. In the first model, the three independent variables (*ISP*, *ESPm* and *ESPc*) were inserted into the analysis in the presence of all the control variables. The results indicated that the adoption of external sustainability practices in buyer–supplier relationship is strongly related to buying firm's sustainability vision and proactiveness (*ISP* → *ESPc*: $\beta = .656$, $p < .001$; *ISP* → *ESPm*: $\beta = .635$, $p < .001$), which can result in better sustainability performance in supplier side (*ISP* → *SSEP* total indirect effect: $\beta = .205$, $p < .001$). Therefore, Hypothesis 1 was supported. In addition, the adoption of different sustainability practices along with suppliers directly affects their sustainability performance, thereby providing evidence to support Hypotheses 2a and 2b (*ESPc*: $\beta = .194$, $p < .05$; *ESPm*: $\beta = .157$, $p < .10$).

The second model examined the moderating effect of SCL by including SCL and the relevant interaction effect of each practice separately. The result indicated that the presence of SCL reinforces the linkage between sustainability practices and suppliers' sustainability performance only for collaborative approaches with suppliers (*ESPc*: $\beta = .170$, $p < .10$), while it is unable to foster the link for internal practices (the interaction effect for *ISP*: $\beta = -.099$, $p > .1$ and *ESPm*: $\beta = .039$, $p > .1$). Thus, Hypothesis 3 was partially supported. Figure 2 represents the structural model of the study by showing the path coefficient (β) and its significance.

Finally, regarding the effect of the control variables, none of the firm-level control variables influence the models. But both country-level control variables of *GDPP* and *GHGP* have statistically significant effects in both models. While the influence of *GDPP* is negative, the effect of *GHGP* is positive, indicating that manufacturing firms are more involved in the evaluation of their supplier sustainability

TABLE 4 PLS result.

Variables	Model 1	*t* statistic	Model 2	*t* statistic
Control variables				
Size → *SSEP*	.014	0.252	−.015	0.314
Ind1 → *SSEP*	.175	1.256	.124	1.015
Ind2 → *SSEP*	−.072	0.512	.026	0.220
GDPP → *SSEP*	−.141*	1.752	−.156**	2.363
GHGP → *SSEP*	.162**	2.132	.216***	3.477
Independent variables				
ISP → *SSEP*	−.021	0.268	−.014	0.197
ISP → *ESPm*	.635***	19.812	.634***	19.770
ISP → *ESPc*	.656***	21.073	.657***	21.116
ESPm → *SSEP*	.157*	1.783	.096	1.268
ESPc → *SSEP*	.194**	2.018	.057	0.736
Moderation effect				
SCL → *SSEP*			.595***	9.531
SCL * *ISP* → *SSEP*			−.099	1.433
SCL * *ESPm* → *SSEP*			.039	0.544
SCL * *ESPc* → *SSEP*			.170*	1.891

*$p < .10$.
$p < .05$.*$p < .01$.

performance in the nations with higher level of GHG emission due to greater pressures for managing risk of their supply chain. A summary of the results is presented in Table 5.

6 | DISCUSSION OF THE FINDINGS

The results of our empirical study support the prediction that a buying firm's sustainability practices play a critical role in promoting responsible behaviour within buyer–supplier relationships. Specifically, our findings demonstrate that proactive buying firms are more likely to achieve higher sustainability performance from suppliers, as they utilize monitoring approaches to strictly evaluate compliance with regulatory standards. Furthermore, our study suggests that training and collaboration mechanisms, driven by both normative and mimetic pressures, are effective in improving suppliers' sustainability competencies.

Our study reveals that while the adoption of sustainability practices within the operational processes of buying firms may not have a direct impact on supplier sustainability performance, it does establish a foundation for influencing suppliers to adopt responsible practices (Gualandris & Kalchschmidt, 2016). We observed a negative path coefficient for the direct effect of *ISP* on *SSEP*, which can be attributed to the costs and time associated with evaluating supplier performance. Nonetheless, our findings suggest that buying firms can enhance supplier sustainability performance by defining more appropriate codes of conduct, standards and sustainability goals (Blome et al., 2014), coordinating inter-organizational and intra-organizational practices (Zhu et al., 2013) and involving suppliers in joint green manufacturing practices (Trujillo-Gallego et al., 2021). By doing so, buying firms can encourage suppliers to undertake sustainability practices, for instance, through obtaining ISO 14001 certificates or by enhancing their sustainability knowledge through inter-organizational exchanges. It may inspire suppliers to align their strategies with the buying firms' sustainability goals and ultimately improve their overall performance.

Regarding monitoring practices, our findings provide important evidence to encourage buying firms to adopt assessment and evaluation approaches, despite the significant effort, time and cost involved in monitoring practices. Contrary to previous research (e.g., Sancha et al., 2016, 2019; Tachizawa et al., 2015; Yang & Zhang, 2017), our empirical analysis demonstrates that the risk of environmental and social damages resulting from supplier non-compliance can be eliminated if buying firms enforce codes of conduct, demand certifications and regularly audit, assess and evaluate the actual performance of their suppliers. Such measures allow for early identification of supplier misconduct and help to maintain strong buyer–supplier relationships (Kumar & Rahman, 2015). Moreover, this type of inter-organizational interaction involves the communication of monitoring results and feedback (Sancha et al., 2019) that facilitates the diffusion of sustainability values, norms and knowledge from buying firms to suppliers (Lee et al., 2014). It helps suppliers to access the knowledge of sustainability or improve their existing knowledge that eventually leads them to enhance their sustainability performance (Gualandris & Kalchschmidt, 2016; Liu et al., 2019).

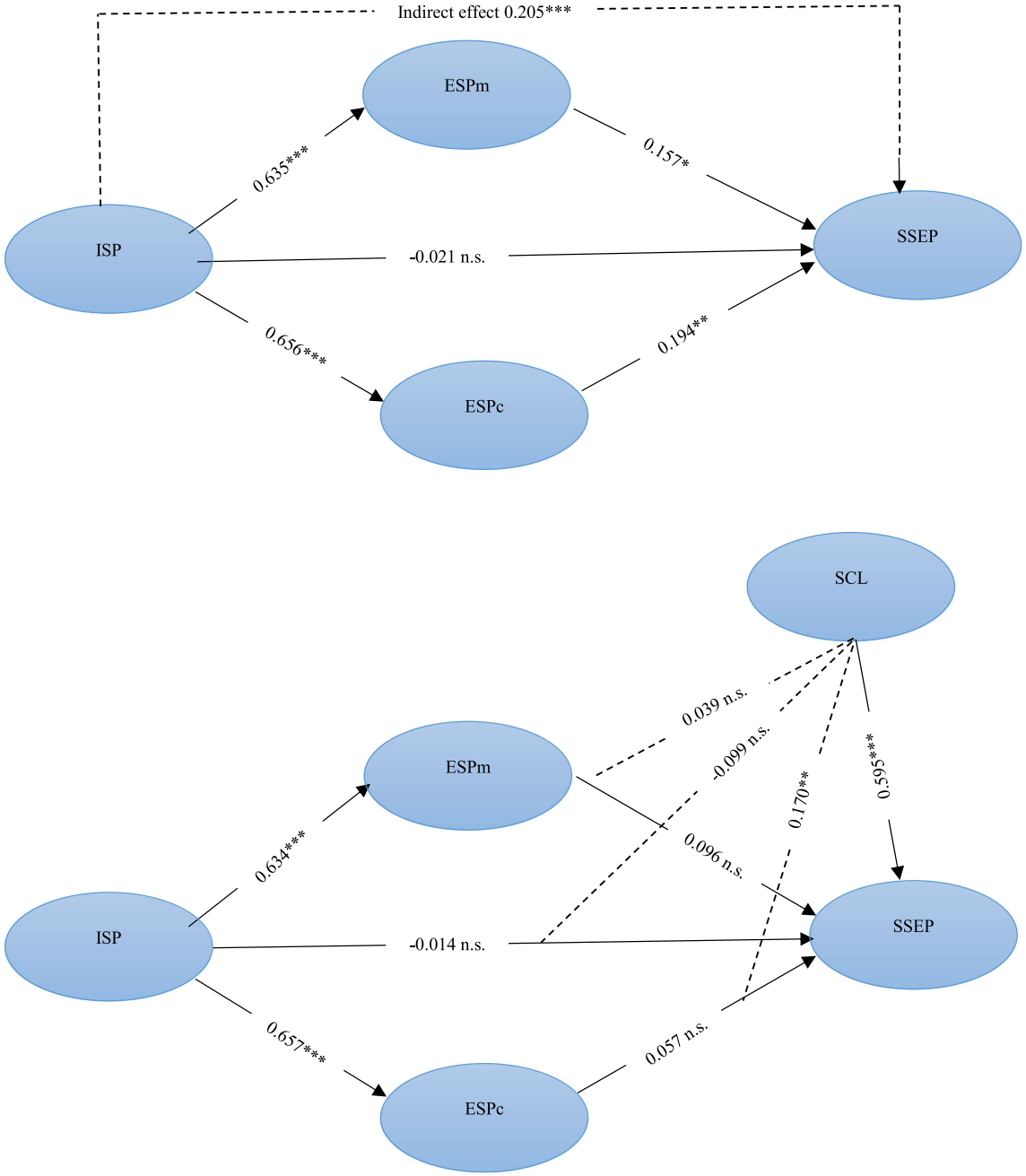
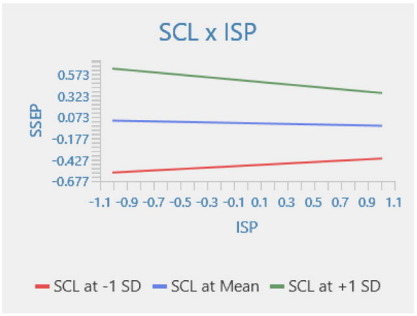


FIGURE 2 Structural model. *Source*: Authors' estimations using PLS4.

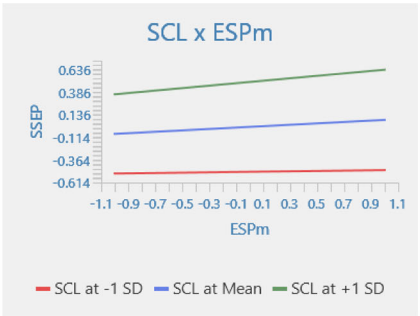
TABLE 5 Summary of the result.

Hypothesis	Result
Hypothesis 1: Effect of *ISP* on *SSEP*	Supported (indirect effect)
Hypothesis 2a: Effect of *ESPm* on *SSEP*	Supported
Hypothesis 2b: Effect of *ESPc* on *SSEP*	Supported
Hypothesis 3: Moderation effect of SCL	Partially supported

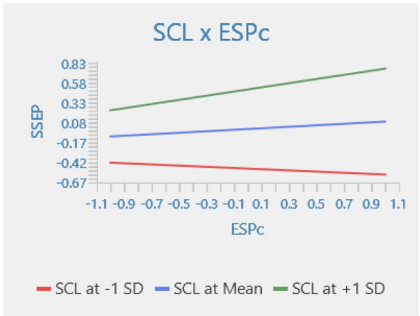
Our study also confirms the presence of a relationship between supplier sustainability performance and collaboration practices within sustainability-oriented buyer–supplier relationships. Faced with normative isomorphism from customers, industry associations and NGOs that seek to improve industry awareness and influence the actions of manufacturing firms, buying firms encourage their suppliers to adopt collaborative approaches in their relationship. By establishing trusting and committed collaborative practices, suppliers are motivated to emulate the sustainability manufacturing processes and corporate social responsibilities of their buying firms or their closest competitors. Consistent with prior research (Gualandris et al., 2014; Sancha et al., 2019; Yang & Zhang, 2017), integrating suppliers into joint practices, such as new product development, can improve their access to information, training, technology and sustainability



The results suggest that the negative effect of ISP on SSEP will be enhanced by higher level of SCL.



The results suggest that ESPm has its own effect on SSEP independently from SCL at lower level of SCL. However, the slope increases gradually and almost constantly by increasing the level of SCL.



The results suggest that at the presence of SCL, the effect of ESPc on SSEP is positively enhanced by applying more level of SCL. At the highest levels of SCL, the higher SSEP for a given time input is achieved.

FIGURE 3 Moderation effect plots. *Source*: Authors' estimations using PLS4.

standards, which in turn promotes the development of sustainability competence among suppliers through the generation and exchange of knowledge and learning related to sustainability.

The results of this study suggest that the leadership capabilities of proactive firms in supply chains can strengthen the link between sustainability practices and suppliers' sustainability performance. These findings underscore the significance of SCL in translating isomorphism pressures into tangible sustainability outcomes within buyer–supplier relationships. By assuming a leading role, buying firms with a strong commitment to sustainability can leverage their influence to exert coercive pressure on suppliers to adopt sustainable initiatives, such as the establishment of sustainability policies, standards and codes of conduct. In addition, they can encourage suppliers to imitate their best sustainability practices through education and supportive mechanisms (Dubey et al., 2019). The possibility of integration into the sustainability vision of buying firms, better communication and learning about sustainability, which are all facilitated by SCL, can lead to improved sustainability performance in suppliers (Gosling et al., 2016; Huo et al., 2021; Pham & Kim, 2019). Furthermore, by distinguishing between the two classic styles of leadership, our results also support the previous research that highlights the more significant role played by transformational SCL in supplier relationship management through higher inspiration, greater intellectual stimulation and more individualized consideration induced by focal companies (Birasnav et al., 2015; Chen et al., 2021; Mokhtar et al., 2019b). However, the impact of SCL on the linkage between internal initiatives and supplier performance, which are more in-house by nature, could perhaps not be reinforced because of the characteristics of SCL, which are primarily focused on the establishment of standards, the provision of consultancy and information, and the sharing of methods with suppliers. Overall, these findings emphasize the crucial role of SCL in driving sustainability-oriented buyer–supplier interactions and highlight the potential benefits of adopting SCL strategies for improving supplier sustainability performance.

The post-analysis results indicate SCL's effectiveness with respect to the link between buying firms' sustainability practices and suppliers' sustainability performance. For this purpose, the robustness check analysis has been conducted by dividing the sample in two groups (i.e., high proactive and low proactive) through applying cluster analysis. By running the regression analysis for both groups, we observed that the high proactive group behaves better in terms of sustainability adoption than low proactive group and SCL is only effective when the manufacturing firms are more proactive. Additionally, the plotting analysis demonstrates a simple slope of three sustainability practices at 'low', 'medium' and 'high' levels of SCL (please see Figure 3). At the presence of SCL, the plots suggest that both external approaches (*ESPc* and *ESPm*) are effective for *SSEP* if we use more SCL. At the highest levels of SCL, we achieve higher *SSEP* for a given time input, highlighting the importance of SCL.

However, the values obtained for the direct effect of these approaches show that a change by buying firms from the mere evaluation of suppliers to greater involvement has a significantly better impact on the sustainability performance of suppliers (the coefficient of direct effect: $ESPm = .157$ vs. $ESPc = .194$). In the moderating effect as well, the slope for collaboration is greater than that for monitoring initiatives (the coefficient of moderation effect: $ESPm = .039$ vs. $ESPc = .170$), confirming that a collaboration mechanism in buyer–supplier relationships is more efficient in terms of supplier sustainability performance.

7 | CONCLUSION, IMPLICATIONS AND FUTURE RESEARCH

7.1 | Conclusion

As manufacturing firms face increasing pressure to act responsibly, manage the risk of supplier misconduct and maintain legitimacy and a good reputation, they must find ways to transmit these institutional pressures to their suppliers. One solution is for buying firms to extend their sustainability vision to their suppliers by integrating sustainability requirements into their supplier relationship management. This not

only helps to ensure that suppliers comply with sustainability standards but also enables them to develop the sustainability competencies of their key suppliers through monitoring and collaboration mechanisms. The results of this study highlight the effectiveness of isomorphic forces in buyer–supplier relationships, particularly when combined with sustainable supplier management practices. Buying firms that take a proactive approach to sustainability can improve the sustainability performance of their suppliers by exerting coercive pressures through the establishment of sustainability policies, standards and codes of conduct and/or normative pressures arisen from collaborative approaches. Additionally, by adopting a leadership position in the supply chain, firms can create a position for themselves to use their power to stimulate suppliers to imitate their best sustainability practices through education and supportive mechanisms.

However, sustainability-focused monitoring and collaboration mechanisms can have an even greater impact on supplier performance when combined with buyer leadership capability (SCL). SCL refers to the capability of buying firms, derived from their power and sustainability vision, to induce their suppliers to behave responsibly. By influencing suppliers' behaviour and commitment to sustainability as well as by shaping and guiding their sustainability activities, SCL can be effective in improving supplier performance. Therefore, firms that take a leadership position in their supply chain and adopt SCL strategies may be better positioned to develop sustainable supplier management practices and improve the sustainability performance of their suppliers.

Overall, this study highlights the importance of sustainable supplier management practices and SCL in improving supplier sustainability performance. As institutional pressures continue to mount, it is crucial for buying firms to adopt proactive approaches to sustainability and extend their sustainability vision to their suppliers in order to maintain legitimacy, manage risks and improve overall sustainability performance.

7.2 | Implications

This study has implications for managers and SSCM practitioners as well as for academia. Manufacturing firms are increasingly pressured to take action, but their performance is greatly related to the social and environmental performance of their suppliers; this finding highlights the importance of isomorphism forces to suppliers through sustainable supplier management practices. This allows manufacturers to adopt responsible attitudes in their own operations and transmit those pressures to their suppliers through different sets of activities, including monitoring and collaboration. However, managers should balance their resources and their efforts related to SSCM practices. This study may help all supply chain actors to make better decisions on the most appropriate kinds of initiatives for their social and environmental responses and to implement them better in their organizations both economically and operationally. The findings suggest two alternatives: on the one hand, to adopt passive strategies (evaluation and monitoring practices) to push their suppliers to follow sustainability requirements strictly due to regulatory pressures and, on the other hand, to conduct supplier development practices through collaborative approaches under normative isomorphism from industry bodies and associations as well as the expectations of customers. However, each of these strategies or a configuration of them might be employed depending on which type of relationship with their suppliers they are intended to have or which stage of relationship (short run or long run) they are in.

The findings demonstrate that both approaches are beneficial for buying firms and suppliers. Manufacturers can establish a proper code of conduct, a sustainability vision and supportive programmes by benchmarking the guidelines of NGOs, for example, the United Nations' Sustainable Development Goals, or by imitating the best sustainability practices implemented in the industry. Suppliers can improve their sustainability capabilities and knowledge by learning sustainability practices from their buyers or by being involved in joint efforts with the possibility of being educated through training programmes provided by their buying firms.

Moreover, the findings highlight the role of leadership capability in the leading firms in a supply chain. For those manufacturers that have the tendency and ability to take up a leading position in their supply chains, the results of this study may encourage them to act in a consultancy role with their suppliers; to set standards; to conduct regular audits and training; to facilitate suppliers' access to methods, technology and knowledge; and to share information with suppliers. If a leading firm is itself proactive, suppliers can be driven either by the firm's power or by the inspiration to imitate the firm's sustainability practices, both of which result in more environmentally friendly products and more attention paid to the needs of employees and society.

The literature has primarily focused on the effect of SSCM practices, specifically sustainable supplier management practices, on the performance of buying firms, with less attention given to the supplier side (Koberg & Longoni, 2019; Sancha et al., 2019). In particular, there is a lack of understanding regarding how buying firms can encourage suppliers to adopt sustainability initiatives and how leadership capability (SCL) plays a role in this relationship (Jia et al., 2019; Mokhtar et al., 2019a). This study aims to fill these gaps by examining the relationship between SSCM practices, suppliers' performance and SCL. First, by identifying the main gaps in the literature, this study made efforts to advance the understanding of how suppliers' sustainability performance is related to buying firms' proactiveness. This relationship is facilitated via SSCM practices adopted by proactive buying companies, which effectively transmit the institutional pressures for sustainability. Thus, the need for further investigation and the provision of empirical evidence on the supplier side, which has been considered an underexamined topic in the literature (Belotti Pedroso et al., 2021; Liu et al., 2018), was fulfilled. Second, the study explored how SCL plays a role in enhancing suppliers' sustainability performance when buying firms adopt various mechanisms to monitor and collaborate with suppliers. Third, the study advanced previous attempts at analysing the role of monitoring and assessment in suppliers' sustainability performance (Gualandris et al., 2015; Sancha et al., 2016; Subramaniam et al., 2020). Lastly, using data from the multi-country, multi-industry HPM project, this paper presented an

insightful view of how companies in different industries worldwide can improve the sustainability performance of their key suppliers and how the leadership capability of sustainability-oriented leading firms can be effective in this link.

7.3 | Limitations and future research

This study had some limitations that can be addressed in future research. First, this study was based on survey data, which limits the assessment of our model over time. A longitudinal study could provide a deeper understanding of the relationship between buying firms' sustainability practices and suppliers' sustainability performance, as well as the moderating effect of SCL. Another limitation of this study is related to the selection of metrics from the HPM project, which is used for evaluating sustainable performance of suppliers. Future research could use a broader set of metrics for this purpose. Additionally, case studies could provide insights into how different sustainability initiatives implemented by leading buying firms could influence their suppliers' behaviours. The third limitation of this study is that the focus is only on buyer–supplier relationship from the viewpoint of buying firms. Future studies could also take into account the perception of suppliers.

In addition, we encourage future research to delve deeper into the model examined in this study. For instance, future research could examine the effect of different leadership styles on the linkage between sustainability practices and SCL. In this regard, future studies should explore the causality relationship between SCL and the sustainability practices adopted and implemented by leading firms. Furthermore, future research is advocated to consider a broader view of sustainability known as the triple-bottom-line (TBL) perspective, including the economic pillar of sustainability. Finally, future research should examine how cultural alignment between buying firms and suppliers can be effective in the adoption of sustainability practices by suppliers.

ACKNOWLEDGEMENTS

This research was funded and conducted within the frameworks of the following projects: PID2020-115018RB-C31 and AEI/FEDER, UE research project financed by the Spanish Ministry of Science, Innovation and Universities (Ministerio de Ciencia, Innovación y Universidades) and the European Regional Development Fund; PID2019-105001GB-I00 (Ministerio de Ciencia e Innovación—Spain); and ECO 2017-86305-C4-4-R (Ministerio de Asuntos Económicos y Transformación Digital, Gobierno de España).

ORCID

Zahra Ahmadi-Gh https://orcid.org/0000-0002-0711-1331
Alejandro Bello-Pintado https://orcid.org/0000-0003-0186-716X

REFERENCES

Ahi, P., & Searcy, C. (2013). A comparative literature analysis of definitions for green and sustainable supply chain management. *Journal of Cleaner Production*, *52*, 329–341. https://doi.org/10.1016/j.jclepro.2013.02.018

Ahmadi-Gh, Z., & Bello-Pintado, A. (2021). The effect of sustainability on new product development in manufacturing—Internal and external practices. *Administrative Sciences*, *11*(4), 115. https://doi.org/10.3390/admsci11040115

Ahmadi-Gh, Z., & Bello-Pintado, A. (2022). Why is manufacturing not more sustainable? The effects of different sustainability practices on sustainability outcomes and competitive advantage. *Journal of Cleaner Production*, *337*, 130392. https://doi.org/10.1016/j.jclepro.2022.130392

Ahmed, M. U., & Shafiq, A. (2022). Toward sustainable supply chains: Impact of buyer's legitimacy, power and aligned focus on supplier sustainability performance. *International Journal of Operations & Production Management*, *42*(3), 280–303. https://doi.org/10.1108/IJOPM-08-2021-0540

Ahmed, W., & Najmi, A. (2018). Developing and analyzing framework for understanding the effects of GSCM on green and economic performance: Perspective of a developing country. *Management of Environmental Quality: An International Journal*, *29*(4), 740–758. https://doi.org/10.1108/MEQ-11-2017-0140

Akamp, M., & Müller, M. (2013). Supplier management in developing countries. *Journal of Cleaner Production*, *56*, 54–62. https://doi.org/10.1016/j.jclepro.2011.11.069

Allenbacher, J., & Berg, N. (2023). How assessment and cooperation practices influence suppliers' adoption of sustainable supply chain practices: An inter-organizational learning perspective. *Journal of Cleaner Production*, *403*(October 2022), 136852. https://doi.org/10.1016/j.jclepro.2023.136852

Andalib Ardakani, D., Soltanmohammadi, A., & Seuring, S. (2022). The impact of customer and supplier collaboration on green supply chain performance. *Benchmarking*, *30*, 2248–2274. https://doi.org/10.1108/BIJ-12-2020-0655

Awasthi, A., & Grzybowska, K. (2014). *Logistics operations, supply chain management and sustainability* (pp. 15–30). Springer Cham. https://doi.org/10.1007/978-3-319-07287-6

Bai, C., & Satir, A. (2022). A critical content-analysis of sustainable supplier development literature and future research directions. *Journal of Cleaner Production*, *365*(May), 132443. https://doi.org/10.1016/j.jclepro.2022.132443

Bello-Pintado, A., Machuca, J. A. D., & Danese, P. (2023). Stakeholder pressures and sustainability practices in manufacturing: Consideration of the economic development context. *Business Strategy and the Environment*, *32*(7), 4084–4102. https://doi.org/10.1002/bse.3355

Belotti Pedroso, C., Tate, W. L., Lago da Silva, A., & Ribeiro Carpinetti, L. C. (2021). Supplier development adoption: A conceptual model for triple bottom line (TBL) outcomes. *Journal of Cleaner Production*, *314*(April 2020), 127886. https://doi.org/10.1016/j.jclepro.2021.127886

Birasnav, M., Mittal, R., & Loughlin, S. (2015). Linking leadership behaviors and information exchange to improve supply chain performance: A conceptual model. *Global Journal of Flexible Systems Management*, *16*(2), 205–217. https://doi.org/10.1007/s40171-015-0092-2

Birkie, S. E., & Trucco, P. (2020). Do not expect others do what you should! Supply chain complexity and mitigation of the ripple effect of disruptions. *International Journal of Logistics Management*, *31*(1), 123–144. https://doi.org/10.1108/IJLM-10-2018-0273

Blome, C., Hollos, D., & Paulraj, A. (2014). Green procurement and green supplier development: Antecedents and effects on supplier performance. *International Journal of Production Research*, *52*(1), 32–49. https://doi.org/10.1080/00207543.2013.825748

Chen, L., Jia, F., Li, T., & Zhang, T. (2021). Supply chain leadership and firm performance: A meta-analysis. *International Journal of Production Economics*, *235*(February), 108082. https://doi.org/10.1016/j.ijpe.2021.108082

Chen, Y., & Chen, I. J. (2019). Mediated power and sustainable supplier management (SSM): Linking power use, justice, and supplier performance. *International Journal of Physical Distribution and Logistics*

Management, *49*(8), 861–878. https://doi.org/10.1108/IJPDLM-12-2018-0393

Coşkun, S. S., Kumru, M., & Kan, N. M. (2022). An integrated framework for sustainable supplier development through supplier evaluation based on sustainability indicators. *Journal of Cleaner Production*, *335*-(January), 130287. https://doi.org/10.1016/j.jclepro.2021.130287

Dai, J., Xie, L., & Chu, Z. (2021). Developing sustainable supply chain management: The interplay of institutional pressures and sustainability capabilities. *Sustainable Production and Consumption*, *28*, 254–268. https://doi.org/10.1016/j.spc.2021.04.017

Danese, P., Lion, A., & Vinelli, A. (2019). Drivers and enablers of supplier sustainability practices: A survey-based analysis. *International Journal of Production Research*, *57*(7), 2034–2056. https://doi.org/10.1080/00207543.2018.1519265

Defee, C. C., Esper, T., & Mollenkopf, D. (2009). Leveraging closed-loop orientation and leadership for environmental sustainability. *Supply Chain Management*, *14*(2), 87–98. https://doi.org/10.1108/13598540910941957

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*(2), 147–160. https://doi.org/10.2307/2095101

Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., & Helo, P. (2019). Supplier relationship management for circular economy: Influence of external pressures and top management commitment. *Management Decision*, *57*(4), 767–790. https://doi.org/10.1108/MD-04-2018-0396

Dubey, R., Gunasekaran, A., & Samar Ali, S. (2015). Exploring the relationship between leadership, operational practices, institutional pressures and environmental performance: A framework for green supply chain. *International Journal of Production Economics*, *160*, 120–132. https://doi.org/10.1016/j.ijpe.2014.10.001

Flynn, B. B., Koufteros, X., & Lu, G. (2016). On theory in supply chain uncertainty and its implications for supply chain integration. *Journal of Supply Chain Management*, *52*(3), 3–27. https://doi.org/10.1111/jscm.12106

Fontoura, P., & Coelho, A. (2020). The influence of supply chain leadership and followership on organizational performance: An empirical study on a Portuguese energy supplier. *Baltic Journal of Management*, *15*(3), 333–353. https://doi.org/10.1108/BJM-01-2019-0012

Giannakis, M., Dubey, R., Vlachos, I., & Ju, Y. (2020). Supplier sustainability performance evaluation using the analytic network process. *Journal of Cleaner Production*, *247*, 119439. https://doi.org/10.1016/j.jclepro.2019.119439

Gimenez, C., & Tachizawa, E. M. (2012). Extending sustainability to suppliers: A systematic literature review. *Supply Chain Management*, *17*(5), 531–543. https://doi.org/10.1108/13598541211258591

Gosling, J., Jia, F., Gong, Y., & Brown, S. (2016). The role of supply chain leadership in the learning of sustainable practice: Toward an integrated framework. *Journal of Cleaner Production*, *137*, 1458–1469. https://doi.org/10.1016/j.jclepro.2014.10.029

Govindan, K., Aditi Dhingra Darbari, J., Kaul, A., & Jha, P. C. (2021). Structural model for analysis of key performance indicators for sustainable manufacturer–supplier collaboration: A grey-decision-making trial and evaluation laboratory-based approach. *Business Strategy and the Environment*, *30*(4), 1702–1722. https://doi.org/10.1002/bse.2703

Gualandris, J., Golini, R., & Kalchschmidt, M. (2014). Do supply management and global sourcing matter for firm sustainability performance? An international study. *Supply Chain Management*, *19*(3), 258–274. https://doi.org/10.1108/SCM-11-2013-0430

Gualandris, J., & Kalchschmidt, M. (2016). Developing environmental and social performance: The role of suppliers' sustainability and buyer–supplier trust. *International Journal of Production Research*, *54*(8), 2470–2486. https://doi.org/10.1080/00207543.2015.1106018

Gualandris, J., Klassen, R. D., Vachon, S., & Kalchschmidt, M. (2015). Sustainable evaluation and verification in supply chains: Aligning and leveraging accountability to stakeholders. *Journal of Operations Management*, *38*, 1–13. https://doi.org/10.1016/j.jom.2015.06.002

Hair, J. F. Jr., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, *26*(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128

Hoejmose, S. U., Grosvold, J., & Millington, A. (2014). The effect of institutional pressure on cooperative and coercive 'green' supply chain practices. *Journal of Purchasing and Supply Management*, *20*(4), 215–224. https://doi.org/10.1016/j.pursup.2014.07.002

Hoejmose, S. U., Roehrich, J. K., & Grosvold, J. (2014). Is doing more doing better? The relationship between responsible supply chain management and corporate reputation. *Industrial Marketing Management*, *43*(1), 77–90. https://doi.org/10.1016/j.indmarman.2013.10.002

Hossan Chowdhury, M. M., & Quaddus, M. A. (2021). Supply chain sustainability practices and governance for mitigating sustainability risk and improving market performance: A dynamic capability perspective. *Journal of Cleaner Production*, *278*, 123521. https://doi.org/10.1016/j.jclepro.2020.123521

Huo, B., Wang, K., & Zhang, Y. (2021). The impact of leadership on supply chain green strategy alignment and operational performance. *Operations Management Research*, *14*(1–2), 152–165. https://doi.org/10.1007/s12063-020-00175-8

Jia, F., Gong, Y., & Brown, S. (2019). Multi-tier sustainable supply chain management: The role of supply chain leadership. *International Journal of Production Economics*, *217*(July 2017), 44–63. https://doi.org/10.1016/j.ijpe.2018.07.022

Jia, M., Stevenson, M., & Hendry, L. (2021). A systematic literature review on sustainability-oriented supplier development. *Production Planning and Control*, *0*(0), 1–21. https://doi.org/10.1080/09537287.2021.1958388

Kauppi, K. (2013). Extending the use of institutional theory in operations and supply chain management research: Review and research suggestions. *International Journal of Operations & Production Management*, *33*(10), 1318–1345. https://doi.org/10.1108/IJOPM-10-2011-0364

Ketchen, D. J., & Hult, G. T. M. (2007). Bridging organization theory and supply chain management: The case of best value supply chains. *Journal of Operations Management*, *25*(2), 573–580. https://doi.org/10.1016/j.jom.2006.05.010

Khan, S. A., Kusi-Sarpong, S., Arhin, F. K., & Kusi-Sarpong, H. (2018). Supplier sustainability performance evaluation and selection: A framework and methodology. *Journal of Cleaner Production*, *205*, 964–979. https://doi.org/10.1016/j.jclepro.2018.09.144

Khurshid, A., Muzaffar, A., & Bhutta, M. K. S. (2021). Institutional pressures and supplier involvement: A perspective on sustainability. *Operations Management Research*, *14*(1–2), 123–137. https://doi.org/10.1007/s12063-021-00181-4

Klassen, R. D., & Vachon, S. (2003). Collaboration and evaluation in the supply chain: The impact on plant-level environmental investment. *Production and Operations Management*, *12*(3), 336–352. https://doi.org/10.1111/j.1937-5956.2003.tb00207.x

Koberg, E., & Longoni, A. (2019). A systematic review of sustainable supply chain management in global supply chains. *Journal of Cleaner Production*, *207*, 1084–1098. https://doi.org/10.1016/j.jclepro.2018.10.033

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (ijec)*, *11*(4), 1–10. https://doi.org/10.4018/ijec.2015100101

Kumar, D., & Rahman, Z. (2015). Sustainability adoption through buyer supplier relationship across supply chain: A literature review and

conceptual framework. *International Strategic Management Review*, *3*(1–2), 110–127. https://doi.org/10.1016/j.ism.2015.04.002

Kumar, D., & Rahman, Z. (2016). Buyer supplier relationship and supply chain sustainability: Empirical study of Indian automobile industry. *Journal of Cleaner Production*, *131*, 836–848. https://doi.org/10.1016/j.jclepro.2016.04.007

Lee, S. Y., Klassen, R. D., Furlan, A., & Vinelli, A. (2014). The green bullwhip effect: Transferring environmental requirements along a supply chain. *International Journal of Production Economics*, *156*, 39–51. https://doi.org/10.1016/j.ijpe.2014.05.010

León Bravo, V., Jaramillo Villacrés, M., & Silva, M. E. (2022). Analysing competing logics towards sustainable supplier management. *Supply Chain Management*, *27*(7), 49–63. https://doi.org/10.1108/SCM-07-2020-0354

Leppelt, T., Foerstl, K., Reuter, C., & Hartmann, E. (2013). Sustainability management beyond organizational boundaries–sustainable supplier relationship management in the chemical industry. *Journal of Cleaner Production*, *56*, 94–102. https://doi.org/10.1016/j.jclepro.2011.10.011

Li, M., Falcone, E., Sanders, N., Choi, T. Y., & Chang, X. (2021). Buyer-supplier collaboration: A macro, micro, and congruence perspective. *Journal of Purchasing and Supply Management*, *28*, 100723. https://doi.org/10.1016/j.pursup.2021.100723

Liu, L., Zhang, M., Hendry, L. C., Bu, M., & Wang, S. (2018). Supplier development practices for sustainability: A multi-stakeholder perspective. *Business Strategy and the Environment*, *27*(1), 100–116. https://doi.org/10.1002/bse.1987

Liu, L., Zhang, M., & Ye, W. (2019). The adoption of sustainable practices: A supplier's perspective. *Journal of Environmental Management*, *232*-(November 2018), 692–701. https://doi.org/10.1016/j.jenvman.2018.11.067

Lockstrom, M., Schadel, J., Moser, R., & Harrison, N. J. (2010). Successful supplier integration in the Chinese automotive industry: A theoretical framework. *International Journal of Integrated Supply Management*, *5*(3), 260–283.

Lockström, M., & Lei, L. (2013). Antecedents to supplier integration in China: A partial least squares analysis. *International Journal of Production Economics*, *141*(1), 295–306. https://doi.org/10.1016/j.ijpe.2012.08.007

Min, S., Mentzer, J. T., & Ladd, R. T. (2007). A market orientation in supply chain management. *Journal of the Academy of Marketing Science*, *35*(4), 507–522. https://doi.org/10.1007/s11747-007-0020-x

Mokhtar, A. R. M., Genovese, A., Brint, A., & Kumar, N. (2019a). Improving reverse supply chain performance: The role of supply chain leadership and governance mechanisms. *Journal of Cleaner Production*, *216*, 42–55. https://doi.org/10.1016/j.jclepro.2019.01.045

Mokhtar, A. R. M., Genovese, A., Brint, A., & Kumar, N. (2019b). Supply chain leadership: A systematic literature review and a research agenda. *International Journal of Production Economics*, *216*(April), 255–273. https://doi.org/10.1016/j.ijpe.2019.04.001

Naffin, J., Klewitz, J., & Schaltegger, S. (2023). Sustainable development of supplier performance. An empirical analysis of relationship characteristics in the automotive sector. *Corporate Social Responsibility and Environmental Management*, *January*, 1–17. https://doi.org/10.1002/csr.2452

Nath, S. D., Eweje, G., & Bathurst, R. (2019). The invisible side of managing sustainability in global supply chains: Evidence from multitier apparel suppliers. *Journal of Business Logistics*, *42*(2), 207–232. https://doi.org/10.1111/jbl.12230

Peng, D. X., & Lai, F. (2012). Using partial least squares in operations management research: A practical guideline and summary of past research. *Journal of Operations Management*, *30*(6), 467–480. https://doi.org/10.1016/j.jom.2012.06.002

Pham, H., & Kim, S. Y. (2019). The effects of sustainable practices and managers' leadership competences on sustainability performance of construction firms. *Sustainable Production and Consumption*, *20*, 1–14. https://doi.org/10.1016/j.spc.2019.05.003

Rintala, O. (2023). How to not lose oneself: The case for relational identity in collaborative supply relationships. *International Journal of Physical Distribution and Logistics Management*, *53*(2), 231–247. https://doi.org/10.1108/ijpdlm-12-2021-0512

Saeed, A., Jun, Y., Nubuor, S. A., RasikaPriyankara, H. P., & Jayasuriya, M. P. F. (2018). Institutional pressures, green supply chain management practices on environmental and economic performance: A two theory view. *Sustainability (Switzerland)*, *10*(5), 1517. https://doi.org/10.3390/su10051517

Sancha, C., Gimenez, C., & Sierra, V. (2016). Achieving a socially responsible supply chain through assessment and collaboration. *Journal of Cleaner Production*, *112*, 1934–1947. https://doi.org/10.1016/j.jclepro.2015.04.137

Sancha, C., Longoni, A., & Giménez, C. (2015). Sustainable supplier development practices: Drivers and enablers in a global context. *Journal of Purchasing and Supply Management*, *21*(2), 95–102. https://doi.org/10.1016/j.pursup.2014.12.004

Sancha, C., Wong, C. W. Y., & Gimenez, C. (2019). Do dependent suppliers benefit from buying firms' sustainability practices? *Journal of Purchasing and Supply Management*, *25*(4), 100542. https://doi.org/10.1016/j.pursup.2019.100542

Sarstedt, M., Hair, J. F., Nitzl, C., Ringle, C. M., & Howard, M. C. (2020). Beyond a tandem analysis of SEM and PROCESS: Use of PLS-SEM for mediation analyses! *International Journal of Market Research*, *62*(3), 288–299. https://doi.org/10.1177/1470785320915686

Sarstedt, M., Hair, J. F., Ringle, C. M., Thiele, K. O., & Gudergan, S. P. (2016). Estimation issues with PLS and CBSEM: Where the bias lies! *Journal of Business Research*, *69*(10), 3998–4010. https://doi.org/10.1016/j.jbusres.2016.06.007

Schroeder, R. G., & Flynn, B. B. (2001). *High performance manufacturing: Global perspectives*. Wiley.

Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, *16*(15), 1699–1710. https://doi.org/10.1016/j.jclepro.2008.04.020

Shafiq, A., Johnson, P. F., Klassen, R. D., & Awaysheh, A. (2017). Exploring the implications of supply risk on sustainability performance. *International Journal of Operations & Production Management*, *37*(10), 1386–1407. https://doi.org/10.1108/IJOPM-01-2016-0029

Sharif, A. M., & Irani, Z. (2012). Supply chain leadership. *International Journal of Production Economics*, *140*(1), 57–68. https://doi.org/10.1016/j.ijpe.2012.01.041

Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J. H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: Guidelines for using PLSpredict. *European Journal of Marketing*, *53*(11), 2322–2347. https://doi.org/10.1108/EJM-02-2019-0189

Singh, J., Pandey, K. K., Kumar, A., Naz, F., & Luthra, S. (2022). Drivers, barriers and practices of net zero economy: An exploratory knowledge based supply chain multi-stakeholder perspective framework. In *Operations management research*. Springer US. https://doi.org/10.1007/s12063-022-00255-x

Subramaniam, P. L., Iranmanesh, M., Kumar, K. M., & Foroughi, B. (2020). The impact of multinational corporations' socially responsible supplier development practices on their corporate reputation and financial performance. *International Journal of Physical Distribution and Logistics Management*, *50*(1), 3–25. https://doi.org/10.1108/IJPDLM-01-2019-0002

Tachizawa, E. M., Gimenez, C., & Sierra, V. (2015). Green supply chain management approaches: Drivers and performance implications. *International Journal of Operations & Production Management*, *35*(11), 1546–1566. https://doi.org/10.1108/IJOPM-01-2015-0023

Tate, W. L., Dooley, K. J., & Ellram, L. M. (2011). Transaction cost and institutional drivers of supplier adoption of environmental practices. *Journal of Business Logistics*, *32*(1), 6–16. https://doi.org/10.1111/j.2158-1592.2011.01001.x

Trujillo-Gallego, M., Sarache, W., & Sellitto, M. A. (2021). Identification of practices that facilitate manufacturing companies' environmental collaboration and their influence on sustainable production. *Sustainable Production and Consumption*, *27*, 1372–1391. https://doi.org/10.1016/j.spc.2021.03.009

Vanalle, R. M., Ganga, G. M. D., Godinho Filho, M., & Lucato, W. C. (2017). Green supply chain management: An investigation of pressures, practices, and performance within the Brazilian automotive supply chain. *Journal of Cleaner Production*, *151*, 250–259. https://doi.org/10.1016/j.jclepro.2017.03.066

Varsei, M., Soosay, C., Fahimnia, B., & Sarkis, J. (2014). Framing sustainability performance of supply chains with multidimensional indicators. *Supply Chain Management*, *19*(3), 242–257. https://doi.org/10.1108/SCM-12-2013-0436

Wang, J., & Dai, J. (2018). Sustainable supply chain management practices and performance. *Industrial Management and Data Systems*, *118*(1), 2–21. https://doi.org/10.1108/IMDS-12-2016-0540

Wilhelm, M. M., Blome, C., Bhakoo, V., & Paulraj, A. (2016). Sustainability in multi-tier supply chains: Understanding the double agency role of the first-tier supplier. *Journal of Operations Management*, *41*, 42–60. https://doi.org/10.1016/j.jom.2015.11.001

Wolf, J. (2014). The relationship between sustainable supply chain management, stakeholder pressure and corporate sustainability performance. *Journal of Business Ethics*, *119*(3), 317–328. https://doi.org/10.1007/s10551-012-1603-0

Wu, G. C. (2017). Effects of socially responsible supplier development and sustainability-oriented innovation on sustainable development: Empirical evidence from SMEs. *Corporate Social Responsibility and Environmental Management*, *24*(6), 661–675. https://doi.org/10.1002/csr.1435

Wu, I. L., Chuang, C. H., & Hsu, C. H. (2014). Information sharing and collaborative behaviors in enabling supply chain performance: A social exchange perspective. *International Journal of Production Economics*, *148*, 122–132. https://doi.org/10.1016/j.ijpe.2013.09.016

Yang, F., & Zhang, X. (2017). The impact of sustainable supplier management practices on buyer-supplier performance: An empirical study in China. *Review of International Business and Strategy*, *27*(1), 112–132. https://doi.org/10.1108/RIBS-08-2016-0043

Zeng, H., Chen, X., Xiao, X., & Zhou, Z. (2017). Institutional pressures, sustainable supply chain management, and circular economy capability: Empirical evidence from Chinese eco-industrial park firms. *Journal of Cleaner Production*, *155*(May 2014), 54–65. https://doi.org/10.1016/j.jclepro.2016.10.093

Zhu, Q., Sarkis, J., & Lai, K. (2013). Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices. *Journal of Purchasing and Supply Management*, *19*(2), 106–117. https://doi.org/10.1016/j.pursup.2012.12.001

Zimmer, K., Fröhling, M., & Schultmann, F. (2016). Sustainable supplier management—A review of models supporting sustainable supplier selection, monitoring and development. *International Journal of Production Research*, *54*(5), 1412–1442. https://doi.org/10.1080/00207543.2015.1079340

Zimon, D., Tyan, J., & Sroufe, R. (2020). Drivers of sustainable supply chain management: Practices to alignment with UN Sustainable Development Goals. *International Journal for Quality Research*, *14*(1), 219–236. https://doi.org/10.24874/IJQR14.01-14

How to cite this article: Ahmadi-Gh, Z., & Bello-Pintado, A. (2024). Sustainability isomorphism in buyer–supplier relationships: The impact of supply chain leadership. *Business Strategy and the Environment*, 1–19. https://doi.org/10.1002/bse.3668