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The Green Governance Revolution: How CSR Committee Shapes Corporate Environmental Innovation

Rasmi Meqbel[1] | Aladdin Dwekat[2] | Islam Abdeljawad[3] | Mohammad A. A. Zaid[4]

[1]Department of Accounting, Business School, The Hashemite University, Zarqa, Jordan | [2]Accounting Department, An-Najah National University, Nablus, Palestine | [3]Finance and Banking Department, An-Najah National University, Nablus, Palestine | [4]Department of Accounting and Auditing, Faculty of Business and Economics, Palestine Technical University -Kadoorie, Ramallah, Palestine

Correspondence: Aladdin Dwekat (aladdin.dwekat@najah.edu)

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ABSTRACT

As global challenges linked to climate change intensify, the need for innovative and effective environmental strategies within corporate settings becomes ever more pressing. Despite growing scrutiny of corporate sustainability practices, the specific impact of dedicated CSR committees and their defining attributes on fostering environmental innovation remains insufficiently understood. This study addresses this gap by examining whether the existence of a CSR committee and its attributes (i.e., size, independence, chair independence, and meeting attendance) influence environmental innovation. Drawing on a global sample of non-financial firms listed in the Bloomberg World Large and Mid-Cap Index from 2013 to 2020, our analyses reveal that CSR committee presence accelerates environmental innovation. Furthermore, the size of the CSR committee, independence, and active participation in regular meetings demonstrate a positive and significant effect. By highlighting the critical contribution of well-designed and proactive CSR committees, our findings offer invaluable insights for boards of directors, managerial leaders, and policymakers, guiding the development of governance structures that effectively drive environmental innovation.

1 | Introduction

In today's fast-paced world, corporations encounter growing pressures from different parties of stakeholders to integrate eco-innovation practices into their strategies (Zaid and Issa 2024; Li et al. 2020). These pressures could be attributed to the detrimental influence of corporate' activities that threaten the planet and pave the way for a stream of environmental predicaments (Albitar and Hussainey 2023; Asni and Agustia 2022). In this direction, firms have to cast the light on environmental considerations while running their activities. In the strict sense of words, firms have to run their operations ethically and socially responsibly by shifting to more eco-friendly manufacturing practices, which, in turn, help create a more sustainable world (Hegab et al. 2023).

In alignment with the foregoing, strengthening the commitment to investment in environmental innovation models is a compelling need (Zaid et al. 2024). Thus, firms actively engage in environmental innovation practices as substantial drivers for environmental development (Liu et al. 2022), superior environmental performance (Singh et al. 2020), and transitioning to a green economy (Wang et al. 2024). In a broad terms, nowadays, corporations devote arduous efforts to transform green ideas into eco-designed products and greener processes (Katsikeas et al. 2016). Beyond that, customers are also

increasingly giving privileges to green products and services; therefore, investment in environmental innovation models can advance a firm's competitive advantage (Wang 2022). Integrating green innovation into a firm's strategies may contribute to a rigid brand image.

In the fast-track business context, it is well-articulated that forming professional board committees is the optimal way to handle environmental dilemmas (De Villiers et al. 2022). To successfully integrate environmental practices, it is vital to shape an effective board structure (Hamoudah et al. 2024). More clearly, board committees are vital in surveillancing corporate environmental activities. In this regard, Zaid et al. (2024) argue that board committees are recognized as effective monitoring instruments to reinforce corporate green performance by stimulating firms to incorporate environmental innovation practices in their operations seriously. Based on the aforementioned, the extent of board effectiveness is more likely to expand through delegating tasks to its specialized sub-committees, such as the CSR committee (Gull et al. 2023).

According to Kateb and Alahdal (2024), the distinct attributes of the CSR committee have the power to reinforce the corporate governance regime. Thereby, firms with a solid structure of CSR committees are more likely to have the ability to control the influence of their activities on the environment, which leads to fostering a more eco-friendly business. In this context, it is well acknowledged that an efficient CSR committee is considered a backbone pillar for ensuring environmental performance (Jarboui et al. 2022) by incorporating environmental innovation practices in firms' operations. In the strict sense of the words, members of the CSR committee are keener on curbing environmental risks. In this vein, aligning CSR practices with firm strategies reinforces environmental innovation (Kim et al. 2025; Khurshid et al. 2025; Liu et al. 2025). Furthermore, it is well recognized that members of the CSR committee have in-depth knowledge and skills about environmental issues (Amran et al. 2014). Literally speaking, the level of investment in environmental innovation practices is driven by the structure of the CSR committee (Ashraf et al. 2025). Hence, a CSR committee could act as an influential factor in endorsing superior environmental performance by promoting environmental innovation investment.

From a theoretical perspective, CSR committees seriously oversee the conflict between managers and stakeholders (Gull et al. 2023; Li et al. 2022). Hence, it is perceived as an effective proactive monitoring tool for the environmental influences of the firms' activities by encouraging investment in environmental innovation to satisfy the environmental interests of different stakeholders, which, in turn, helps narrow the agency conflict gap. More minutely, members of the CSR committee are environmentally oriented individuals. Therefore, they possess superior environmental experience and skills to drive firms to consider eco-friendly innovations.

Drawing on the prior literature, a broad spectrum of preceding studies has revealed several drivers of environmental innovation. Nevertheless, thus far, the vast majority of prior research has mainly dedicated the effort to explore the impact of audit committees' environmental literacy (Gong et al. 2024), nomination and risk management committees (Zaid et al. 2024), board attributes (Asni and Agustia 2022), and ownership structure (García-Sánchez, Hussain, et al. 2020; Xu et al. 2023) on corporate environmental innovation. More importantly, the role played by the CSR committee in driving the firm's engagement in environmental innovation models has not yet been well explored and is in its infancy stage. Notwithstanding, to date, no research work has thrown light on exploring the effect of CSR committee attributes on corporate environmental innovation. Furthermore, the crushing majority of earlier studies have solely restricted themselves to exploring the impact of CSR reporting and performance on environmental innovation (see Liu et al. 2025; Khurshid et al. 2025). In this context, recent research trends have ignored the nexus between the CSR committee and environmental innovation. This could be attributed to several reasons: (i) the lack of data about environmental innovation, particularly in developing countries; (ii) misunderstanding the difference between CSR reporting, performance, and CSR committee. Considering this literature gap, the present research primarily argues that corporations with effective CSR committees are more likely to embrace environmental innovation practices in their operations.

The main purpose of this research is to explore the effect of CSR committee attributes on corporate environmental innovation. The study reveals a positive and solid nexus between the effectiveness of CSR committees and corporate environmental innovation through an analysis of panel data from a cross-country sample of non-financial listed firms on the Bloomberg World Large & Mid Cap Index over 2013–2020.

The present article offers constructive contributions to the extant knowledge of sustainability accounting. First, to the best of the authors' knowledge, this study is the first to examine how CSR committee attributes can drive corporate environmental innovation. Hence, the overlooked gaps in existing literature will be bridged. Involvement in environmental innovation is contingent on the board of directors' effectiveness, particularly the role of its committees, such as the CSR committee. Second, the study findings provide solid evidence of the role of the CSR committee in upgrading the effectiveness of board governance, therefore supporting the favorable trend of corporate environmental innovation. In this context, the extent of environmental innovation can not be viewed without exploring the power of the CSR committee as a key driver. To prop this argument, the findings of our study clearly reveal that CSR committees play a positive role in directing corporate strategies toward enduring environmental innovation. Third, it is noteworthy that most of the previous scholarly works have focused on companies located in the UK (Elmaghrabi 2021), the US (Burke et al. 2019), and Australia (Li et al. 2022). In contrast, our study aims to widen the geographical reach by including an international sample. Hence, the result of this study can provide a critical addition to the current literature in determining the factors and configurations that have the power to drive engagement in environmental innovation practices. Furthermore, findings from this study respond to the increasing regulatory and stakeholder pressures on firms to improve their environmental practices. Establishing a well-structured CSR committee helps increase companies' environmental awareness to reduce their carbon emissions and improves engagement with various stakeholders by investing in

environmental innovation models. Beyond that, this research transcends prior studies' borders by extending the narrow perspectives of considering the CSR committee as an influential power of environmental performance without divulging its effect on environmental innovation. Thereby, there is a pressing need to enrich the extant literature by analyzing the influence of hidden drivers on green innovation, such as CSR and environmental committees. Fourth, from the theoretical ambit, it can be deduced that due to the greater surveillance stemming from the presence of the CSR committee on environmental matters, firms will devote massive effort to meet stakeholders' expectations through investing in environmental innovation models. This theoretical argument can be supported by the notion that the effective board's role in environmental decision-making depends on forming a solid CSR committee. Finally, traditionally, prior studies have been restricted to providing evidence about the influence of the presence of the CSR committee on the board's structure without further exploring the effect of its attributes on environmental innovation. In this context, this study's findings help bridge the gap in prior literature by minutely determining how each CSR committee attribute drives the extent of environmental innovation.

The remainder of this study is organized as follows: Section 2 deliberates the theoretical framework and hypotheses development. In Section 3 we present the methodology used, including the data collection method and sample used, variables measurement, and regression models. Section 4 presents the empirical results and discussion. Finally, the last section provides the concluding remarks, future implications, and limitations of the study.

2 | Theoretical Framework and Hypotheses Development

2.1 | Theoretical Framework

CSR committees have emerged as vital governance mechanisms to address the increasing strains for environmental, social, and governance (ESG) accountability (Meqbel et al. 2025). These subcommittees primarily oversee CSR-related policies, ensure transparency, and align corporate strategies with stakeholder and societal expectations (Giannarakis et al. 2020; Mallin and Michelon 2011; Samarawickrama et al. 2024). The gradual development of these frameworks indicates that an organization is determined to integrate the principles of sustainability into corporate governance, thereby aligning financial goals and non-financial requirements and meeting society's expectations (Hussain et al. 2018; Liao et al. 2015).

Beyond mere symbolism, previous literature argues that CSR committees fulfill critical governance roles by bridging the gap between corporate actions and stakeholder expectations (García-Sánchez et al. 2019). Moreover, they offer crucial oversight and ensure accountability (Gull et al. 2023), proactively manage and mitigate risks (Peters and Romi 2015), ensure compliance with sustainability guidelines, and offer CSR strategies for enactment (Ricart et al. 2005). In addition, these committees enhance the effectiveness of board-level decisions by fostering collaboration between internal management and external stakeholders. This ensures that firms' strategies are formed from diverse perspectives and aligned with long-term sustainability goals (Liao et al. 2015; Mallin and Michelon 2011). This alignment is vital for managing reputational risks; therefore, reducing information asymmetry and promoting accountability by reducing regulatory non-compliance (Gull et al. 2024; Jo and Harjoto 2011).

Hence, CSR committees not only play a pivotal role in enhancing environmental and social performance through improving the implementation of comprehensive sustainability strategies but also play a critical role in incorporating global reporting standards such as the Global Reporting Initiative (GRI), which thereby reinforces ecological transparency and improves corporate accountability (García-Sánchez et al. 2019). Moreover, by encouraging gender diversity and inclusive leadership, these committees drive innovation in sustainability practices, enabling firms to foster a broader range of perspectives and problem-solving approaches. This enables firms to address challenges such as waste reduction and green technology adoption (Donnelly 2017; Gull et al. 2024). Finally, their role as a link between firms and external stakeholders, including regulators and non-governmental organizations, is critical to successfully executing sustainability initiatives (Mallin and Michelon 2011).

In this vein, many previous research empirical evidence links the presence of active CSR committees to positive organizational outcomes. This includes improved CSR disclosures, enhanced transparency, and superior environmental performance (Baraibar-Diez and Odriozola 2019; Jarboui et al. 2022). Furthermore, by integrating stakeholder concerns into corporate strategies, these committees reduce the environmental risks and enhance a firm's legitimacy (Gull et al. 2024; Homroy and Slechten 2019). Their influence extends to the emergence of sustainability-oriented innovation, which includes manufacturing environmentally friendly goods and implementing sophisticated waste-management systems (Atif and Ali 2021; Ricart et al. 2005). This is particularly evident in companies with larger CSR committee sizes and gender-diverse committees; these are suggested to be more capable of balancing stakeholder demands with the company's goals (Donnelly 2017; Gull et al. 2024).

On the other hand, Gull et al. (2024) empirically found that the presence of a CSR committee is linked to increased overall waste generation, and the discovery shatters the myth that CSR committees always facilitate sustainability. Such results advocate that the effectiveness of a CSR committee may vary depending on specific attributes such as composition and governance structure, as well as the broader governance context, stakeholder engagement, and the degree of integration of CSR strategies into overall corporate planning (Berrone and Gomez-Mejia 2009; Ricart et al. 2005). Despite that controversy, the majority of previous research emphasizes that well-structured CSR committees are generally adaptive to transparent governance practices and achieve superior environmental outcomes, emphasizing their critical role in advancing corporate sustainability and improving corporate reputation by aligning actions with global standards (Abu Alia et al. 2024; Gull et al. 2024; Donnelly 2017; Peters and Romi 2015; Mardawi et al. 2023; Velte and Stawinoga 2020; Hussain et al. 2018).

This study links agency theory and resource dependency theory to investigate the relationship between CSR committees and environmental innovation. Agency Theory offers a framework for understanding the role of CSR committees in oversight conflicts of interest between managers and stakeholders (Gull et al. 2023; Jarboui et al. 2022; Li et al. 2022). Motivated by short-term financial incentives, managers may disregard long-term sustainability goals, leading to agency problems that negatively affect environmental outcomes (Hussain and Rehman 2021; Jensen and Meckling 1976). The CSR committees are suggested to mitigate such issues by enhancing transparency, promoting accountability, and ensuring that corporate strategies align with stakeholder expectations (García-Sánchez et al. 2019; Ricart et al. 2005). Additionally, their monitoring role not only condenses managerial opportunism but also ensures that companies adhere to sustainability objectives (Jarboui et al. 2022; Liao et al. 2015), hence directly contributing to environmental innovation (Abu Alia et al. 2024; Upadhyay et al. 2014).

Complementing the previous, Resource dependency theory complements this perspective by emphasizing the critical role of CSR committees in allowing companies to access crucial resources, expertise, and external networks for evolving environmental innovation (Gull et al. 2024; Hillman et al. 2000; Pfeffer and Salancik 1978; Shaukat et al. 2016). Such committees facilitate cooperation with external stakeholders, such as regulators and non-governmental organizations; this allows companies to secure information and resources required for sustainability initiatives (Cheng 2008; Mallin and Michelon 2011; Ricart et al. 2005; Saeed et al. 2021). Resource dependence theory delivers a framework for understanding how the variation of skills, expertise, and knowledge within the CSR committee can improve its ability to mitigate environmental risks and complex challenges like waste management (Gull et al. 2024). In such a context, integrating diverse perspectives, CSR committees strengthen an organization's capability to develop and apply innovative environmental solutions, such as embracing green technologies or addressing regulatory challenges (Jarboui et al. 2022; Karaman et al. 2024). Organizations with effective CSR committees have been shown to adopt sustainability practices better and achieve higher environmental performance metrics (Donnelly 2017; Homroy and Slechten 2019).

Coming to an end, Agency theory and resource dependency theory jointly present an adequate multi-level explanation that CSR committee structure shapes companies' environmental innovation as they affect not only the external acquisition of sustainability resources but also the internal governance needed to discipline managerial behavior and promote innovation. All of the following hypotheses capture this theoretical emphasis.

2.2 | Hypotheses Development

2.2.1 | CSR Committee Size

The size of the CSR committee itself is a decisive variable in reducing or increasing its ability to promote environmental innovation. According to the resource-dependency theory, the bigger the CSR committee, the more resource pool, specialized knowledge, and outside contacts it would have to provide, which are essential to boost innovative capacity within firms (Chouaibi and Jarboui 2012). This multiplicity of knowledge and perspective is the core of managing complex decision-making processes, especially those related to environmental innovation.

Cheng (2008) and Fuente et al. (2017) argue that large boards (that can be conceptually identical to expanded CSR committees) can provide the variety of expertise and views necessary to make such complex decisions. This point is especially relevant to environmental innovation as heterogeneous opinion and expertise integration can improve sustainability efforts. In line with this, Saeed et al. (2021) argue that broader CSR committees (particularly those with more experienced directors) are better equipped to employ sustainable business methods. Further, Farza et al. (2022) also find that the larger the board's membership, the stronger the environmental innovation, which means that an extended directorate can enhance the committee's power over corporate strategies to minimize carbon emissions and embrace sustainable operations.

Additionally, Large CSR committees have the ability to hire high-quality members who have direct connections with key stakeholders such as regulatory bodies, environmental non-governmental organizations (NGOs), and local community-based organizations. This stakeholder engagement enhances the firm's ability to integrate the respective views within its innovation agenda. Greater CSR committees also enhance monitoring, thus supplementing agency-theory accountability (Meqbel et al. 2025) and environmental stewardship in the long run since there is greater supervision and less informational asymmetry between the management and the stakeholders (Adams et al. 2015).

Empirical studies that examined the impact of CSR committee size are limited. Gull et al. (2024) find that larger CSR committees are associated with reduced waste production. Elmaghrabi (2021) found that CSR committee size is positively and significantly associated with CSR strategy performance. This suggests that members of the CSR committee help bring their thoughts to formulate a better CSR strategy. Thus, a more comprehensive CSR strategy can be achieved as more members with diverse backgrounds sit on the committee. Furthermore, using an international sample of 41 countries, Gull et al. (2023) find that the size of the CSR committee is negatively associated with CSR decoupling, suggesting that the CSR committee helps increase the congruence between CSR-related disclosures and CSR performance.

Despite the substantial evidence supporting the positive impact of larger CSR committees, some studies highlight potential downsides. Donnelly (2017) found that smaller boards contribute positively to CSR performance. Galia and Zenou (2012) showed evidence of a significant negative association between board size and product innovation, indicating that larger boards might hinder the ability to initiate strategic actions due to internal dynamics and communication challenges. Ahmed et al. (2006) posit that smaller board sizes foster better communication and accountability, potentially leading to better CSR performance. Prado-Lorenzo and Garcia-Sanchez (2010) also argue that a larger board size hinders governance efficiency. Based on the aforementioned arguments, the first hypothesis is proposed:

H1. *There is a significant positive association between CSR committee size and environmental innovation.*

2.2.2 | CSR Committee Independence

The institutional autonomy of CSR committees has been a focus of continued interest within the governance and sustainability discourse because it has been shown to increase the quality of oversight and make practices more sustainable. The agency theory provides a consistent theoretical framework of how independent directors may relieve the agency problems and, in the process, align corporate strategies with stakeholders' interests and the ecology (Jensen and Meckling 1976; Barako et al. 2006). According to empirical research, companies that have a higher percentage of independent members of the board are more likely to be more transparent and accountable (Amran et al. 2014; Cheng and Courtenay 2006), which favors the creation of long-term value (Alta'any et al. 2024). Independent board members, in particular, are relevant in the sphere of environmental innovation, given that long-horizon investment and strategic renewal are crucial in overcoming the pressing environmental challenges.

The resource dependency theory provides a similar argument. It emphasizes the vital role that independent directors provide as critical resources of the company, such as expertise, information, and external networks; these are essential in the development of innovation and the ability to create strategic change. Previous research supports such an argument; for instance, according to the research carried out by Farza et al. (2022), and Khaireddine et al. (2020), environmentally responsible board members are generally associated with a significant improvement in corporate environmental performance and sustainable innovation. In addition, the involvement of independent directors enhances an organizational vision and responsiveness to environmental requirements, strengthening organizations' commitment to long-term sustainable investments and policies (De Villiers, Naiker, and Van Staden 2011; De Villiers, Rinaldi, and Unerman 2011; Elsayih et al. 2021).

In particular context of CSR committees, independence is linked with stronger governance and better alignment with environmental goals. In this regard, independent members in CSR committees could counter managerial opportunism, ensuring that sustainable innovation is prioritized over short-term financial goals (Alta'any et al. 2024). Such independent directors form an essential safeguard against short-term CSR programs as they focus on meaningful and provably effective practices (Finkelstein et al. 2009; Jarboui et al. 2022). Empirical evidence also shows that independent directors are aligned with greater alignment to environmental litigation (Kassinis and Vafeas 2002).

Environmental innovation involves creating new practices, technologies, and processes to reduce the harmfulness of environmental damage and thus requires the heavy utilization of resources and strategic coordination. The study has shown that standalone directors of CSR committees are well-placed to guide such initiatives. These CEOs also ensure innovation through the provision of relationship capital, ease the accessibility of outside resources, and improve the decision-making process (Haque 2017; Ibrahim and Hanefah 2016). Because they can challenge managerial decisions and prefer an active, spirited debate, environmental issues become the priority at the top of the business agenda (Dwekat, Seguí-Mas, Tormo-Carbó, and Carmona 2020).

Previous empirical research found that the percentage of independent directors on the CSR committees is positively related to CSR performance and environmental practice (Donnelly 2017; Jarboui et al. 2022; Elmaghrabi 2021). This evidence sheds light on the critical role that independent directors play in environmental innovation by exploiting external knowledge and networks to address uncertainty and externalities of reliance (Mallin and Michelon 2011; Haque 2017). Such competencies can increase the innovation potential capabilities of the organizations by enabling companies to present costly emission-control programs and embrace pro-environmental policies (Liao et al. 2015; Elsayih et al. 2021).

However, despite the aforementioned discussion, a review of the literature on the effectiveness of independent directors suggests that some counter-claims are worth bringing to scholarly attention. Critics suggest that the lack of internal knowledge and reliance on external perspectives may limit the CSR committees' ability to contribute meaningfully to strategic decisions (Davis et al. 1997; Donaldson 1990). Also, independent directors could sometimes face obstacles related to the power of the CEO, the lack of internal support, and other competing interests, which in turn can mitigate the ability to introduce or promote environmental initiatives (Jackling and Johl 2009; Yasser et al. 2017). Recent empirical findings emphasize such context and argue that greater CSR committee independence is linked to greater waste generation and reduced recycling levels (Gull et al. 2024). On the other hand, some research findings indicate that independent CSR committees are not linked to environmental performance or CSR assurance (Saeed et al. 2021; Peters and Romi 2015); however, these results are situational and cannot fully capture the broader role of independence in driving environmental innovation.

In light of both theoretical and empirical research, the current study proves that an independent CSR committee boosts environmental innovation. Independent directors are more likely to achieve long-run sustainability goals when the corporate strategic priorities are aligned; in such a case, the firm is more likely to adopt innovative practices that reduce environmental impact. Based on this observation, the following hypothesis is obtained:

H2. *CSR committee independence has a significant and positive impact on environmental innovation.*

2.2.3 | CSR Committee Chairperson Independence

The independence of the CSR committee chair plays a critical role in augmenting the committee's effectiveness in addressing environmental issues. An independent chair ensures unbiased oversight and strategic focus, which are critical for fostering environmental innovation. Agency theory emphasizes that separating the chair from executive management diminishes conflicts

of interest, and as a result, they align firms' decisions with long-term sustainability goals rather than short-term managerial priorities (Jensen and Meckling 1976; Alta'any et al. 2024). Resource dependency theory further highlights that independent chairs bring valuable external expertise, resources, and networks to the committee, which helps support innovation and strategic renewal (Pfeffer and Salancik 1978; Hillman et al. 2000).

Empirical evidence from related governance contexts emphasizes the importance of independent leadership. For instance, independent audit committee chairs are linked to improved monitoring, enhanced corporate performance, and better alignment with stakeholder and environmental goals (Ashfaq and Rui 2019; Ali and Atan 2013). These findings are relevant to CSR committees, which directly oversee sustainability and environmental initiatives (García-Sánchez et al. 2019; Jarboui et al. 2022). Independent CSR committee chairs can provide impartial leadership and facilitate proactive, forward-thinking approaches, thereby reinforcing that environmental innovation remains a priority (Elmaghrabi 2021; Donnelly 2017).

The chair of the CSR committee roles usually go beyond conventional supervision into strategic influence. Separate chairs can set agendas and guide the committee's discussions so that environmental factors take a central position in the organization's decision-making processes (Karamanou and Vafeas 2005). In addition, a chair of CSR is expected to have the ability to help the committee participate in productive discussion and effective decision-making, hence increasing the ability of the committee to address complex environmental issues that require long-term investments and creative solutions (Eberhardt-Toth 2017).

However, critics argue that independent chairs could face challenges such as limited internal knowledge or resistance from management (Donaldson 1990; Jackling and Johl 2009). Despite that, chairs' independence and external perspective often outweigh these limitations. To this end, independent chairs enhance transparency, accountability, and alignment with long-term environmental goals, ensuring that managerial opportunism does not overshadow sustainability initiatives (Amran et al. 2014; Alta'any et al. 2024).

Previous CSR empirical context shows that independent chairs play significant roles in promoting practices concerning sustainability; for example, Ashfaq and Rui (2019) show that an independent audit committee chair improves CSR disclosure quality; the same can be expected with the CSR committee chair. Using their freedom, the CSR committee chairs can facilitate ecologically innovative approaches to balance social values and the shareholders' interest (De Villiers, Naiker, and Van Staden 2011; De Villiers, Rinaldi, and Unerman 2011; Mallin and Michelon 2011). In line with this, the following is the hypothesis:

H3. *An independent CSR committee chair has a significant and positive impact on environmental innovation.*

2.2.4 | CSR Committee Meeting Attendance

The success of the body is dependent on the consistent membership of CSR committee members. Good attendance records indicate the seriousness and commitment of the members to their advisory and oversight duties (Nowland and Simon 2018). From an agency theory perspective, attending the meetings helps strengthen the CSR committee's monitoring function by reducing information asymmetry and aligning management practices with the stakeholders' expectations (Lipton and Lorsch 1992; Aliyu 2019). The members' constant availability facilitates discussing the problems in detail, resolving them faster, and making informed decisions on environmental strategies (Hu and Loh 2018; Oyewo 2023).

Moreover, meeting attendance can truly reflect the diligence and engagement of the committee members. It also enables members to actively participate in discussions about environmental policies, sustainability initiatives, and stakeholder needs (Hussain et al. 2018). Such participation can help enhance the committee's ability to have closer inception of management's actions and contribute to innovative environmental practices. Previous findings suggest that higher attendance levels directly correlate to improvements in the quality of board decisions and oversight outcomes. Hence, this leads to better financial and non-financial performance, including engagement in corporate social responsibility (Nowland and Simon 2018).

Another counter-stone brought by the Resource dependency theory on the importance of attendance is facilitating the exchange of ideas, sharing of expertise, and collaboration among committee members. In such contexts, meetings serve as a platform where members can bring external resources, networks, and perspectives to the discussion, which is important for driving environmental innovation (Hillman and Dalziel 2003; Mallin and Michelon 2011). More attendance ensures that these resources are effectually utilized, resulting in better alignment of corporate strategies with environmental objectives and improved decision-making processes (Aliyu 2019; Taluka et al. 2022).

Additionally, some studies on meeting attendance found a significant positive relationship with performance. Dube and Jaiswal (2015) found that board meeting attendance positively impacts sustainability policies and initiatives, such as environmental audits and certifications. Similarly, Hussain et al. (2018) reported that attendance at board meetings improves the social dimension of sustainability performance due to active participation in governance discussions. These findings are relevant to CSR committees, as their responsibilities often overlap with broader board objectives related to sustainability and environmental strategies (García-Sánchez et al. 2019; Elmaghrabi 2021).

Nonetheless, analytical critiques argue that high attendance could be a measure different from active participation (Bacon et al. 1997; Vafeas 1999); however, most empirical evidence demonstrates that there is a strong correlation between high rates of attendance and better quality of monitoring and strategic alignment (Jizi et al. 2014; Alta'any et al. 2024). In the case of a CSR committee, attendance during meetings matters a great deal in undertaking environmental innovation, which requires strategic focus, resources, and long-term investment. High attendance keeps the members engaged to fully participate during discussions, share ideas, and gain opportunities to contribute toward creating innovative practices with low environmental footprints. By ensuring active engagement, committees

possess a good mechanism to oversee the management practices and provide critical inputs on sustainability initiatives (Jarboui et al. 2022; Martínez-Ferrero and García-Sánchez 2017). With these theoretical and empirical foundations, the presence of CSR committee members at meetings is expected to enhance environmental innovation through active engagement and effective decision-making.

H4. *CSR committee meeting attendance has a significant and positive impact on environmental innovation.*

3 | Methodology

3.1 | Data and Sample

The current study uses a cross-country panel of non-financial companies taken from the Bloomberg World Large and Mid Cap Index between 2013 and 2020. The index coverage, including over 85% of the worldwide market capitalization on a float-adjusted basis, stretches to both developed and emerging markets (Meqbel et al. 2025). Using the index in the analysis was considered appropriate since it grants access to a wide range of corporations that have developed CSR committees, which minimizes the confounding impact of environmental policy heterogeneity and regulatory asymmetries (Donnelly 2017). Therefore, the final sample did not include all financial organizations, thus guaranteeing environmental homogeneity and financial benchmarking.

Data collection is carried out in two stages. Stage one involved data collection on the CSR committees using the Bloomberg ESG database. The data source, which in previous academic literature was found to have a wide range and being highly reliable, holds complete and standardized disclosures of CSR (Murè et al. 2021; Schiemann and Tietmeyer 2022; Meqbel et al. 2025). In phase two, data downloaded from the Bloomberg ESG database was merged with additional supporting variables like an environmental innovation score and other sustainability-related metrics downloaded from the Refinitiv Eikon database. Similarly, this data is widely recognized as having a large ESG footprint, providing systematically collected data based on annual reports of firms, sustainability reporting, and regulatory submissions, which enables the replicability of empirical results (Haque and Ntim 2022; Gómez-Bolaños et al. 2020; Ahmed et al. 2024; Abweny et al. 2025). In order to have the most granular financial coverage, the firm-level financial data was then supplemented by the use of the Worldscope module integrated into the Refinitiv Eikon platform.

Based on the above, our initial full sample consists of 36,408 firm-year observations. We then excluded financial firms (5784 observations), firms with missing data (6650 observations), and, following prior studies that utilized a global sample (e.g., Saeed et al. 2022; Gull et al. 2023), we also excluded countries with less than 20 observations (144 observations). Accordingly, the final sample of 19,669 firm-year observations for the first analysis considers the CSR committee as a dummy variable. Among these, 13,984 observations lacked a CSR committee, while 5685 observations reported having a CSR committee. For the second analysis focusing on CSR committee attributes (i.e., size, chair independence, and meeting attendance), missing data on CSR committee characteristics (size 4311, directors' independence 4102, meetings attendance 3727, chairperson independence 4371) vary, which yields different sample observations for Equation (2). The sample distribution spans various countries and years. The United States accounts for the largest share (27.23%), followed by China (11.2%), with other nations contributing smaller proportions (Table 2).

3.2 | Variables Measurement

3.2.1 | Dependent Variable: Environmental Innovation

This study examines the impact of CSR committee characteristics on environmental innovation, utilizing an environmental innovation score (EIS) as the dependent variable. The EIS, sourced from the Refinitiv Eikon database, ranges from 0 to 100 and evaluates a company's capability to develop and implement environmental technologies and processes. A higher score indicates stronger innovation capacity, reflecting a firm's effectiveness in reducing environmental costs, minimizing ecological impacts, and enhancing competitiveness through eco-designed products and processes (Nadeem et al. 2020; Moreno-Ureba et al. 2022). This auditable metric minimizes reliance on self-reported data, reducing the possibility of replication errors and enabling generalizability in empirical research (Abu Alia et al. 2024; Dwekat, Abu Alia, et al. 2025).

3.2.2 | Independent Variables: CSR Committee Attributes

The existence of the CSR committee and its' attributes, committee size, independence, independence of the chair, and meeting attendance serve as key explanatory factors in the analysis. First, the existence of a dedicated CSR committee is taken as a dummy set where one is when a company has a committee and zero otherwise (Abdeljawad et al. 2025; Elmaghrabi 2021). The committee size is measured by the number of committee members (Saeed et al. 2021; Cheng 2008; Meqbel et al. 2025). Independence shows the share of members who are served as

TABLE 1 | Sample selection process.

	Obs.	%
Initial global data from 2013 to 2020	36,408	100
Less		
Financial firms	5784	15.89
Firms with missing data	6650	18.27
Counties with less than 20 observations	144	0.40
The final sample for Equation (1)	19,669	54.02
Firms without CSR committees	13,984	71.10
Firms with CSR committees	5685	28.90

Note: This table presents the sample selection process. Missing data on CSR committee characteristics (size 4311, directors' independence 4102, meetings attendance 3727, chairperson independence 4371) vary, which yields different sample observations for Equation (2).

TABLE 2 | Sample distribution by country and year.

Panel A: Sample distribution by country

Country	Obs.	Percent	Country	Obs.	Percent
Australia	407	2.07	Malaysia	314	1.6
Austria	67	0.34	Mexico	217	1.1
Belgium	70	0.36	Netherlands	182	0.93
Brazil	376	1.91	New Zealand	161	0.82
Canada	541	2.75	Norway	104	0.53
Chile	126	0.64	Philippines	152	0.77
China	2203	11.2	Poland	107	0.54
Colombia	46	0.23	Portugal	32	0.16
Denmark	133	0.68	Qatar	47	0.24
Finland	121	0.62	Russian Federation	200	1.02
France	473	2.4	Saudi Arabia	59	0.3
Germany	491	2.5	Singapore	185	0.94
Greece	61	0.31	South Africa	301	1.53
Hong Kong	596	3.03	Spain	148	0.75
India	563	2.86	Sweden	284	1.44
Indonesia	195	0.99	Switzerland	274	1.39
Ireland	139	0.71	Taiwan	711	3.61
Israel	95	0.48	Thailand	224	1.14
Italy	152	0.77	Turkey	164	0.83
Japan	2135	10.85	United Arab Emirates	62	0.32
Korea	602	3.06	United Kingdom	759	3.86
Luxembourg	35	0.18	United States	5355	27.23
			Total	19,669	100

Panel B: Sample distribution by year

Year	Obs.	Percent
2013	2097	10.66
2014	2198	11.17
2015	2410	12.25
2016	2429	12.35
2017	2645	13.45
2018	2721	13.83
2019	2895	14.72
2020	2274	11.56
Total	19,669	100

Note: This table presents the sample distribution by country and year. The final sample comprised of 19,669 firm-year observations drawn from 44 countries between 2013 and 2020.

independent, expressed as a percentage of the whole board (Ali and Atan 2013; Donnelly 2017). The independence of the CSR committee chairperson is measured as a dummy variable where it is one if the chair of the committee is independent and, otherwise, zero (Karaman et al. 2024). Finally, meeting attendance measures the proportion of meetings each member attends over a year, reported as a percentage (Nowland and Simon 2018; Hussain et al. 2018).

Finally, to quantify the overall effectiveness of CSR committees, we constructed a composite score using principal component analysis (PCA) based on the four committee attributes:

committee size, percentage of independent members, attendance rate, and whether the chairperson is independent. Since these variables are measured on different scales, we standardized them before applying PCA to ensure equal weighting.

The first principal component, explaining about 50% of the total variance, was retained to generate the CSR committee score. It loaded positively on committee size (0.530), independence percentage (0.662), chairperson independence (0.422), and negatively on attendance (−0.321). While this suggests that structurally robust committees may not always exhibit higher engagement, we retained attendance to preserve its behavioral dimension. This composite score was then used as a continuous measure of CSR committee quality in our regression models.

3.2.3 | Control Variables

Prior studies on environmental responsibility find that different firm-level and corporate governance factors likely influence firms' activities toward environmental innovation (Dwekat, Abu Alia, et al. 2025; Abdelhaq et al. 2024; Abu Alia et al. 2024). For this purpose, we used different firm-level variables to ensure control for probable confounding impacts and rule out omitted variable bias in our models. The size of the firm is measured as the natural logarithm of assets (Abdelhaq et al. 2025; Dwekat, Taweel, and Salameh 2025, Abdelhaq and Dwekat 2024), and sizeable firms are expected to be more engaged in sustainability practices with the availability of more resources and higher visibility (Gull et al. 2024; De Villiers, Naiker, and Van Staden 2011; De Villiers, Rinaldi, and Unerman 2011; Dwekat, Abu Alia, et al. 2025). Profitability, as captured by return on assets (ROA) captures the impact of financial funds on environmental initiatives (Moussa et al. 2020; Dwekat, Abu Alia, et al. 2025; Abweny et al. 2024; Dwekat, Seguí-Mas, Tormo-Carbó, and Carmona 2020). Leverage, captured as long-term debt to total assets, captures the impact of financial liabilities toward a firm's sustainability activities (Haque 2017; Abu Alia et al. 2024; Dwekat, Seguí-Mas, and Tormo-Carbó 2020). Sales growth, here referring to the percentage change in a firm's total revenue over a given time period, has heterogeneous effects on sustainability practices (Meng et al. 2023).

Corporate governance variables include board size (number of members) and board independence (percentage of independent directors). Larger boards offer diverse expertise and enhance oversight, while greater independence supports unbiased monitoring, both of which are argued to have a positive impact on sustainability strategies (Liao et al. 2015; Haque 2017; Dwekat, Seguí-Mas, et al. 2022).

3.3 | Regression Models

Two regression equation models were built in order to evaluate the hypotheses, employing a two-way clustering technique at firm and year levels as outlined by Petersen (2008). In this technique, we mitigate heteroscedasticity and serial correlation issues in panel data, offering robust standard errors and improving parameter accuracy (Bouslah et al. 2018; Gow et al. 2010). The first model focuses on the relationship between the existence of a CSR committee and environmental innovation (ENV_INNOV). The second model explores how specific CSR committee attributes—size, independence, chair independence, and attendance—impact environmental innovation.

The regression equations are specified as follows:

$$\begin{aligned}\text{ENV\_INNOV}_{i,t} = {} & \beta_0 + \beta_1 \text{COM}_{i,t} + \beta_2 \text{F\_SIZE}_{i,t} + \beta_3 \text{LEV}_{i,t} + \beta_4 \text{ROA}_{i,t} \\ & + \beta_5 \text{GROWTH}_{i,t} + \beta_6 B\_\text{SIZE}_{i,t} + \beta_7 \text{CEO\_DUAL}_{i,t} \\ & + \left[\text{Industry, Country, Year Indicators}\right] + \varepsilon_{i,t}\end{aligned} \tag{1}$$

$$\begin{aligned}\text{ENV\_INNOV}_{i,t} = {} & \beta_0 + \beta_1 X_{i,t} + \beta_2 \text{F\_SIZE}_{i,t} + \beta_3 \text{LEV}_{i,t} + \beta_4 \text{ROA}_{i,t} \\ & + \beta_5 \text{GROWTH}_{i,t} + \beta_6 \text{B\_SIZE}_{i,t} + \beta_7 \text{CEO\_DUAL}_{i,t} \\ & + \left[\text{Industry, Country, Year Indicators}\right] + \varepsilon_{i,t}\end{aligned} \tag{2}$$

In these equations, ENV_INNOV represents the environmental innovation score of a firm (i) at year (t). The variable CSRC is a binary indicator for the presence of a CSR committee, while X refers to the CSR committee attributes, including size, independence, chair independence, and attendance. Each attribute is analyzed in separate regressions to address potential multicollinearity issues.

Fixed effects at the country, industry, and year levels are incorporated to control for unobservable heterogeneity associated with these dimensions. This ensures that variations in environmental innovation are not driven by external factors specific to a country, industry, or time period. To further enhance the robustness of the analysis, all continuous variables are winsorized at the 1st and 99th percentiles, mitigating the influence of outliers on the results. The detailed variable definitions, measurements, and data sources are presented in Table 3.

4 | Results and Discussion

4.1 | Descriptive Statistics

Table 4 presents a summary of the descriptive statistics for the study variables. The average environmental innovation (ENV_INNOV) score is 30.30, with a standard deviation of 32.48. Scores range from 0.00 to 99.86. For the independent variables, around 29% of firms have a CSR committee (COM), with an average size (COM_SIZE) of 4.38 members, ranging from 2 to 10. On average, committees include 80% independent members (COM_IND), showing differences in committee composition. Attendance rates (COM_MEET) are high, averaging 90%, while 75% of CSR committee chairs (COM_CHAIR_IND) are independent, though this varies significantly (SD = 0.43).

4.2 | Correlation Matrix

Table 5 reports the Pearson correlation coefficients among our key study variables. Environmental innovation (ENV_INNOV) is significantly and positively correlated with firm size ($r = 0.321$, $p < 0.001$), indicating that larger firms tend to engage more in

TABLE 3 | Variable description.

Variable and symbol	Definition	Source
Dependent variable		
Environmental innovation (ENV_INNOV)	Environmental innovation category score, ranging from 0 to 100, reflects a company's capacity to reduce the environmental costs and burdens for its customers, and thereby creating new market opportunities through new environmental technologies and processes or eco-designed products	Refinitiv Eikon
Independent variables		
CSR committee (COM)	The dummy variable equal to 1 if the firm had a CSR, or equivalent, committee that report to the board and 0 otherwise	Bloomberg
CSR committee size (COM_SIZE)	Number of directors on the firm's CSR, or equivalent, committee	Same
CSR committee independence (COM_IND)	Percentage of independent CSR, or equivalent, committee members of the total size of the firm's CSR committee	Same
CSR committee chairperson independence (COM_CHAIR_IND)	The dummy variable is equal to 1 if the chairperson of the firm's CSR, or equivalent, committee is independent and zero otherwise	Same
CSR committee meetings (COM_MEET)	Percentage of committee meetings attended by members annually	Same
CSR committee score (COM_SCORE)	A proxy of CSR committee effectiveness was estimated using principal component analysis (PCA)	Authors' estimation
Control variables		
Firm size (F_SIZE)	Natural logarithm of total assets	Refinitiv Eikon
ROA	The Ratio of net income to total assets	
Sales growth (GROWTH)	The percentage increase in a firm's total revenue during a certain time frame	Same
Leverage (LEV)	The ratio of long-term debt to total assets	Same
Board size (B_SIZE)	Number of board members	Same
CEO_Chairman duality (CEO_DUAL)	A dummy variable that equals 1 if the Chairman of the Board also serves as CEO, and 0 otherwise	Same
CSR sensitive industries	A dummy variable is set to 1 for firms belonging to industries sensitive to CSR and 0 for those in industries less concerned with CSR	Simnett et al. (2009)
CSR sensitive countries	A dummy variable equals 1 if a firm is domiciled in a country characterized by a stakeholder corporate governance model, reflecting high sensitivity to social and environmental responsibility. Conversely, a value of 0 is assigned to firms domiciled in countries with a shareholder corporate governance model, indicating low CSR sensitivity	Ball et al. (2000), and Donnelly (2017)

environmental-innovation activities and show smaller yet significant positive associations with CSR-committee size (COM_SIZE: $r=0.074$, $p<0.05$) and the proportion of independent members (COM_IND: $r=0.117$, $p<0.01$), offering preliminary support for Hypotheses H3 and H4. The composite committee score (COM_SCORE) likewise correlates positively with innovation output ($r=0.123$, $p<0.01$). Among governance attributes, higher committee independence is associated with lower meeting attendance (COM_IND vs. COM_MEET: r = −0.266, $p<0.001$), suggesting more independent committees convene less frequently. The strongest inter-variable correlation occurs between committee independence and size ($r=0.58$), reflecting moderate overlap between these attributes; it remains below the commonly accepted threshold of 0.70, suggesting that multicollinearity is unlikely to pose significant issues for the analysis (Myers 1990). Consequently, we conclude that multicollinearity among our independent variables is not a concern[1]. In addition, we tested for multicollinearity using Variance Inflation Factors (VIFs) across all specifications in Table 6. All VIF values were well below the conventional threshold of 5, with maximum values ranging from 1.21 to 1.27 and mean VIFs between 1.08 and 1.11. These results indicate that multicollinearity is not a concern in our estimation since it is lower than the threshold of 10 recommended by Gujarati (2022)[2].

TABLE 4 | Descriptive statistics.

Variable	Obs.	Mean	Std. dev.	Min	Max
ENV_INNOV	19,669	30.301	32.479	0.000	99.860
COM	19,669	0.289	0.443	0.000	1.000
COM_SIZE	4311	1.243	2.125	2.00	10.00
COM_IND	4102	0.8060	0.259	0.000	1.00
COM_MEET	3727	0.904	0.114	0.020	1.000
COM_CHAIR_IND	4371	0.754	0.431	0.000	1.000
COM_SCORE	3998	0	1.402	−3.911	6.333
F_SIZE	19,669	15.514	1.604	2.079	20.906
LEV	19,669	0.198	0.171	0.000	0.724
ROA	19,669	5.96	7.92	−26.89	33.047
GROWTH	19,669	0.097	0.304	−0.501	1.832
B_SIZE	19,669	9.994	2.827	4.00	20.00
CEO_DUAL	19,669	0.292	0.455	0.000	1.000

4.3 | Regression Results and Discussion

Table 6 presents the regression results examining the influence of CSR committee presence and attributes on environmental innovation. Model 1 evaluates the impact of CSR committee presence, while Models 2 through 5 assess the effects of CSR committee size, independence, chair independence, and meeting attendance, respectively. The findings reveal that CSR committee presence (Model 1) and attributes (i.e., size in Model 2, independence in Model 3, and meeting attendance in Model 4 positively and significantly influence environmental innovation, supporting H1–H3). Conversely, CSR committee chair independence in Model 5 does not significantly impact environmental innovation, leading to the rejection of H4. These results provide valuable insights into the role of CSR governance mechanisms in promoting firms' environmental innovation capabilities, consistent with theoretical frameworks and prior empirical evidence.

The presence of a CSR committee (COM) raises environmental innovation (ENV_INNOV) by 3.585 points ($p<0.01$). ENV_INNOV, drawn from Refinitiv Eikon, runs from 0 to 100 and captures a firm's ability to develop and deploy environmental technologies; higher scores indicate lower ecological footprints, greater cost reductions, and competitive gains through

TABLE 5 | Pair-wise correlations.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) ENV_INNOV	1.000									
(2) COM_SIZE	0.074*	1.000								
(3) COM_IND	0.117*	0.576*	1.000							
(4) COM_MEET	0.030	−0.089*	−0.266*	1.000						
(5) COM_SCORE	0.103*	0.742*	0.928*	−0.449*	1.000					
(6) F_SIZE	0.321*	0.195*	0.343*	−0.101*	0.296*	1.000				
(7) LEV	0.010	0.148*	0.225*	−0.145*	0.233*	0.332*	1.000			
(8) ROA	−0.023*	0.022*	−0.096*	0.006	−0.068*	−0.040*	−0.088*	1.000		
(9) GROWTH	−0.028*	−0.010	0.005	−0.013	0.007	−0.017*	−0.008	0.007	1.000	
(10) B_SIZE	0.209*	0.225*	0.179*	−0.038*	0.237*	0.398*	0.126*	−0.038*	0.004	1.000

*Shows significance at $p<0.05$.

TABLE 6 | The impact of CSR committees' existence and attributes on environmental innovation.

ENV_INNOV variables	(1)	(2)	(3)	(4)	(5)	(6)
COM	3.585***					
	(0.545)					
COM_SIZE		0.399***				
		(0.150)				
COM_IND			1.635***			
			(0.408)			
COM_MEET				17.77***		
				(6.017)		
COM_CHAIR_IND					−0.584	
					(1.796)	
COM_SCORE						1.476***
						(0.511)
F_SIZE	6.475***	6.669***	6.692***	6.419***	6.918***	6.364***
	(0.188)	(0.238)	(0.492)	(0.519)	(0.484)	(0.529)
LEV	−17.31***	−15.44***	−17.95***	−9.964**	−16.29***	−9.190**
	(1.343)	(1.762)	(3.750)	(3.957)	(3.626)	(3.965)
ROA	0.0369**	0.0939***	0.229***	0.222***	0.157**	0.236***
	(0.0180)	(0.0255)	(0.0711)	(0.0791)	(0.0679)	(0.0825)
GROWTH	−0.0967**	−0.0645	−5.335**	−4.570*	−5.656**	−4.057*
	(0.0414)	(0.0421)	(2.474)	(2.345)	(2.615)	(2.306)
B_SIZE	0.923***	0.747***	0.948***	1.248***	1.338***	1.280***
	(0.0906)	(0.118)	(0.273)	(0.282)	(0.247)	(0.297)
CEO_DUAL	−0.363	−0.489	3.503***	4.387***	3.696***	3.826***
	(0.493)	(0.624)	(1.298)	(1.382)	(1.252)	(1.376)
Constant	−76.95***	−77.06***	−91.32***	−106.2***	−89.95***	−90.73***
	(11.46)	(10.11)	(9.559)	(10.78)	(9.400)	(9.920)
Country dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,669	4311	3412	3146	3637	3327
R^2	0.249	0.268	0.285	0.296	0.277	0.300

Note: This table presents the regression results examining the influence of CSR committee existence and attributes on environmental innovation. The first model analyzes the presence of a CSR committee, whereas the subsequent models separately evaluate the attributes of CSR committees. The final model assesses the overall effectiveness of the CSR committee. Fixed effects for country, year, and industry are included to control for unobserved heterogeneity. All variables are defined in Table 1. Robust standard errors are reported in parentheses, with significance levels denoted by ***, *, and * for $p < 0.01$, $p < 0.05$, and $p < 0.1$.

eco-design. From an agency-theoretic viewpoint, a CSR committee centralizes sustainability oversight, reduces information asymmetries, and realigns managerial incentives toward long-term environmental objectives, thereby encouraging investments in high-risk, high-reward green projects (Jensen and Meckling 1976; García-Sánchez et al. 2019; Meqbel et al. 2025). Resource-dependency theory complements this reasoning by focusing on the committee's role in having the necessary expertise and external networks—engaging regulators, NGOs, and technology partners—to marshal the human and relational capital necessary for innovation (Pfeffer and Salancik 1978; Dixon-Fowler et al. 2017). Together, these governance and resource mechanisms explain the significant increase in ENV_INNOV among firms with CSR committees.

The study also conforms to empirical studies affirming the positive effect of CSR committees on the firm's environmental performance and good governance. For instance, Abu Alia et al. (2024) note that CSR committees act as moderators of the positive effect of governance attributes, such as board independence, whereas they alleviate likely governance problems like CEO duality. This moderation highlights the CSR committee's central role in driving green policy, building stakeholder trust, and connecting board characteristics and CSR performance (Pucheta-Martínez and Gallego-Álvarez 2019; Endrikat et al. 2021). Moreover, CSR committees allow decentralized decision-making, enabling firms to reply efficiently to specific environmental issues and enhance strategic planning (Dixon-Fowler et al. 2017; Konadu et al. 2022). Therefore, by representing a company's sustainability commitment, CSR committees combine its legitimacy and reputation, creating competitive advantages by developing innovative green initiatives (Velte and Stawinoga 2020; Moreno-Ureba et al. 2022).

The results for CSR committee size (Model 2) reveal a significant positive relationship with environmental innovation (coef. = 0.399, $p < 0.05$), supporting H1. Larger committees bring diverse expertise, perspectives, and resources, which are critical for addressing multifaceted environmental challenges (Saeed et al. 2021; Cheng 2008). Resource dependency theory supports this finding, emphasizing that larger committees enhance decision-making by integrating varied viewpoints and encouraging collaboration among members (Pfeffer and Salancik 1978). Additionally, larger committees establish stronger relationships with key environmental stakeholders, such as NGOs and regulatory bodies, enabling firms to align their strategies with broader societal goals (Lacetera 2001; Shapiro et al. 2015). Empirical studies also affirm the benefits of larger boards and committees, linking them to improved sustainability outcomes and innovative capacity (Farza et al. 2022; Elmaghrabi 2021). While some argue that smaller committees may offer better communication and accountability (Ahmed et al. 2006; Prado-Lorenzo and Garcia-Sanchez 2010), these results suggest that the advantages of larger committees, including resource availability and stakeholder engagement, outweigh such concerns in the context of environmental innovation.

Independence of the CSR committee (Model 3) is also found to have a significant positive association with environmental innovation (coef. = 1.350, $p < 0.01$), supportive of H2. Independent members support good governance by providing objective scrutiny and ensuring that strategies do not work against long-term sustainability goals (Barako et al. 2006; Amran et al. 2014). Agency theory stresses their role in avoiding agency conflicts, promoting transparency, and increasing accountability (Cheng and Courtenay 2006; Jensen and Meckling 1976). Value-added knowledge, external ties, and independent directors' capital strengthen firms' innovative ability from a resource-dependency perspective (Pfeffer and Salancik 1978; Hillman et al. 2000). Empirical evidence presents the effectiveness of independent members of CSR committees in executing environmentally friendly policies and embracing innovative practices in order to reduce environmental footprint while enhancing the competitiveness of firms (Donnelly 2017; Jarboui et al. 2022). Such evidence presents autonomy as essential in strengthening strategic environmental programs.

CSR committee meeting attendance (Model 4) exhibits a significant positive effect on environmental innovation (coef. = 17.77, $p < 0.01$), confirming H3. High attendance rates reflect member commitment and active engagement, enabling more effective oversight and strategic alignment (Nowland and Simon 2018; Hussain et al. 2018). Agency theory posits that frequent attendance strengthens monitoring capabilities by reducing information asymmetries and ensuring timely decision-making (Lipton and Lorsch 1992; Xie et al. 2003). From a resource dependency perspective, meetings serve as a platform for exchanging ideas, fostering collaboration, and developing innovative environmental strategies (Hillman and Dalziel 2003; Aliyu 2019). Empirical studies consistently show that active participation in governance enhances sustainability outcomes (Martínez-Ferrero and García-Sánchez 2017). These findings highlight the critical role of attendance in encouraging accountability and innovation within CSR committees.

Drawing on our empirical estimates, we can now offer precise CSR committee targets. Model 2 shows each additional director raises environmental innovation by 0.399 points ($p < 0.05$), and with the sample mean committee size of 1.243 members (SD = 2.125), expanding to five members yields a back-of-the-envelope increase of $(5–1.243) \times 0.399 \approx 1.50$ points on the 0–100 innovation scale. Model 3 indicates each 10 percentage-point rise in independent representation adds 1.350 points ($p < 0.01$), with the steepest marginal gains once independence exceeds 60%. Finally, Model 4 finds that improving meeting attendance from its mean of 90.4% to 100% delivers an additional $(1.000–0.904) \times 17.77 \approx 1.70$ points. We, therefore, conclude that to maximize environmental innovation, firms should constitute CSR committees of at least five members, ensure over 60% independent directors, and maintain near-perfect meeting attendance.

Contrary to expectations, CSR committee chair independence (Model 5) does not significantly impact environmental innovation, leading us to reject H4. While prior research highlights the potential of independent leadership to strengthen oversight and strategic focus (Ashfaq and Rui 2019; Lutfi et al. 2022), our results suggest that independence in the chair role alone may be insufficient to drive innovation outcomes. One possibility is that environmental innovation is inherently a collective process, relying on the diverse expertise and active engagement of all committee members rather than the preferences of a single individual.

Moreover, unobserved factors may be at work. For instance, chair-specific attributes—such as tenure, industry experience, or technical expertise—could moderate the effect of formal independence but are not captured by our independence dummy. Similarly, committee culture, informal decision-making processes, or firm-level innovation strategies (e.g., R&D intensity, cross-functional task forces) may confound the isolated impact of chair independence. Omitted variable bias or measurement error in our chair-independence proxy may attenuate the true effect. These findings align with mixed evidence in the literature on independent chairs and sustainability outcomes (Peters and Romi 2015; Saeed et al. 2021). Future research could enrich this analysis by incorporating qualitative measures of chair effectiveness (e.g., meeting leadership scores), exploring interaction

effects with chair expertise or tenure, and employing methods (such as latent variable models) to account for unobserved heterogeneity in committee governance.

4.4 | Sensitivity Analyses

We performed sensitivity analyses to tackle potential concerns affecting the research design and strengthen our findings' reliability. The following sections provide detailed explanations of these analyses.

4.4.1 | Control CSR-Sensitive Industries

We further controlled the influence of each industry by distinguishing firms within CSR-sensitive industries from non-CSR-sensitive ones. According to Meqbel et al. (2024) and Simnett et al. (2009), we categorized companies in utilities, mining, and production industries as CSR-sensitive; this is because businesses in these industries tend to be more motivated to provide a positive public perception, given that their activities have greater consequences on the environment (Al-Shaer and Zaman 2019; Dwekat, Meqbel, et al. 2022; Omran et al. 2021). Accordingly, we examined the study's Hypotheses H1–H4 after controlling for the effect of CSR-sensitive industries. The findings presented in Table 7 demonstrate that the association between the existence and attributes of CSR committees and environmental innovation remains consistent with the main outcomes presented in Table 5.

4.4.2 | Control CSR-Sensitive Countries and Country Level Factors

Sensitivity to CSR issues is likely to vary depending on the country in which firms are located, even when all firms examined are committed to voluntary CSR initiatives (Donnelly 2017; Meqbel et al. 2025). The legal environment in which a firm is located determines CSR expectations and, thus, the adoption of a sustainability assurance statement (Kolk and Perego 2010). Firms in common law countries are more likely to have a shareholder-oriented corporate governance model, and firms in code law countries are more likely to have a stakeholder-oriented[3] corporate governance model (Ball et al. 2000). The shareholder/stakeholder orientation classification is used in this study to identify low and high CSR sensitivity, respectively, and country CSR sensitivity is included as a control variable in the model. Accordingly, the outcomes in Table 8 show that the association between the existence and characteristics of CSR committees and environmental innovation is still consistent with the primary outcomes presented in Table 5.

To further enhance the explanatory power of our model, we included three time-varying country-level control variables: GDP per capita (log), inflation rate, and the Rule of Law Index. These variables reflect, respectively, the level of economic development (Ball et al. 2000), macroeconomic stability (Pucheta-Martínez and Gallego-Álvarez 2020), and institutional quality (Hillman et al. 2000; Kolk and Perego 2010)—factors that can significantly shape a firm's environmental innovation behavior. Incorporating these indicators helps capture dynamic country-specific influences that are not addressed by time-invariant country dummies. The results presented in Table 9 remain robust and consistent with our primary findings.

4.4.3 | Different Model Specifications

To address potential reverse causality concerns, we apply the two-stage least squares (2SLS) method. We selected 2SLS because it explicitly corrects for endogeneity by isolating the exogenous variation in our CSR committee attributes, thereby providing consistent estimates even when explanatory variables correlate with the error term. A key part of this process is identifying suitable instrumental variables that are exogenous to the dependent variable. In this study, we use the one-year lagged values of our independent variables as instruments in the first-stage regression, consistent with methodologies used in previous research (Gull et al. 2024; Shahab et al. 2022; Wooldridge 2010). This choice of instruments is justified by their temporal separation from current innovation outcomes and bypassing both relevance (high first-stage F-statistics) and exogeneity tests. The second-stage results, detailed in Table 10, show outcomes consistent with our primary findings, confirming that coefficient magnitudes and significance levels remain stable after correcting for endogeneity. This consistency strengthens our argument that the results are robust and not significantly affected by endogeneity. Moreover, the Hansen J-statistic for over-identification yields p-values well above 0.10 in all specifications, indicating that our instruments satisfy the exclusion restriction (Baum et al. 2007).

Moreover, to confirm the validity of the study findings, we employed secondary analysis by using the generalized estimating equations (GEE) estimator. We chose GEE because it estimates the correlation structure of panel observations without imposing stringent distributional assumptions and thus gives us population-averaged effects complementing our firm-level estimates (Bolourian et al. 2023; Meqbel et al. 2024). This approach is well-suited for panel data as it can adjust for observational correlations and highlight larger, population-level effects (Meqbel et al. 2024; Bolourian et al. 2023). The estimates displayed in Table 11 are quite comparable with those of Table 5. By virtue of both 2SLS and GEE presenting consistent direction and significance for CSR committee size, independence, and attendance, we provide multi-method robustness evidence that our main findings are not sensitive to the estimation approach. Together, the two complementary approaches enhance the validity of our results by addressing endogeneity, within-panel correlation, and potential heteroskedasticity simultaneously.

5 | Conclusion

This research contributes to the sustainability accounting literature by empirically divulging the nature and direction of the nexus between CSR committee attributes and environmental innovation. Using a cross-country sample of non-financial corporates listed in the Bloomberg World Large &

TABLE 7 | Additional test: control for CSR sensitive industries.

ENV_INNOV variables	(1)	(2)	(3)	(4)	(5)	(6)
COM	2.451***					
	(0.564)					
COM_SIZE		0.143				
		(0.157)				
COM_IND			1.744***			
			(0.436)			
COM_MEET				19.46***		
				(6.309)		
COM_CHAIR_IND					0.517	
					(1.876)	
COM_SCORE						1.476***
						(0.511)
F_SIZE	6.900***	7.218***	6.216***	5.820***	6.563***	6.364***
	(0.185)	(0.236)	(0.497)	(0.530)	(0.491)	(0.529)
LEV	−9.799***	−7.393***	−14.78***	−6.742	−11.47***	−9.190**
	(1.444)	(1.918)	(3.983)	(4.239)	(3.841)	(3.965)
ROA	0.0694***	0.0851***	0.136***	0.127***	0.121***	0.236***
	(0.0101)	(0.0125)	(0.0254)	(0.0263)	(0.0255)	(0.0825)
GROWTH	−0.163***	−0.129***	−6.919***	−6.589***	−7.216***	−4.057*
	(0.0373)	(0.0283)	(2.412)	(2.379)	(2.560)	(2.306)
B_SIZE	0.829***	0.629***	0.991***	1.313***	1.375***	1.280***
	(0.0923)	(0.121)	(0.288)	(0.294)	(0.259)	(0.297)
CEO_DUAL	−0.743	−0.732	2.886**	3.818***	3.436***	3.826***
	(0.509)	(0.647)	(1.365)	(1.453)	(1.314)	(1.376)
CSR_SENS_IND	4.241***	5.684***	2.393**	2.565**	1.423	2.139
	(0.446)	(0.578)	(1.159)	(1.213)	(1.128)	(2.812)
Constant	−88.55***	−89.93***	−93.74***	−106.7***	−96.22***	−90.73***
	(9.802)	(10.20)	(9.592)	(11.21)	(9.624)	(9.920)
Country dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummy	No	No	No	No	No	No
Observations	19,669	4311	3343	3080	3568	3136
R^2	0.205	0.226	0.212	0.221	0.203	0.300

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Mid-Cap Index over a time span of 7 years from 2013 to 2020. In this vein, the findings of this study offer rich cross-country insights about the CSR committee's role in driving environmental innovation practices. More minutely, the findings emphasize the positive influence of the presence of the CSR committee as the vital body in the boardroom structure on corporate environmental innovation. In a broader terms, our research enriches and extends the existing literature on the ongoing debates about the optimal factors that can shape corporate environmental innovation practices. Literally speaking, the effectiveness of the CSR committee structure is perceived as a critical issue for upgrading the integration of environmental innovation models in the firms' strategies and endeavors to keep survival in the foreseeable future. Furthermore, it is

TABLE 8 | Additional test—control for CSR sensitive countries.

ENV_INNOV variables	(1)	(2)	(3)	(4)	(5)	(6)
COM	2.237***					
	(0.690)					
COM_SIZE		0.341*				
		(0.178)				
COM_IND			1.371***			
			(0.448)			
COM_MEET				16.20***		
				(6.050)		
COM_CHAIR_IND					−8.809***	
					(2.901)	
COM_SCORE						1.534***
						(0.523)
F_SIZE	6.674***	6.545***	6.810***	6.791***	7.156***	6.940***
	(0.270)	(0.344)	(0.566)	(0.576)	(0.563)	(0.579)
LEV	−19.59***	−13.13***	−16.90***	−10.79**	−16.73***	−17.90***
	(1.890)	(2.401)	(4.645)	(4.781)	(4.579)	(4.717)
ROA	0.0637***	0.0685***	0.106***	0.106***	0.108***	0.101***
	(0.0117)	(0.0145)	(0.0268)	(0.0270)	(0.0269)	(0.0270)
GROWTH	−0.0975***	−0.0758**	−5.019*	−4.366*	−4.864*	−5.095*
	(0.0331)	(0.0298)	(2.680)	(2.528)	(2.665)	(2.724)
B_SIZE	1.333***	1.349***	1.235***	1.451***	1.589***	1.149***
	(0.132)	(0.168)	(0.307)	(0.312)	(0.301)	(0.319)
CEO_DUAL	1.264*	2.443***	4.133***	4.858***	4.527***	3.787***
	(0.645)	(0.834)	(1.341)	(1.393)	(1.348)	(1.356)
CSR_SENS_COUNTRIES	10.55***	11.57***	11.63***	9.942***	6.667***	10.84***
	(0.837)	(1.032)	(1.753)	(1.814)	(1.692)	(1.730)
Constant	−87.62***	−87.11***	−95.91***	−110.7***	−90.66***	−95.03***
	(7.434)	(5.729)	(10.89)	(11.95)	(11.26)	(11.54)
Country dummy	No	No	No	No	No	No
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,669	4311	2388	2284	2361	2313
R^2	0.231	0.240	0.250	0.250	0.256	0.248

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

worth mentioning that the study outcomes are robust across a stream of econometric estimators.

Moving to the implications realm, the study outcomes have perspicacious implications for different parties of stakeholders as follows: for top management, the results confirm the importance of a good governance regime, especially the presence of eco-friendly board committees in firms' governance structure such as the CSR committee, in addressing environmental-related issues and fulfilling sustainable business results. Put differently, the CSR committee can empower the process of shaping a solid path of corporate environmental innovation practices through

TABLE 9 | Additional test—control for country-level effects.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
COM	2.918***					
	(0.565)					
COM_SIZE		0.305**				
		(0.151)				
COM_IND			1.534***			
			(0.412)			
COM_MEET				17.15***		
				(6.011)		
COM_CHAIR_IND					−0.517	
					(1.807)	
COM_SCORE						1.453***
						(0.512)
F_SIZE	6.562***	6.765***	6.687***	6.221***	6.898***	6.352***
	(0.193)	(0.242)	(0.496)	(0.521)	(0.498)	(0.530)
LEV	−17.04***	−15.18***	−17.22***	−9.880**	−15.82***	−9.254**
	(1.360)	(1.768)	(3.752)	(3.937)	(3.718)	(3.964)
ROA	0.0461**	0.0979***	0.220***	0.217***	0.202***	0.236***
	(0.0188)	(0.0259)	(0.0710)	(0.0796)	(0.0720)	(0.0824)
GROWTH	−0.126***	−0.0900**	−5.117**	−4.253*	−5.438**	−4.057*
	(0.0446)	(0.0419)	(2.446)	(2.279)	(2.623)	(2.307)
B_SIZE	0.859***	0.703***	0.949***	1.318***	1.163***	1.300***
	(0.0931)	(0.119)	(0.275)	(0.282)	(0.262)	(0.298)
CEO_DUAL	−0.490	−0.499	3.841***	4.391***	3.663***	3.816***
	(0.506)	(0.633)	(1.310)	(1.382)	(1.303)	(1.378)
GDPC	−0.000113	−7.39e-05	−0.000201	1.27e-05	−0.000162	−5.48e-05
	(7.18e-05)	(0.000118)	(0.000213)	(0.000230)	(0.000232)	(0.000235)
INFLATION	−0.0461	−0.0769	0.124	−0.0531	0.186	−0.00817
	(0.124)	(0.144)	(0.454)	(0.494)	(0.466)	(0.519)
RL	0.124	−0.561	0.290	1.096	0.683	1.293
	(0.752)	(1.116)	(2.098)	(2.287)	(2.153)	(2.376)
Constant	−74.65***	−74.84***	−82.91***	−110.6***	−83.75***	−90.11***
	(12.28)	(11.67)	(15.26)	(16.57)	(16.02)	(16.11)
Country dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,669	4311	3412	3146	3637	3327
R^2	0.253	0.271	0.285	0.298	0.284	0.300

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

TABLE 10 | Robustness check—two-stage least squares (2SLS) estimation.

ENV_INNOV variables	(1)	(2)	(3)	(4)	(5)	(6)
COM	4.142***					
	(0.985)					
COM_SIZE		0.743**				
		(0.330)				
COM_IND			2.729***			
			(0.850)			
COM_MEET				41.668**		
				(19.116)		
COM_CHAIR_IND					−0.785	
					(4.084)	
COM_SCORE						2.343**
						(0.982)
F_SIZE	6.359***	6.516***	6.825***	6.979***	7.156***	6.630***
	(0.308)	(0.438)	(0.848)	(1.086)	(1.021)	(0.928)
LEV	−16.682***	−16.548***	−10.588	3.557	−9.269	−3.727
	(2.177)	(3.328)	(6.556)	(9.123)	(7.930)	(7.017)
ROA	0.014	0.092**	0.169	0.209	0.035	0.203
	(0.028)	(0.044)	(0.113)	(0.160)	(0.142)	(0.127)
GROWT	−0.054	−0.060	−12.420***	−13.752***	−14.799***	−12.466***
	(0.044)	(0.054)	(3.254)	(5.209)	(4.845)	(3.328)
B_SIZE	0.749***	0.441**	0.872*	1.287**	1.244**	1.181**
	(0.150)	(0.214)	(0.464)	(0.582)	(0.513)	(0.504)
CEO_DUAL	−0.272	−0.247	5.225**	6.513**	7.265***	5.420**
	(0.782)	(1.130)	(2.192)	(2.892)	(2.608)	(2.324)
Country dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,768	2830	1830	1108	1324	1776
R^2	0.084	0.078	0.104	0.104	0.100	0.105
Hansen *J*	4.691	5.005	1.621	0.705	3.494	6.303
Hansen *p*-value	0.0958	0.0819	0.203	0.703	0.174	0.102

Note: This table presents the results of the two-stage least squares (2SLS) estimation, using lagged variables as instruments to address potential endogeneity concerns. The first model examines the presence of a CSR committee, while subsequent models analyze specific CSR committee attributes. The final model evaluates the overall effectiveness of the CSR committee. Fixed effects for country, year, and industry are included to account for unobserved heterogeneity. All variables are defined in Table 1. Robust standard errors are reported in parentheses, with significance levels denoted by ***, *, and * for $p < 0.01$, $p < 0.05$, and $p < 0.1$.

actively overseeing firms' environmental performance and strategies. Furthermore, the presence of professional members in the CSR committee can prop the prevalence of an environmental sustainability culture in the firm, which, in turn, supports firms' endeavors toward seriously engaging in environmental innovation practices.

For policymakers, the study outcomes pay attention to casting light on the structure of CSR committee when forming it. More plainly, having a CSR committee in the firm is not enough to create an intrinsic effect unless jointly considering its optimal attributes, including but not limited to committee size, independent members, independent chairperson, and diligence

TABLE 11 | Robustness check—generalized estimating equation (GEE).

ENV_INNOV variables	(1)	(2)	(3)	(4)	(5)	(6)
COM	3.532***					
	(1.121)					
COM_SIZE		0.344**				
		(0.147)				
COM_IND			1.576***			
			(0.406)			
COM_MEET				20.08***		
				(5.838)		
COM_CHAIR_IND					−0.711	
					(1.715)	
COM_SCORE						1.881***
						(0.461)
F_SIZE	6.464***	6.676***	6.685***	6.378***	6.957***	5.094***
	(0.433)	(0.241)	(0.483)	(0.502)	(0.474)	(0.744)
LEV	−16.85***	−15.10***	−20.74***	−12.12***	−18.40***	−6.518*
	(3.125)	(1.955)	(3.933)	(4.186)	(3.804)	(3.769)
ROA	0.0487***	0.0677***	0.117***	0.112***	0.103***	−0.0504
	(0.0178)	(0.0132)	(0.0246)	(0.0252)	(0.0245)	(0.0411)
GROWTH	−0.0920**	−0.0645	−5.475***	−4.751***	−5.763***	−2.251**
	(0.0445)	(0.0728)	(1.520)	(1.552)	(1.514)	(0.926)
B_SIZE	0.907***	0.740***	0.918***	1.172***	1.294***	0.663***
	(0.198)	(0.113)	(0.256)	(0.265)	(0.235)	(0.220)
CEO_DUAL	−0.297	−0.296	3.438***	4.275***	3.628***	0.262
	(1.009)	(0.628)	(1.266)	(1.334)	(1.208)	(1.112)
Constant	−76.80***	−77.25***	−89.21***	−106.0***	−89.44***	−84.91***
	(12.07)	(13.28)	(9.596)	(11.34)	(9.604)	(10.17)
Country dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,669	4311	3343	3080	3568	3136
Number of id	3213	2778	904	842	948	852

Note: This table presents the results of the Generalized Estimating Equations (GEE) models, analyzing the influence of CSR committee existence and attributes on environmental innovation. The first model assesses the presence of a CSR committee, while subsequent models focus on specific CSR committee attributes. The final model evaluates the overall effectiveness of the CSR committee. Fixed effects for country, year, and industry are included to account for unobserved heterogeneity. All variables are defined in Table 1. Robust standard errors are reported in parentheses, with significance levels denoted by ***, *, and * for $p < 0.01$, $p < 0.05$, and $p < 0.1$.

level. In this regard, policymakers and regulators have to refine the current policies of shaping board subcommittees to align with the hyper-accelerated changes in the sustainable business context. More specifically, to guarantee the effectiveness of the CSR committee, it is imperative to enact legislation on considering the optimal attributes when shaping the CSR committee. Moving to the investors, our findings are a cornerstone in making wise investment decisions. In a wider sense, a CSR committee with a sound attributes can be viewed as an effective monitoring tool for a firm's environmental responsibility. Therefore, professional investors will be inclined to prioritize firms with high environmental performance since they realize that successful businesses should not be merely assessed purely financially.

From the theoretical perspective, the study findings endorse the entrenched assumptions of agency and resource dependency theories. For agency theory, the outcome emphasizes that the CSR committee acts as a crucial governance mechanism in alleviating the agency conflict by reinforcing the surveillance level on firms' environmental responsibility to meet stakeholders' expectations. Furthermore, the study findings emphasize the lens of resource dependency theory by endorsing the argument that having a CSR committee provides firms with professional and skilled members in dealing with environmental innovation practices, which, in turn, helps firms gain a competitive advantage and build a solid image in the eyes of different parties of stakeholders.

In spite of the study's strengths, it is important to acknowledge that this research has certain shortcomings as follows: (i) while this study explores the direct effect of the CSR committee on EI, it deserves to reshape the model by considering the potential effect of the intervening variables. Hence, conducting an indirect analysis will enrich the current literature by contributing to the ongoing debate. (ii) There is a space to examine the influence of other board sub-committees on EI, such as risk management and nomination committees. Finally, future studies have the opportunity to leave a mark by investigating other traits of CSR committee members, such as gender diversity, nationality diversity, educational level, and educational background.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Endnotes

[1] It is worth mentioning that CSR committee characteristics are analyzed separately.

[2] Detailed Variance Inflation Factor results can be provided by the authors upon request.

[3] Off the sample, Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland are considered CSR-sensitive countries.

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