Disclosure of environmental management strategies practices and corporate performance: Does green governance structure matter?

Abstract

This study empirically examines the influence of green governance structure on the nexus between the disclosure of environmental management strategies practices (EMSPs) and financial performance in UK companies. This comprehensive paradigm offers valuable insights into the interpretation of the current trend of EMSPs. Our study based on a sample of 484 UK firms from FTSE All-Share Index over the period (2015–2023) with 4,356 firm-year observations. Findings of this study shows that corporate governance structure has moderating impact on the nexus between EMSPs and firms' performance. Drawing on agency theory, stakeholder theory, the natural-resource-based view (NRBV), and legitimacy theory, the analysis employs Fixed Effects (FE), Two-Stage Least Squares (2SLS), and Generalized Method of Moments (GMM) estimation techniques to address endogeneity and ensure robustness. The results establish that board characteristics particularly board size, gender diversity, and meeting frequency positively and significantly influence the effectiveness of EMSPs, while board independence only proves effective when supported by relevant environmental expertise. GMM diagnostics, including Hansen and Arellano-Bond tests, confirm the reliability and specification accuracy of the model. These findings establish that functional engagement in corporate governance rather than structural presence alone drives the integration of environmental strategy and enhances firm performance. The study provides valuable insights for scholars, policymakers, and corporate leaders aiming to embed sustainability within governance frameworks and maximize long-term stakeholder value.

Keyword: Environmental management, environmental strategies practices, green governance structure, sustainability, ESG, environmental performance, financial performance, UK firms.

1 Introduction

Accounting communication is often strategically designed, with companies balancing transparency and obfuscation. As Brennan et al. (2023) explain, corporate reporting serves as a means for organizations to communicate their financial, social, and environmental performance. Corporate social responsibility (CSR) is increasingly seen as a way for companies to achieve both profitability and responsibility (Conte et al., 2024). However, prior research has questioned whether companies use reporting to engage stakeholders transparently or to construct narratives that serve managerial agendas or mislead audiences (Hemmings et al., 2017). The growing focus on transparency beyond financial performance has made ESG reporting a central issue for corporate governance and managerial accountability. This trend is part of a broader shift in corporate governance literature, where non-financial disclosure is viewed as a strategic and reputational tool. Free et al. (2024) contribute valuable insights into accounting's emerging work on greenwashing and sustainability assurance, and numerous studies have examined the correlation between governance systems and sustainability outcomes. Governance and sustainability remain widely debated topics among scholars, practitioners, regulators, and policymakers. These issues are central to evaluating corporate commitments to social responsibility, climate action, and sustainable performance, particularly in advancing circular economy principles and achieving the sustainable development goals (Alkaraan, 2023). Fan et al. (2025) examine the interplay between investor pressure, corporate greenwashing practices, governance structures, and policy-derived rhetorical strategies. Their study finds that both corporate governance and policy-derived rhetorical strategies moderate the impact of investor pressure on greenwashing behaviours. Notably, the synergy between governance mechanisms and rhetorical strategies amplifies this moderating effect, helping to reduce corporate greenwashing practices. This combined influence not only mitigates the risk of environmental penalties but also enhances corporate transparency and accountability. Environmental Management Strategy Practices (EMSPs) refer to efforts in boardrooms to manage, identify, and disclose sustainability impacts, such as carbon reduction, resource efficiency, waste management, and innovation, often aligning with global reporting frameworks like the Global Reporting Initiative (GRI).

Environmental, social and governance (ESG) disclosure has gained momentum in corporate reporting, and a recent review by Del Gesso et al. (2024) examines the theories behind ESG disclosure. Their study provides a comprehensive overview of mainstream and niche theoretical perspectives in accounting studies focused on ESG. Sustainable business strategies are increasingly integrating green innovation and incorporating ESG pillars into corporate decision-making (Alkaraan et al., 2023), emphasizing the need to examine the influence of corporate governance structures on EMSPs, especially in the evolving ESG landscape of UK firms. In this evolving landscape, governance structures play a crucial role in shaping the authenticity and impact of ESG disclosures. Free et al. (2024) offer valuable insights into the emerging accounting research on greenwashing and sustainability assurance, highlighting how firms may selectively report or embellish environmental commitments without genuine performance improvements. Numerous contemporary studies have used statistical methods to explore the relationship between governance system characteristics and sustainability outcomes. ESG disclosure, in particular, has gained significant traction in corporate reporting, both as a regulatory requirement and a voluntary communication tool. A recent systematic review by Del Gesso et al. (2024) provides a comprehensive overview of the theoretical frameworks underpinning ESG disclosure in accounting, highlighting both mainstream theories (such as legitimacy and agency theory) and more niche approaches. Despite these advances, a clear gap remains in understanding how specific EMSPs when voluntarily disclosed, are influenced by internal governance structures and whether such disclosures translate into improved corporate performance. By addressing this underexplored intersection, particularly within the UK context, this study contributes to a deeper and more nuanced understanding of the ESG-performance relationship. Governance structures shape EMSPs and firms' ESG performance. The findings of Al-Shaer et al., (2024) show that female leadership positively influences ESG performance. Specifically, they highlight the need for women to reach top management positions to effectively drive sustainability strategies. Moreover, companies with male CEOs committed to sustainability might still benefit from increasing the proportion of women on their boards, though token female representation does not enhance ESG practices. Gender-diverse boards, when reaching a critical mass, are associated with improved ESG performance, while token representation remains ineffective. Similarly, executive compensation linked to ESG targets enhances symbolic environmental efforts, although actual carbon performance often remains unaffected (Haque et al., 2020).

Whether or not mandating non-financial disclosures is effective at driving improvements in corporate social and environmental performance is currently a prominent and important topic (de Villiers et al., 2024). However, there are notable gaps in the literature. Many studies rely on narrow theoretical frameworks and lack attention to country-specific contexts, especially in the UK (Nguyen et al., 2020). Furthermore, regulatory initiatives like the EU Directive 2014/95/EU have not significantly improved corporate environmental and social outcomes, raising questions about the efficacy of mandatory disclosure regimes (de Villiers et al., 2024).

Organisational structures including management, governance, and procedures shape risk culture and influence incident occurrence, with growing operational risks leading to significant financial and non-financial impacts (Cornwell et al., 2023). Organisational structure characteristics, particularly those related to management, governance, and operational procedures, play a critical role in shaping environmental management strategies. As organisations face increasingly complex operational and environmental risks, the design and effectiveness of green governance structures have become central to mitigating both financial and non-financial impacts. Structural and cultural dimensions, including environmental policies and leadership commitment to sustainability, significantly influence organisational risk culture and the implementation of green practices, thereby affecting overall corporate performance. Despite significant advancements in ESG research, a notable gap persists in understanding the role of green governance structure in moderating the relationship between EMSPs disclosure and corporate performance, particularly within the UK context. While prior studies have focused on broad ESG scores or environmental outcomes, they often neglect the specific governance structures that underpin the transparency and effectiveness of EMSPs. Limited research has been conducted on the influence of green governance mechanisms, such as board gender diversity, board independence, CEO duality, and ESG-linked incentives, on EMSPs disclosure and corporate performance outcomes (Huq et al., 2024). These mechanisms are crucial in shaping how companies engage with environmental issues, yet their direct impact on EMSP-related disclosures remains underexplored. This study seeks to fill this gap by focusing on FTSE All-Share firms in the UK, where the regulatory environment, notably the more recent UK Corporate Governance Code, offers a unique framework for understanding how governance structures align with environmental performance (Annesi et al., 2024; Zaman et al., 2022). The Code's emphasis on transparency, stakeholder engagement, and accountability makes it vital to examine how these governance features affect EMSPs disclosures within the post-Brexit regulatory landscape. The use of multi-theoretical lenses through research paradigms permits a richer and a better understanding of accounting and accountability, enabling researchers to capture the complex, socially embedded, and evolving nature of organisational practices (Hopper & Hoque, 1997). Kintu (2025) advances this discourse by integrating a multi-theoretical approach that synthesizes key insights from motivation theory, socio-technical systems theory, human capital theory, and job demands-resource**.** By employing a multi-theoretical approach that integrates agency theory, stakeholder theory, the natural-resource-based view (NRBV), and legitimacy theory, scholars offer a comprehensive analysis of how governance structures and technological adoption influence corporate business model transformation towards ESG performance and sustainability (see Alkaraan et al., 2024; Alkaraan, 2025). This framework provides a comprehensive lens to examine how green governance structures and environmental management strategy disclosures influence corporate performance. Accordingly, the study poses two primary research questions as follows:

RQ1: Does corporate governance structure reinforces environmental management strategies practises?

RQ2: Does the disclosure of environmental management strategies practises strengthen firms' performance?

Findings of this study make four key contributions to the extant literature on environmental management strategy disclosure and corporate performance, with a particular focus on green governance structures. First, this study addresses a significant gap in the literature by providing updated empirical evidence from the UK context on the relationship between governance structures, EMSPs, and firm financial performance. While existing studies have explored these relationships in broader international settings (e.g., Aibar-Guzmán et al., 2024; Nguyen et al., 2021), few have investigated them within the post-Brexit UK regulatory landscape. Drawing on a panel dataset of UK-listed firms from 2015 to 2023, this study captures the effects of recent ESG reforms and institutional changes, thereby extending prior research with a more temporally and contextually relevant analysis.

Second, this study advances governance research by disaggregating corporate governance structures into their constituent components, namely, board diversity, independence, and committee structures, instead of relying on broad composite indices. This methodology allows for a more nuanced examination of how specific governance mechanisms influence EMSPs effectiveness. In doing so, the study responds to recent calls (e.g., Badwan et al., 2025; Drago et al., 2025) to move beyond aggregated governance measures and offers a more precise understanding of EMSPs.

Third, the study introduces a robust multi-theoretical framework that integrates agency theory, stakeholder theory, legitimacy theory, and the natural-resource-based view (NRBV). This theoretical triangulation provides a comprehensive lens through which to examine how governance structures shape EMSPs and align them with both internal accountability mechanisms and external stakeholder expectations. By combining these perspectives, the study fills a critical conceptual gap in the literature, particularly within the UK context, where governance models are undergoing rapid transformation under increasing socio-environmental pressures (Del Gesso et al., 2024).

Fourth, the study offers practical and policy-relevant insights for UK regulators, institutional investors, and corporate boards aiming to enhance the alignment between environmental sustainability and financial performance. By bridging methodological gaps and contextual voids in existing research, the findings underscore how green governance structures can serve as strategic enablers of both improved EMSPs outcomes and long-term value creation for firms operating in highly regulated and environmentally sensitive markets.

The remainder of this paper is structured as follows; section two outline the conceptualization, current understanding of EMSPs and hypotheses development. Rationale underlying the research methodology adopted by this study is articulated in section three. Sections four presents the results of data analysis and discussion and is followed by conclusion and suggestions for future research in section five.

2. Literature review-hypotheses development

2.1 Theorisation: current understanding of ESMPs

Recent literature increasingly explores how EMSPs, particularly their disclosure, interact with corporate governance and firm performance, revealing a lack of a dominant theoretical paradigm in this field (Zaman et al., 2022). The complexity and multidimensionality of sustainability challenges have prompted researchers to adopt more integrated approaches. In response, this study adopts a multi-theoretical framework, drawing on agency theory, stakeholder theory, legitimacy theory, and the natural-resource-based view (NRBV), to provide a holistic explanation of how green governance structures affect both EMSPs disclosure and its performance implications. Agency theory (Jensen & Meckling, 1976) provides insight into how governance mechanisms such as board independence, audit committees, and managerial incentives help reduce agency costs and align environmental strategies with shareholder interests (Nguyen et al., 2021). This supports our proposition that strong governance can ensure EMSPs are disclosed not merely as symbolic actions but as strategic, performance-oriented initiatives. Stakeholder theory (Freeman & David, 1983) extends this by emphasising that firms operate within a network of diverse stakeholder expectations, including regulators, investors, and civil society. Effective governance structures must therefore be inclusive and responsive to these demands to facilitate credible EMSPs disclosure (Hussain et al., 2018). The NRBV (Hart, 1995) contributes a strategic dimension by positing that EMSPs, particularly when disclosed transparently, reflect firm capabilities such as pollution prevention and sustainable innovation, key drivers of long-term competitive advantage. Furthermore, legitimacy theory (Suchman, 1995) underscores the importance of transparency and accountability in maintaining societal trust. Firms that disclose EMSPs and other ESG-related information can avoid reputational risk and regulatory sanctions, especially in environmentally sensitive markets (Dragomir et al., 2024; Pandey et al., 2024).

Applying multi-theoretical lenses to research paradigms allows for a deeper understanding of accounting and accountability studies (Hopper & Hoque, 1997). Further, Kintu (2025) contributes to the ongoing discussion by employing a multi-theoretical framework that brings together core principles from motivation theory, socio-technical systems theory, human capital theory, and the job demands–resources model. Furthermore, Alkaraan et al. (2024) investigate how contextual factors shape green strategic investment decision-making practices within UK firms. Grounded in the resource-based theory (RBT), the natural-resource-based view (NRBV), and dynamic capabilities theory, their study empirically examines the interactions between green strategic investment decision-making practices and key constructs such as green governance structures, Industry 4.0-oriented technological innovation, and firm performance. By adopting a mixed-method approach, the authors highlight the importance of theoretical pluralism in understanding the complex and evolving relationship between sustainability strategy and organisational outcomes. In line with this perspective, our study also recognises the strategic and adaptive dimensions of EMSPs. Accordingly, we adopt a multi-theoretical framework to improve the interpretation of EMSPs and to provide a more comprehensive explanation of how governance structures and disclosure practices jointly influence sustainability performance, particularly within the context of the UK's post-Brexit ESG regulatory landscape.

2.2 Green governance structure, environmental management strategies practices (EMSPs) and firms' performance

Organisational structure characteristics encapsulate management practices, governance frameworks, and business procedures that collectively shape how firms operate and respond to emerging challenges. In today's dynamic and highly regulated business environment, operational risks, especially those related to environmental sustainability, are increasingly prevalent and complex, posing significant challenges for organisations. These risks can result in substantial financial losses, reputational damage, and broader non-financial impacts, particularly when not adequately addressed through strategic oversight. Structural and cultural aspects of organisations, such as formalised sustainability policies, the tone and commitment from senior executives, and the integration of environmental considerations into decision-making processes, play a critical role in shaping organisational risk culture (Cornwell et al., 2023). These elements influence how risks are perceived, managed, and communicated internally and externally, and they directly affect the frequency and severity of risk incidents. As such, the consideration of organisational structure and governance especially in the context of green governance mechanisms is essential in understanding how companies manage environmental challenges and how such practices translate into enhanced corporate performance. This study of ElKelish et al., (2024) investigates how organisational culture impacts governance transparency within audit firms in the UAE, highlighting the significance of cultural factors in shaping transparency-related practices. The findings offer valuable guidance for strengthening governance frameworks in audit firms globally. The 2018 UK corporate governance code contains the most recent UK corporate governance structure (FRC, 2018). The 2018 corporate governance was updated recently (January 2024) and will be active from financial years beginning on or after 1 January 2025. The 2024 UK corporate governance code shed lights on transparency and accountability issues at every level. The quality of governance will be evident in the way the company conducts business including relationship with stakeholders, corporate culture and effective mechanisms regarding ethical and compliance issues. Effective disclosure of EMSPs is vital for corporate performance, with green governance structure playing a key role. Strong governance through strategic board oversight, dynamic capabilities, and knowledge-sharing enhances EMSP transparency, stakeholder trust, and regulatory compliance. Firms with adaptive leadership and robust governance frameworks can better leverage EMSPs for sustainability and competitive advantage. This study explores how green governance influences EMSP disclosure and its impact on corporate outcomes. Good governance and sustainability are complementary approaches to improving management of stakeholders (see Alshukri et al., 2024; Hussain et al., 2023). Firms that integrate EMSPs such as carbon reduction policies, circular economy initiatives, and responsible resource use are more likely to achieve long-term financial success. Prior studies show that companies with robust corporate governance structure strengthen ESG performance (see Alkaraan et al., 2022), promote M&A (see Feyisetan et al., 2025), reinforce circular economy (see Alkaraan et al., 2023), enhance efficient use of firm resources, improve investment efficiency and financial flexibility (Wu et al., 2023), reinforce green innovation strategies (see Alkaraan et al., 2024) and maximise sustainable performance (see Alkaraan et al., 2025).

Prior studies reveal that environmental policies attract greater institutional investment and experience lower capital costs (Eccles et al., 2017), this is particularly relevant in industries where environmental concerns (e.g., energy, mining, and manufacturing) are central to stakeholder engagement and hence firms that fail to address these concerns risk losing investor confidence and facing reputational damage, ultimately impacting their financial performance. According to agency theory, establishing sound corporate governance structure can reinforce the relationship that exists between a company's environmental and financial performance by aligning the interest of management in line with that of its stakeholders and motivating management to take action in the best interest of the stakeholders (Qiu et al., 2016). Nguyen et al., (2021)indicate that adopting best practices of governance can enhance the legitimacy of the business by signalling to the market that the business is interested in safeguarding the interests of multiple stakeholders and hence strengthen the connection that exists between environmental and financial performance of the business.

Non-executive directors

Non-executive directors viewed as the check and balance instrument to increase the effectiveness of the board, non-executive directors contribute to good governance from the perspective of the organization's ideology by keeping influence on the decision-making of senior management. In relation to developed countries, empirical research has mostly proven a positive correlation between environmental performance and board independence (Cucari et al., 2018)and developing economies (Alhassan et al., 2020). However, other research has either indicated no (Trireksani et al., 2016) or a negative (Nguyen et al., 2021) correlation between environmental performance and board independence. For example, (Alnabsha et al., 2018) establish that non-executive directors negatively impact environmental disclosure since the selection of non-executive directors mainly relies on social networks rather than the competency of individuals.

Stakeholder-agency theory claims that a corporate board with more independent members perform its monitoring duty and therefore mitigates management opportunistic activities which compromise stakeholders' interests (Tejedo-Romero et al., 2020). The monitoring incorporates a wide range of dimensions, which includes environmental initiatives and CSR, in addition to financial elements. Baalouch et al., (2019)found that non-executive directors are more concerned with CSR, sustainable development, and environmental issues, and appear to be less focused on financial performance.

Additionally, because they are more sensitive to societal pressure than executive board members, independent board members are better positioned to defend the interests of the stakeholders (Baalouch et al., 2019). Because they are not directly engaged with the daily operations of the company (de Villiers, et al., 2024) and because they are not considerably affected by pressure from rival companies (García-Sánchez et al., 2019), independent members are allowed to operate in this way. As a result, the independent members' improved monitoring skills, interest in environmental issues, and enhanced focus on stakeholders may favour more extensive information disclosure regarding the environment within the integrated reports. However, given the substantial theoretical foundation, it is possible to introduce the first hypothesis of the study:

H1: Independent directors have moderating impact on the nexus between corporate EMSPs and firms' performance

Board size

A major mechanism that impacts a board's effectiveness and efficiency is said to be its size (Farooq et al., 2022). Since larger boards have greater diversity in expertise, knowledge, stakeholders' participation, and skills, therefore are effective at controlling and monitoring managerial opportunistic behaviours. The agency theory (Nguyen et al., 2016) suggests that larger boards frequently make poor decisions, which is mainly because there is a lack of communication and coordination among board members. This can therefore lead to a reduction of board effectiveness in monitoring management opportunistic behaviour (Kwamboka et al., 2025). Considering this, the prediction of the agency theory is that poor governance is strongly correlated with larger boards, which may have a negative effect on the environmental performance of businesses. These conditions might encourage integrated reports to disseminate environmental information more widely. Contradictory findings have been reported in previous studies about the effect of board size on the level of environmental performance. Based on the above theoretical and empirical arguments the second hypothesis is that:

H2. Board size has moderating influence on the relationship between corporate EMSPs and firms' performance.

Gender diversity

A board of directors with more diversity performs its monitoring duties more effectively and therefore possibly representation of the interest of various stakeholder groups, claims the stakeholder-agency theories (Tejedo-Romero et al., 2020). An aspect of the board that is often debated is gender diversity (Liao et al., 2015). Women might improve monitoring responsibilities and more effectively meet stakeholder expectations (Tejedo-Romero et al., 2020). The diligence and commitment that set women apart in monitoring roles, as well as their capacity to foster a positive environment inside the board of directors, are what contribute to their increased efficiency in these tasks (Huse et al., 2006). This effectiveness in monitoring actions of management also includes ethics, environmental, and CSR concerns (Tejedo-Romero et al., 2020). They have a keen interest in environmental and sustainability concerns (Liao et al., 2015). This situation is in relation to women's values culturally, which tend to be less focused on personal and economic interests (Prado-Lorenzo et al., 2010) and put a higher priority on the quality of life and well-being (Liao et al., 2015). The resource dependence theory proposes that better representation of the interests of various stakeholders, which is typically associated with gender-diverse boards, can help address stakeholders' environmental concerns, which can subsequently allow access to resources (Haque, 2017) . The legitimacy and stakeholder theories ultimately suggest that female directors are more likely to support efforts that address environmental concerns because they are more concerned with marketing and building their firms' ties with significant stakeholders (Nguyen et al., 2021). The third hypothesis can be introduced, given the broad theoretical and empirical support:

H3: Women representation on board has moderating impact on the nexus between corporate EMSPs and firms' performance.

Number of annual board meetings

Boards promote the effectiveness of the board by fostering critical discussion and sharing of ideas on issues influencing the operations of the businesses Pernelet et al., 2023). Operational complexity, uncertainty, and increased competition in the contemporary business environment have increased the need for frequent meetings to address the concerns of multiple stakeholders and review better the risks of the business, which include those in relation to the challenges of the environmental (Hussain et al., 2018) . As articulated by Nguyen et al., (2021), frequent board meetings, which are frequently associated with increased stakeholder representation, can boost corporate efficiency by helping organisations maintain and build stronger business relationships with stakeholders who are influential in accessing resources that are required. Consequently, monitoring carefully, direct participation in sustainability disclosure, and interest in sustainability-related issues distinguish CSR committees that may favour adequate disclosure of information with respect to the environment within the integrated reports (Albitar et al., 2022; Liu, 2024). Conversely, this present study expects a positive correlation between environmental sustainability and board meeting frequency based on predictions made by the theories of, legitimacy, agency, stakeholder, stakeholder-agency, and resource dependence; Therefore, given the substantial empirical and theoretical evidence, the fourth hypothesis can be introduced.

H4: Number of annual board meeting has moderating impact on the nexus between corporate EMSPs and firms' performance.

Based on the above debates, the conceptual framework underlying this study is depicted as shown in Figure 1.

Please insert Figure 1 here

Transparency, defined as thorough and frequent disclosure of EMSPs, increases corporate accountability, builds stakeholder trust, and enhances regulatory compliance. By being open about company performance, investors and regulators can better judge how much a firm values sustainability and what its environmental consequences are. Environmental management strategy requires companies to apply sustainable practices to their corporate operations to fulfil environmental regulations by minimizing risks (Hristov et al., 2024) . Through strong green governance frameworks, companies focus on resource consumption managing resources by implementing sustainable materials, enhancing energy efficiency, and minimizing waste. Through proper EMSPs disclosure, stakeholders receive information about a company's efforts to minimize its environmental impact. Companies must reveal their environmental liabilities, including pollution-related costs, regulatory fines and remediation expenses, through green governance structures, companies remain accountable for their actions and proactively manage risks to prevent future liabilities. Environmental investments include investment in technologies, renewable energy and sustainable business practices demonstrates a company's commitment to the environment, Strong governance leads to better strategic environmental investments, resulting in improved sustainability and corporate performance (Alkaraan et al, 2023; Agyemang et al., 2025). When companies reveal their EMSPs, they typically show superior environmental performance through reduced carbon emissions and better resource management. Green governance structures act as critical components for establishing and tracking environmental targets. Reliability-certification and system implementation refer to environmental certifications that are credible (such as ISO 14001) together with strong system implementation strengthen adherence to international sustainability standards. A solid governance structure provides compliance, credibility and continuous improvement in environmental practices (Nguyen et al., 2021).

3. Methodology

Firm performance (FIRMP) is measured by net profit before tax divided by total assets. EMSPs is captured through a composite disclosure score covering transparency, environmental management, resource consumption, liability, investment, performance, certification, and system implementation (Nguyen et al., 2021). Corporate governance is proxied by four board-related indicators: board independence (percentage of independent non-executive directors), board size, gender diversity (proportion of female directors), and board meeting frequency (Farag et al., 2016). Proxies are drawn from established literature: EMSP disclosure scores

(Nguyen et al., 2021); environmental performance via actual-to-optimal disclosure ratios (Rashid, 2024; Soana, 2024); financial performance measured as return on total assets (Nguyen et al., 2021); board size (log of directors) (Dohrmann, 2024); board independence (Irshad et al., 2024); board meetings frequency (log of annual meetings) (Alwadan et al., 2024); gender diversity (female-to-total directors ratio) (Bufarwa et al., 2020); and controls including firm leverage and size (debt-to-assets ratio and log of total assets) (Khlifi et al., 2024).

The study employs both Generalized Method of Moments (GMM) and Two-Stage Least Squares (2SLS) to address endogeneity. GMM is preferred for its ability to handle dynamic panel models with multiple endogenous variables and issues like heteroskedasticity and autocorrelation, offering consistent estimates even with weak instruments (Khatib, 2024). Meanwhile, 2SLS suits simpler linear models but may be biased if instruments are weak (Khatib, 2024). Using both methods enhances robustness and allows cross-validation of results (Nguyen et al., 2021). This study utilizes ordinary least squares regression models to evaluate the postulated four hypotheses: Equation 1 is estimated in the current study to evaluate hypotheses from hypothesis 1 to hypothesis 4:

$$EMSPs_{it} = \beta_o + \sum_{k=1}^{4} \beta_k \, CG_{it} + \beta_5 FSIZE_{it} + \beta_6 FLEVE_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

where EMSPs stands for Environmental management strategies practices; CG stands for independent variables, which include the four corporate governance proxies, BINDE, BMEET, GDIVE, and BSIZE; FSIZE stands for firm size; and FLEVE stands for firm leverage; β: the independent variable's parameters, firm leverage, and firm size; t: year; ε: error term; i: firm.

3.2 Sample selection

The sample for this study consists of UK firms listed on the London Stock Exchange, drawn from the FTSE All-Share Index for the period 2015–2023. The period 2015–2023 was selected for this study to capture the evolving landscape of EMSPs disclosure and sustainability governance in the UK, shaped by significant regulatory and policy developments. Starting in 2015, the Paris Agreement and the UK's increasing alignment with global climate goals prompted firms to enhance environmental reporting. The companies required to disclose non-financial and sustainability-related information. Furthermore, this period covers the UK's exit from the European Union (Brexit) and its subsequent shift toward a distinct post-Brexit ESG regulatory framework, including the UK Green Finance Strategy (2019) and the Task Force on

Climate-Related Financial Disclosures (TCFD) requirements, which became mandatory for premium-listed companies from 2021, and later extended more broadly. By selecting 2015–2023, the study captures a critical phase of transition and regulatory tightening, providing a robust context to investigate how UK firms responded to growing pressures for transparency, environmental accountability, and the strategic integration of sustainability practice.

The FTSE All-Share Index was chosen as the sample frame because it offers comprehensive and representative coverage of UK-listed firms across a wide range of industries and market capitalizations. This inclusivity is particularly important for our study, which examines EMSPs disclosures and their impact on corporate performance. This diversity enhances the generalisability of our findings and allows for a more nuanced and robust analysis of how EMSPs influence firm-level outcomes within the broader UK market context.

The dataset includes 4,356 firm-year observations collected from Bloomberg and company annual reports through the following process:

(i) Firms with complete datasets accessible to the researchers were initially selected.

(ii) Companies lacking data for any of the variables in a given year were excluded.

After applying these criteria, the final sample comprises 484 firms with a total of 4,356 firm-year observations.

4. Results and discussion

4.1 Descriptive statistics

Table 2 summarizes the descriptive statistics regarding the main constructs employed by this study.

Please insert Table 2 here

Although this mean suggests a low level of environmental performance disclosure, it is crucial to note that the maximum value recorded is significantly higher than in previous studies (Nguyen et al., 2021). This variation highlights the diverse commitment levels to environmental disclosure among these companies. Board size (BSIZE) shows that these companies have an average of nine directors (Mean = 1.03, SD = 0.08), consistent with the following studies (Le et al., 2023; Nguyen et al., 2021). The board independence (BINDE) variable reveals that firms appoint an average of four independent directors, corresponding to the UK corporate governance regulations. Moreover, the board meeting frequency (BMEET) data indicates that these firms hold an average of three meetings per year (Mean = 0.88, SD = 0.17), aligning with the regulatory requirement of more than two annual meetings. The variable gender diversity within boards appears to be limited, with firms averaging just one female director or women occupying 8.66% of board seats (GDIVE, Mean = 0.33, SD = 0.26). This figure is slightly lower than those reported in previous research (Elmagrhi et al., 2019; Nguyen et al., 2021), suggesting slow progress in improving gender diversity in UK boardrooms. Regarding financial leverage (FLEVE), the data establishes an average leverage ratio of 34.91% (SD = 1.08), which indicate a moderate reliance on debt financing. This figure is slightly lower than the 52.37% reported by (Nguyen et al., 2021), proposing a more conservative approach to debt utilization in this sample. This result is inconsistent with the findings Nguyen et al., (2021) which demonstrate that these firms tend to favour debt over equity financing. The financial performance (FIRMP) and firm size (FSIZE) variables establish significant variation, with mean values of 0.08 (SD = 0.11) and 4.33 (SD = 0.65), respectively, indicating substantial diversity within the dataset, the descriptive statistics indicate that UK companies largely adhere to corporate governance regulations, particularly in areas such as board size, board independence, and the frequency of board meetings.

4.2 Correlation

Table 3 shows the results of correlation matrix. Table 3 displays both the parametric Pearson and non-parametric Spearman correlation coefficients, offering an in-depth look at the relationships among the variables. Notably, there is a significant consistency between the Pearson correlation coefficients (located in the bottom left) and the Spearman coefficients (found in the top right). This estimate indicates that the variables closely align with a normal distribution, which makes using parametric techniques like ordinary least squares (OLS) regression suitable for additional analysis.

Please insert Table 3 here

The relationships among important corporate governance indicators like board size (BSIZE), board independence (BINDE), frequency of board meetings (BMEET), gender diversity (GDIVE), and EMSPs are notably weak, as many of the correlations do not reach statistical significance. For instance, EMSPs shows a minor negative correlation with BSIZE (Pearson's r = -0.0378, significant at the 5% level) and has a very weak correlation with BINDE (Pearson's r = -0.0058) that is only marginally significant. The weak correlations indicate that the traits of corporate boards may not have a strong connection to the environmental performance of UK firms.

In a similar vein, the relationship between financial performance (FIRMP) and other governance factors is also limited. For instance, FIRMP shows a negative relationship with BSIZE (Pearson's r = -0.0678, statistically significant at the 1% level) and BMEET (Pearson's r = -0.0760, also significant at the 1% level). These negative relationships might suggest that having larger boards and holding meetings more often do not automatically lead to improved financial performance, aligning with conclusions drawn from earlier research (Tarighi et al., 2023). The fact that the correlation values between the variables are low indicates that there is little multicollinearity present, which is important for ensuring the reliability of regression analyses, the lack of multicollinearity enhances the reliability of the OLS regression outcomes, as it guarantees that the estimates of the regression coefficients remain unbiased despite the presence of strong correlations between independent variables. The relationships shown in Table 3 suggest that the corporate governance mechanisms examined in this study have a minimal direct impact on the environmental and financial performance of companies in the UK. The results indicate that these variables are suitable for OLS regression analysis, as their low correlation values reduce worries regarding multicollinearity (Alam et al., 2025).

4.3 Multiple regression analysis

The results presented in Table 4 provide robust empirical support for the proposition that corporate governance structures significantly moderate the relationship between Environmental Management Strategy Practices (EMSPs) and firm performance. This directly addresses the central research question concerning whether green governance mechanisms influence the effectiveness of EMSP disclosures. Grounded in agency theory (Jensen and Meckling, 1976), stakeholder theory (Freeman & David, 1983), legitimacy theory (Suchman, 1995), and the natural-resource-based view (Hart & Dowell, 2011), the analysis demonstrates that specific governance attributes namely board independence, size, gender diversity, and meeting frequency have differential moderating effects on EMSP disclosure and, by extension, corporate sustainability performance.

Please insert Table 4 here

The presence of independent directors (BINDE) is found to have a consistently negative and statistically significant association with EMSP disclosures across Models 2, 5, and 6, with coefficients of -1.008 ($p < 0.05$), -0.801 ($p < 0.05$), and -0.690 ($p < 0.10$), respectively. These results lend partial support to Hypothesis 1 but in a direction contrary to expectations. While agency theory suggests that independent directors enhance board oversight and reduce managerial opportunism, the findings imply that such directors may adopt a conservative stance toward voluntary environmental disclosures (Ahmed et al., 2025; Hussainey et al., 2022). One plausible interpretation is that independent directors, particularly in high-emission sectors, prioritize financial compliance over environmental transparency due to risk aversion or a lack of expertise in sustainability matters (Agyemang et al., 2025), hence, their moderating role appears to constrain rather than enhance the EMSP–performance link.

Board size (BSIZE) also exhibits a negative and significant relationship with EMSP disclosures in Models 1, 5, and 6, with coefficients of -3.214 ($p < 0.001$), -3.001 ($p < 0.001$), and -2.215 ($p < 0.05$). These results support Hypothesis 2, indicating that larger boards may impede effective governance of environmental strategy. This aligns with extant literature suggesting that increased board size can lead to coordination inefficiencies, diluted accountability, and strategic inertia (Aibar-Guzmán et al., 2024; Almici, 2022). Within the agency and stakeholder theoretical frameworks, the inefficacy of larger boards in promoting EMSPs reflects potential collective action problems, where the diffusion of responsibility undermines proactive environmental engagement (Åberg et al., 2020).

In contrast, board gender diversity (GDIVE) demonstrates a strong, positive, and highly significant relationship with EMSP disclosures across Models 4 through 6, with coefficients ranging from 1.521 to 1.649 ($p < 0.001$ in all cases), these results provide strong support for Hypothesis 3, suggesting that gender-diverse boards positively moderate the EMSP–performance nexus. Consistent with the natural-resource-based view and legitimacy theory, female directors appear more attuned to stakeholder expectations and long-term ecological value creation (Al Amosh, 2025; Al-Shaer et al., 2024). Prior empirical studies further indicates that women in governance roles often advocate for ethical stewardship, transparency, and sustainability-driven innovation (Alexander et al., 2022; Alkaraan et al., 2024), thereby enhancing the credibility and scope of environmental disclosures.

Similarly, board meeting frequency (BMEET) is positively and significantly associated with EMSP disclosures in Models 3, 5, and 6, with coefficients of 1.145 ($p < 0.001$), 1.202 ($p < 0.001$), and 1.331 ($p < 0.001$), respectively. These findings lend empirical support to Hypothesis 4, indicating that more frequent board engagement enables more effective oversight of environmental strategy and within the framework of stakeholder theory, frequent meetings enhance the board's capacity to deliberate on complex environmental issues, respond to emerging stakeholder pressures, and ensure continuity in ESG initiatives (Alslaibi et al., 2025; Awa et al., 2024). These results also support the dynamic capabilities perspective (Teece, 2007), whereby organizational adaptability and responsiveness are strengthened through active board participation.

With respect to firm-level controls, firm size (FSIZE) is negatively and significantly associated with EMSP disclosure in Models 5 and 6 (coefficients = -0.415 and -0.438; $p < 0.05$ in both cases), suggesting that larger firms may encounter bureaucratic rigidity or increased public scrutiny, which could inhibit voluntary environmental disclosures (Alwadani et al., 2024; Boakye et al., 2021). Leverage (FLEVE) exhibits a marginally significant negative relationship in Model 6 (coefficient = -0.184; $p = 0.082$), implying that financially constrained firms may deprioritize environmental strategies in favour of short-term financial stability (Agyemang et al., 2025; Angsoyiri et al., 2025).

Collectively, these findings emphasize the critical role of internal governance mechanisms in shaping the scope and effectiveness of EMSP disclosures, the results affirm that green governance structures particularly gender diversity and board engagement serve as pivotal moderators that enhance the strategic integration of environmental concerns into corporate performance frameworks. Theoretical implications are twofold: First, the findings contribute to agency and stakeholder theories by illustrating how board configurations can either facilitate or impede environmental transparency, second, they enrich the legitimacy and NRBV literatures by demonstrating that environmentally attuned governance structures can enhance firm legitimacy and strategic resource use.

The empirical evidence aligns with recent studies that advocate for governance-based levers to promote corporate environmental responsibility (Alkaraan et al., 2023; Alshukri et al., 2024). It also suggests practical implications for policymakers and regulators seeking to advance sustainability reporting by strengthening governance mandates, firms aiming to enhance EMSP disclosures and their associated performance benefits should consider institutionalizing gender-diverse boards and increasing board engagement in sustainability oversight as key strategic priorities.

4.4 The robustness of the results: Additional analysis

Table 5 presents a comprehensive econometric assessment of how corporate governance mechanisms affect the adoption of Environmental Management Strategy Practices (EMSPs). The analysis applies four modelling strategies Fixed Effects (FE), Random Effects (RE), Two-Stage Least Squares (2SLS), and Generalized Method of Moments (GMM) to control for firm heterogeneity, endogeneity, and dynamic persistence in EMSPs (Khatib, 2024; Nguyen et al., 2021). Only the GMM model incorporates the lagged dependent variable, revealing a positive and highly significant relationship ($\beta = 0.524$, $p < 0.001$), this result underscores the path-dependent nature of EMSPs, consistent with dynamic capabilities theory, suggesting that firms build upon prior environmental strategies incrementally over time (Hristov et al., 2024; Sidney et al., 2025).

Board size shows contrasting effects across models. In FE and RE, it has a negative and marginally significant impact ($\beta = –0.873$, $p = 0.059$; $\beta = –0.812$, $p = 0.067$). The 2SLS model shows a positive but not significant effect ($\beta = 0.339$, $p = 0.114$). In GMM, the coefficient turns positive and significant ($\beta = 1.912$, $p = 0.038$), supporting agency theory's notion that larger boards may enhance governance oversight (Jensen and Meckling, 1976; P. Nguyen et al., 2016).

Please insert Table 5 here

Board independence exhibits substantial variation in sign and magnitude. FE and RE models suggest a positive and significant influence ($\beta = 0.703$, $p = 0.018$; $\beta = 0.628$, $p = 0.023$), whereas 2SLS and GMM report negative and significant effects (2SLS: $\beta = –0.477$, $p = 0.066$; GMM: $\beta = –10.648$, $p = 0.069$). These findings may reflect governance inefficiencies when independence lacks contextual knowledge (Pernelet et al., 2023; Prado-Lorenzo et al., 2010).

Board meeting frequency is consistently positively associated with EMSPs. It is significant across all models except 2SLS ($\beta = –0.095$, $p = 0.187$), with the GMM model showing the strongest effect ($\beta = 1.052$, $p = 0.044$). This supports the argument that active board engagement drives environmental strategy responsiveness (Orazalin, 2020; Owusu et al., 2023).

Gender diversity shows a mostly positive effect, but the GMM model indicates a significant negative association, it is positive and significant in FE, RE, and 2SLS (FE: β =

0.501, p = 0.012; RE: β = 0.479, p = 0.014; 2SLS: β = 0.433, p = 0.019), but negative and marginally significant in GMM (β = –2.718, p = 0.071). This reversal may indicate latent contextual or cultural factors, such as tokenism or limited influence of diverse perspectives (Liao et al., 2015; Mehedi et al., 2024; Nguyen et al., 2020).

Firm size and leverage both have positive effects. Firm size is significant across all models except GMM (FE: β = 0.436, p = 0.027; RE: β = 0.401, p = 0.031; 2SLS: β = 0.654, p = 0.014; GMM: β = 0.262, p = 0.116). Firm leverage is consistently positive, though less robust in significance. These results suggest that larger and moderately leveraged firms may be more committed to EMSPs, potentially to maintain legitimacy and stakeholder trust (Hussain et al., 2018; Michelon et al., 2012; Suchman, 1995).

The endogeneity test in the 2SLS model is significant at 0.062, suggesting that accounting for endogeneity is necessary (Irshad et al., 2023; Khatib, 2024). The over-identification test (p = 0.115) confirms that the instruments used in 2SLS are valid and not over-specified. In the GMM model, the Hansen test (p = 0.561) supports the validity of the instruments. Serial correlation tests for GMM show AR (1) at 0.004 and AR (2) at 0.528, indicating first-order autocorrelation (expected in dynamic models) and no second-order autocorrelation, which affirms the reliability of the moment conditions (Tarighi et al., 2023; Zaman et al., 2022).

These results establishes that the effectiveness of corporate governance features such as board structure and diversity varies depending on the econometric technique used. Controlling for endogeneity and dynamics through GMM reveals more nuanced insights, particularly the path dependence of EMSPs, the strategic contribution of board activity, and the complex role of gender diversity (Rashid et al., 2024; Soana, 2024). The diagnostic tests confirm the robustness and reliability of the instrumental variable strategies applied (Huq et al., 2024; Khlifi et al., 2024).

The results presented in Table 6 highlight the impact of various corporate governance mechanisms on the adoption of Environmental Management and Sustainability Practices (EMSPs), the inclusion of control variables such as firm size (FSIZE), liquidity (LIQ), return on assets (ROA), firm age (AGE), market beta (BETA), and firm growth strengthens the models by addressing potential omitted variable bias and enhancing internal validity (Cucari et al., 2018), these controls help isolate the unique contribution of governance features to EMSP outcomes.

Board Size (BSIZE) exhibits a consistently negative and significant relationship with EMSP adoption across all specifications, in the GMM model, the coefficient is -1.782 ($p = 0.044$), aligning with the fixed-effects (FE) and full models, suggesting that larger boards may suffer from coordination inefficiencies, thereby hindering proactive environmental strategies.

Please insert Table 6 here

Board Independence (BINDE), while significant and positive in FE (2) ($\beta = 0.936$, $p = 0.049$), loses its significance in the full and GMM models, this discrepancy indicates that independence alone does not ensure meaningful governance influence over sustainability matters, as Mehedi et al., (2024) emphasize, board independence must be accompanied by relevant competencies and contextual understanding to foster impactful environmental decisions. Board Meeting Frequency (BMEET) emerges as one of the most consistent and robust predictors of EMSP adoption. The GMM estimate ($\beta = 0.685$, $p = 0.006$) reinforces earlier findings in FE (3) and the full model, underscoring the value of frequent board engagement. This result is aligned with the Natural Resource-Based View (NRBV) and stakeholder theory, which suggest that active board oversight facilitates better strategic alignment and accountability on environmental matters (Dohrmann et al., 2024).

Gender Diversity (GDIVE) on boards also shows strong statistical significance across all specifications, with the GMM model indicating a coefficient of 0.792 ($p = 0.003$). This supports the view that diverse boards are more attuned to stakeholder expectations and better equipped to promote environmental initiatives (Al Amosh, 2025; Carvajal et al., 2022). The results reinforce legitimacy and stakeholder theories by demonstrating that diversity enhances transparency and long-term value orientation. Among the control variables, ROA, AGE, and BETA are positively and significantly associated with EMSPs, suggesting that more profitable, mature, and stable firms are more capable of committing to environmental initiatives. FSIZE is negatively significant ($\beta = -0.203$, $p = 0.043$ in GMM), possibly reflecting the heightened scrutiny and legitimacy pressures faced by larger firms (Nguyen et al., 2016). LIQ also has a negative and marginally significant effect, implying that liquidity constraints may limit EMSP investments. Notably, FLEVE is not significant, indicating that leverage does not play a primary role in shaping EMSP outcomes relative to other firm characteristics.

Model diagnostics further confirm the robustness of the findings, the GMM model satisfies the Hansen J-test ($p = 0.692$) and hence confirming the validity of instruments used, while the Arellano-Bond test indicates expected first-order autocorrelation ($p = 0.045$) and no second-order serial correlation ($p = 0.811$), validating the GMM estimation strategy.

Overall, the convergence of results across fixed-effects and GMM models underscores the reliability of the results, the evidence suggests that corporate governance mechanisms, particularly those emphasizing functional board engagement and diversity, significantly enhance EMSP adoption. Rather than focusing solely on structural attributes, these findings highlight the importance of intentional, inclusive, and strategically oriented governance practices in fostering environmental innovation, this underlines the need for policymakers and corporate leaders to embed sustainability into governance frameworks meaningfully and actively.

Conclusion

This study provides compelling empirical evidence that corporate governance mechanisms significantly influence the adoption and performance outcomes of Environmental Management Strategy Practices (EMSPs), thereby reinforcing their strategic role in sustainability-oriented corporate behaviour. Drawing on foundational theories such as agency theory (Jensen and Meckling, 1976), stakeholder theory (Freeman & David, 1983), legitimacy theory (Suchman, 1995), and the Natural Resource-Based View (Hart & Dowell, 2011), the findings consistently demonstrate that not all governance attributes exert uniform effects rather, their impact is nuanced, context-dependent, and sometimes contrary to theoretical expectations.

Critically, governance features that emphasize active board engagement and inclusive decision-making, notably board meeting frequency and gender diversity, emerge as robust and consistent facilitators of EMSP disclosure and adoption across multiple model specifications, including GMM, FE, and 2SLS (Al Amosh, 2025; Alslaibi et al., 2025; Dohrmann et al., 2024). These elements strengthen organizational responsiveness and align environmental strategies with long-term stakeholder and societal expectations (Alexander et al., 2022; Awa et al., 2024).

In contrast, structural governance characteristics such as board size and independence reveal more complex and sometimes contradictory influences. Larger boards consistently exhibit negative effects, potentially due to coordination inefficiencies and diluted accountability

(Aibar-Guzmán et al., 2024; Almici, 2022). Board independence, although theoretically associated with stronger oversight (Ahmed & Hassan, 2025), often shows neutral or negative effects, especially in dynamic models (Mehedi et al., 2024; Pernelet et al., 2023), suggesting that independence without sustainability expertise may hinder effective environmental governance.

Moreover, the robustness checks using GMM and 2SLS confirm the path-dependent nature of EMSPs (Hristov & Searcy, 2024), the importance of controlling for endogeneity, and the validity of the instrumental variables used (Khatib, 2024; Tarighi et al., 2023). This underlines the methodological strength of the analysis and enhances the credibility of the findings. From a practical standpoint, these results offer clear implications: firms should institutionalize functionally engaged and diverse governance structures to elevate environmental strategy from peripheral compliance to core strategic intent. Policymakers, too, can leverage these insights to craft regulatory frameworks that emphasize board functionality and inclusion as levers for sustainable transformation (Alkaraan et al., 2023; Alshukri et al., 2024).

This study affirms that “green governance” is not merely about who sits on the board, but how they act, effective sustainability oversight requires moving beyond formal structures to embrace intentional governance practices that are dynamic, informed, and aligned with the evolving demands of environmental stewardship and corporate legitimacy.

Theoretical implications

This study contributes to the corporate governance and sustainability literature by integrating multiple theoretical perspectives to explain current corporate disclosure practices and their impact on corporate performance, with a particular focus on the moderating role of green governance structures. Stakeholder theory is supported through the positive influence of independent directors in aligning financial objectives with environmental responsibilities. However, the findings challenge legitimacy theory within the UK context, as gender diversity on boards did not significantly affect environmental performance, suggesting that regulatory-driven diversity may not yet yield substantive environmental outcomes. These findings indicate that governance mechanisms should be contextually adapted, taking into account industry-specific characteristics, regulatory environments, and cultural factors, particularly within the UK market.

Furthermore, this study reinforces the view that relying solely on a single theoretical lens is insufficient to capture the complexities surrounding EMSPs. It highlights the value of employing a multi-theoretical perspective to achieve a deeper and more comprehensive understanding of how green governance influences corporate sustainability outcomes. Extending the insights of recent work (e.g., Alkaraan et al., 2024), the study demonstrates that no single theory adequately explains the intricate interactions among governance structures, environmental strategies, and organisational performance. By integrating agency theory, stakeholder theory, the natural-resource-based view (NRBV), and legitimacy theory, the findings reveal how dynamics of power, accountability, and legitimacy shape environmental decision-making processes. These results align with and support the arguments of Hopper and Hoque (1997), Alkaraan et al. (2024), and Kintu (2025) regarding the importance of research paradigms rooted in theoretical triangulation. Moreover, the study moves beyond narrow, technical interpretations of accounting and accountability, embracing their broader socio-political, ethical, and governance dimensions (Hopper & Hoque, 1997). This approach advances a more holistic theorisation of green governance, framing environmental strategy not only as a strategic imperative but also as an institutional response to growing stakeholder and regulatory demands. Governance mechanisms, therefore, are conceptualised not merely as tools for compliance, but as enablers of innovation, long-term value creation, and organisational legitimacy within sustainability-oriented ecosystems.

Managerial implications

Our challenges the notion of a simple, linear relationship between EMSPs and firm performance, instead revealing a more complex interaction in which environmental practices may serve both strategic and symbolic roles. These findings highlight the importance of context-specific, strategically aligned green governance mechanisms to effectively enhance sustainability outcomes and reconcile inconsistent results in the existing literature. This difference also raises issues on how Legitimacy theory can be applied in the UK, and whether elements such as industry characteristics, or cultural factors may affect the role of gender diversity in governance. Therefore, these findings shed light on the significance of board composition, independent oversight, and strategic decision making in enhancing environmental performance and corporate accountability. Therefore, policymakers should concentrate on improving the governance structures to guarantee that sustainability is incorporated properly. Findings challenge the conventional assumption of a straightforward linear relationship between EMSPs and financial outcomes by highlighting a more complex, potentially nonlinear interaction. While prior studies have reported both positive and negative impacts of environmental engagement, this study attempts reconcile these conflicting findings. It argues that EMSPs may serve not only performance-enhancing purposes but also legitimising functions in response to regulatory and societal expectations, particularly when governance structures lack strategic environmental alignment.

For corporate boardrooms and policymakers, this study offers actionable insights into how green governance structures can be designed to enhance both EMSPs and organisational performance. Transparent disclosure of EMSPs not only reinforces corporate accountability but also strengthens stakeholder trust and regulatory compliance. When firms communicate their EMSPs effectively, they provide investors and regulators with clearer signals regarding their sustainability priorities and environmental impacts. Robust internal and external governance mechanisms serve as complementary pillars, facilitating the successful implementation of EMSPs by ensuring responsible resource consumption, improving energy efficiency, and reducing environmental waste. Moreover, through effective green strategic investments projects such as clean technologies, renewable energy initiatives, and circular economy practices, reinforce the role of board-level leadership in aligning organisational performance with long-term ecosystem sustainability.

Green governance structures can act as a strategic enabler of effective EMSPs, long-term financial value, and organisational legitimacy (Alkaraan et al, 2024; Del Gesso et al., 2024). Regulators and corporate leaders should thus focus on governance reforms that not only meet compliance standards but also embed environmental accountability and sustainability into the strategic core of the organisations. Green governance structures play a critical role in setting, monitoring, and achieving environmental targets. A well-structured board can serve as mechanisms for compliance, credibility, and ongoing improvement in ESG-driven corporate transformation and investment strategies (Alkaraan et al., 2024). These managerial insights can help firms integrate sustainability into their core business models while responding effectively to mounting stakeholder and regulatory pressures in an evolving business environment.

Limitations and suggestions for future research

While this study offers important insights into the disclosure EMSPs and their relationship with corporate performance, several limitations present opportunities for future research. The application of instrumental variable techniques could strengthen the causal interpretation of the findings; however, this would require a substantial redesign of the theoretical framework and data collection process. Additionally, the study focuses exclusively on UK FTSE All-Share Index firms, which may limit the generalisability of the results to other markets. Expanding the research to include cross-country analyses could provide comparative insights into green governance structures across different regulatory and cultural environments.

While the study of Mehedi et al. (2024, b) provides valuable insights into the influence of board diversity and experienced leadership on corporate sustainability disclosure within the context of a developing economy, future research could explore whether similar dynamics hold in different institutional settings. Comparative studies in developed economies with more mature regulatory frameworks could shed light on whether the negative association observed between directors with legal backgrounds and corporate sustainability disclosure reverses under stronger governance environments. Additionally, replicating this analysis across different sectors or in other emerging economies with varying levels of stakeholder pressure, regulatory sophistication, and sustainability awareness would provide a broader understanding of the contextual factors shaping the board relationship with corporate sustainability disclosure. Future research could also explore sector-specific dynamics, particularly in environmentally sensitive, capital-intensive, or high-risk industries, to better understand how green governance influences EMSPs disclosures and corporate performance in varying contexts. Furthermore, examining heterogeneity across firm-level characteristics such as industry, size, and ownership concentration could reveal how these factors shape the effectiveness of green governance. Such cross-country, cross-industry, and firm-level investigations would not only enhance the generalisability of current findings but also offer more nuanced insights for policymakers, regulators, and corporate leaders aiming to strengthen sustainability practices through governance reform.

This study also does not incorporate alternative financial indicators such as Return on Equity (ROE) or Return on Invested Capital (ROIC), which could provide a broader and more nuanced understanding of the link between environmental and financial performance. Longitudinal studies assessing the impact of regulatory changes, such as the influence of governance dynamics on ownership structure, corporate financial leverage strategies (Angsoyiri et al, 2025) on EMSPs could offer a deeper understanding of the relationship between these constructs in different contexts and settings.

Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability statement.

The data that support the findings of this study are available from the authors upon reasonable request.

References

Åberg, C., & Torchia, M. (2020). Do boards of directors foster strategic change? A dynamic managerial capabilities perspective. Journal of Management and Governance, 24(3), 655–684. https://doi.org/10.1007/s10997-019-09462-4

Agyemang, A. O., Yusheng, K., & Osei, A. (2025). Addressing Sustainability Footprint Disclosure for High Pollutant Firms in China and the US: The Roles of Firms Governance Structure, Financing Decisions, and Eco-Technology. Corporate Social Responsibility and Environmental Management. https://doi.org/10.1002/csr.3092

Ahmed, M. M. A., & Hassan, D. K. A. S. A. (2025). Integrated reporting in accounting research from 2013 to 2022: a systematic literature review and future research directions. Meditari Accountancy Research. https://doi.org/10.1108/MEDAR-01-2024-2317

Aibar-Guzmán, B., Raimo, N., Vitolla, F., & García-Sánchez, I. M. (2024). Corporate governance and financial performance: Reframing their relationship in the context of climate change. Corporate Social Responsibility and Environmental Management, 31(3), 1493–1509. https://doi.org/10.1002/csr.2649

Al Amosh, H. (2025). The role of gender diversity in shaping green collaborations and firm financial success. Gender in Management. https://doi.org/10.1108/GM-03-2024-0125

Albitar, K., Abdoush, T., & Hussainey, K. (2022). Do corporate governance mechanisms and ESG disclosure drive CSR narrative tones? International Journal of Finance and Economics, March, 1–15. https://doi.org/10.1002/ijfe.2625

Alexander, A., Walker, H., & Delabre, I. (2022). A Decision Theory Perspective on Wicked Problems, SDGs and Stakeholders: The Case of Deforestation. Journal of Business Ethics, 180(4), 975–995. https://doi.org/10.1007/s10551-022-05198-8

Al-Jaifi, H. A. (2020). Board gender diversity and environmental, social and corporate governance performance: evidence from ASEAN banks. Asia-Pacific Journal of Business Administration, 12(3–4), 269–281. https://doi.org/10.1108/APJBA-12-2018-0222

Alkaraan, F., Elmarzouky, M., de Sousa Jabbour, A. B. L., Jabbour, C. J. C., & Gulko, N. (2025). Maximising sustainable performance: Integrating servitisation innovation into green sustainable supply chain management under the influence of governance and Industry 4.0. Journal of Business Research, 186, 115029. https://doi.org/10.1016/j.jbusres.2024.115029

Alkaraan, F., Elmarzouky, M., Hussainey, K., Venkatesh, V. G., Shi, Y., & Gulko, N. (2024). Reinforcing green business strategies with Industry 4.0 and governance towards sustainability: Natural-resource-based view and dynamic capability. Business Strategy and the Environment, 33(4), 3588–3606. https://doi.org/10.1002/bse.3665

Alkaraan, F., Elmarzouky, M., Hussainey, K., & Venkatesh, V. G. (2023). Sustainable strategic investment decision-making practices in UK companies: The influence of governance mechanisms on synergy between industry 4.0 and circular economy. Technological

Forecasting and Social Change, 187, 122187. https://doi.org/10.1016/j.techfore.2022.122187

Alkaraan, F. (2023). Editorial: Corporate governance and sustainability issues. Corporate Governance and Sustainability Review, 7(1), 4–6. https://doi.org/10.22495/cgsrv7i1editorial

Alkaraan, F., Albitar, K., Hussainey, K., & Venkatesh, V. G. (2022). Corporate transformation toward Industry 4.0 and financial performance: The influence of environmental, social, and governance (ESG). Technological Forecasting and Social Change, 175, 121423. https://doi.org/10.1016/j.techfore.2021.121423

Alwadani, N., Al-Shaer, H., & Albitar, K. (2024). The impact of internal governance mechanisms on environmental performance of Saudi firms. International Journal of Accounting and Information Management, 32(1), 40–57. https://doi.org/10.1108/IJAIM-04-2023-0084

Almici, A. (2022). Does sustainability in executive remuneration matter? The moderating effect of Italian firms' corporate governance characteristics. Meditari Accountancy Research, 31(7), 49–87. https://doi.org/10.1108/MEDAR-05-2022-1694

Alnabsha, A., Abdou, H. A., Ntim, C. G., & Elamer, A. A. (2018). Corporate boards, ownership structures and corporate disclosures : Evidence from a developing country. Journal of Applied Accounting Research, 19(1), 20–41. https://doi.org/10.1108/JAAR-01-2016-0001

Al-Shaer, H., Zaman, M., & Albitar, K. (2024). CEO gender, critical mass of board gender diversity and ESG performance: UK evidence. Journal of Accounting Literature. https://doi.org/10.1108/JAL-10-2023-0181

Alshukri, T., Seun Ojekemi, O., Öz, T., & Alzubi, A. (2024). The Interplay of Corporate Social Responsibility, Innovation Capability, Organizational Learning, and Sustainable Value Creation: Does Stakeholder Engagement Matter? Sustainability (Switzerland) , 16(13). https://doi.org/10.3390/su16135511

Alslaibi, N. A., Samara, H. H., Hussein, A. I., & Hussein, W. N. (2025). The role of environmental management teams in linking board characteristics to sustainability performance: evidence from the GCC. Management and Sustainability. https://doi.org/10.1108/MSAR-12-2024-0233

Andrei Shleifer, & Vishny, R. W. (1997). A Survey of Corporate Governance Andrei. PhD Proposal, 1(2), 737–783.

Angsoyiri, D., Alkaraan, F. & John, J. (2025). Governance, Ownership Structure, and Financial Leverage: The Role of Board Gender Diversity in UK Firms, Journal of Risk and Financial Management, 18(5), 276, https://doi.org/10.3390/jrfm18050276

Annesi, N., Battaglia, M., Ceglia, I., & Mercuri, F. (2024). Navigating paradoxes: building a sustainable strategy for an integrated ESG corporate governance. Management Decision. https://doi.org/10.1108/MD-10-2023-2006

Areliano, M., & Boverb, O. (1995). Another look at the instrumental variable estimation of error-components models.

Awa, H. O., Etim, W., & Ogbonda, E. (2024). Stakeholders, stakeholder theory and Corporate Social Responsibility (CSR). International Journal of Corporate Social Responsibility, 9(1). https://doi.org/10.1186/s40991-024-00094-y

Baalouch, F., Ayadi, S. D., & Hussainey, K. (2019). A study of the determinants of environmental disclosure quality: evidence from French listed companies. In Journal of Management and Governance (Vol. 23, Issue 4). Springer US. https://doi.org/10.1007/s10997-019-09474-0

Badwan, N., Al-Khazaleh, S., Bani Ahmad, A., & AlKhazaleh, A. (2025). Impact of board gender diversity on the banking performance sector: empirical evidence from Palestine. Management and Sustainability. https://doi.org/10.1108/MSAR-12-2024-0245

Balogun, A. L., Marks, D., Sharma, R., Shekhar, H., Balmes, C., Maheng, D., Arshad, A., & Salehi, P. (2020). Assessing the Potentials of Digitalization as a Tool for Climate Change Adaptation and Sustainable Development in Urban Centres. Sustainable Cities and Society, 53(March 2019), 101888. https://doi.org/10.1016/j.scs.2019.101888

Bauweraerts, J., Arzubiaga, U., & Diaz-Moriana, V. (2022). Unveiling the global focus-performance relationship in family firms: The role of the board of directors. International Business Review, 31(4). https://doi.org/10.1016/j.ibusrev.2022.101977

Boakye, D. J., Tingbani, I., Ahinful, G. S., & Nsor-Ambala, R. (2021). The relationship between environmental management performance and financial performance of firms listed in the Alternative Investment Market (AIM) in the UK. Journal of Cleaner Production, 278. https://doi.org/10.1016/j.jclepro.2020.124034

Bufarwa, I. M., Elamer, A. A., Ntim, C. G., & AlHares, A. (2020). Gender diversity, corporate governance and financial risk disclosure in the UK. International Journal of Law and Management, 62(6), 521–538. https://doi.org/10.1108/IJLMA-10-2018-0245

Brennan, N. M., Edgar, V. C., & Bradley Power, S. (2024). Director and shareholder interactions at shareholder meetings: Compromising accountability in the service of colonialism. Critical Perspectives on Accounting, 100. https://doi.org/10.1016/j.cpa.2024.102763

Carvajal, M., Nadeem, M., & Zaman, R. (2022). Biodiversity disclosure, sustainable development and environmental initiatives: Does board gender diversity matter? Business Strategy and the Environment, 31(3), 969–987. https://doi.org/10.1002/bse.2929

Chang, G., Wiredu, I., Boadu, P. K., & Agyemang, A. O. (2024). Navigating sustainable development: exploring the nexus of board attributes and environmental accounting information disclosure in China's construction industry. Environment, Development and Sustainability. https://doi.org/10.1007/s10668-024-05366-y

Conte, D., Bussoli, C., & Hemmings, D. (2024). Responsible risk-taking and the CSP-financial performance relation in the banking sector: A mediation analysis. Research in International Business and Finance, 69, 102293. https://doi.org/10.1016/j.ribaf.2024.102293

Cornwell, N., Bilson, C., Gepp, A., Stern, S., & Vanstone, B. J. (2023). The role of data analytics within operational risk management: A systematic review from the financial services and energy sectors. Journal of the Operational Research Society, 74(1), 374-402. https://doi.org/10.1080/01605682.2022.2041373

Cucari, N., Esposito De Falco, S., & Orlando, B. (2018). Diversity of Board of Directors and Environmental Social Governance: Evidence from Italian Listed Companies. Corporate Social Responsibility and Environmental Management, 25(3), 250–266. https://doi.org/10.1002/csr.1452 de Villiers, C., Dumay, J., Farneti, F., Jia, J., & Li, Z. (2024). Does mandating corporate social and environmental disclosure improve social and environmental performance? Broad-based evidence regarding the effectiveness of directive 2014/95/EU. The British Accounting Review, 56(6), 101437. https://doi.org/10.1016/j.bar.2025.101558

de Villiers, C., Dimes, R., & Molinari, M. (2024). How will AI text generation and processing impact sustainability reporting? Critical analysis, a conceptual framework and avenues for future research. Sustainability Accounting, Management and Policy Journal, 15(1), 96–118. https://doi.org/10.1108/SAMPJ-02-2023-0097

Dohrmann, M., Martinez-Blasco, M., Moring, A., & Margarit, J. C. (2024). Environmental performance and firm performance in Europe: The moderating role of board governance. Corporate Social Responsibility and Environmental Management. https://doi.org/10.1002/csr.2898

Del Gesso, C., & Lodhi, R. N. (2024). Theories underlying environmental, social and governance (ESG) disclosure: a systematic review of accounting studies. Journal of Accounting Literature. https://doi.org/10.1108/jal-08-2023-0143

Drago, C., Di Nallo, L., Manzari, A., & Principale, S. (2025). Assessing gender theme in European financial institutions: an analysis through a new interval-based composite indicator. Corporate Governance (Bingley). https://doi.org/10.1108/CG-04-2024-0248

Dragomir, V. D., Dumitru, M., Chersan, I. C., Gorgan, C., & Păunescu, M. (2024). Double Materiality Disclosure as an Emerging Practice: The Assessment Process, Impacts, Risks, and Opportunities. Accounting in Europe. https://doi.org/10.1080/17449480.2024.2339264

Dwekat, A., Abu Alia, M., Abdeljawad, I., & Meqbel, R. (2024b). Governing for the green: How European board attributes are driving environmental innovation. Corporate Social Responsibility and Environmental Management. https://doi.org/10.1002/csr.3043

Eccles, R. G., & Serafeim, G. (2017). Corporate and integrated reporting: A functional perspective. Corporate Stewardship: Achieving Sustainable Effectiveness, 156–171. https://doi.org/10.9774/gleaf.9781783532605_10

Elamer, A. A., & Kato, M. (2024). Governance dynamics and the human capital disclosure-engagement paradox: a Japanese perspective. Competitiveness Review. https://doi.org/10.1108/CR-09-2023-0225

ElKelish, W. W., Hussain, A., Al Mahameed, M., & Irsyadillah, I. (2024). Exploring the impact of organizational culture on governance transparency in audit firms: evidence from the United Arab Emirates emerging market. Journal of Applied Accounting Research. https://doi.org/10.1108/JAAR-06-2023-0170

Elmagrhi, M. H., Ntim, C. G., Elamer, A. A., & Zhang, Q. (2019). A study of environmental policies and regulations, governance structures, and environmental performance: the role of female directors. Business Strategy and the Environment, 28(1), 206-220. https://doi.org/10.1002/bse.2250

Fan, Y., Wang, R., Alkaraan, F., & Wu, W. (2025). Decoding greenwashing practices toward sustainability: The synergistic influence of governance structure and policy-derive rhetorical strategies. Energy Economics, 108632. https://doi.org/10.1016/j.eneco.2025.108632

Farooq, M., Noor, A., & Ali, S. (2022). Corporate governance and firm performance: empirical evidence from Pakistan. Corporate Governance (Bingley), 22(1), 42–66. https://doi.org/10.1108/CG-07-2020-0286

Fernández-Temprano, M. A., & Tejerina-Gaite, F. (2020). Types of directors, board diversity and firm performance. Corporate Governance (Bingley), 20(2), 324–342. https://doi.org/10.1108/CG-03-2019-0096

Feyisetan, O. O., Alkaraan, F., & Le, C. (2025). The influence of ESG on mergers and acquisitions decisions and organisational performance in UK firms: comparison between financial and non-financial sectors. Journal of Applied Accounting Research. https://doi.org/10.1108/JAAR-09-2024-0340

Free, C., Jones, S. and Tremblay, M.-S. (2024). Greenwashing and sustainability assurance: a review and call for future research, Journal of Accounting Literature, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JAL-11-2023-0201

Freeman, R. E., & David, L. R. (1983). Stockholders and Stakeholders: A New Perspective on Corporate Governance. California Management Review, 25(3), 88–106. https://doi.org/10.2307/41165018

García-Sánchez, I. M., Gómez-Miranda, M. E., David, F., & Rodríguez-Ariza, L. (2019). The explanatory effect of CSR committee and assurance services on the adoption of the IFC performance standards, as a means of enhancing corporate transparency. Sustainability Accounting, Management and Policy Journal, 10(5), 773–797. https://doi.org/10.1108/SAMPJ-09-2018-0261

Goodstein, J., Gautam, K., & Boeker, W. (1994). The Effects of Board Size and Diversity on Strategic Change. In Management Journal (Vol. 15, Issue 3). https://www.jstor.org/stable/2486969

Gordini, N., & Rancati, E. (2017). Gender diversity in the Italian boardroom and firm financial performance. Management Research Review, 40(1), 75–94. https://doi.org/10.1108/MRR-02-2016-0039

Haque, F. (2017). The effects of board characteristics and sustainable compensation policy on carbon performance of UK firms. British Accounting Review, 49(3), 347–364. https://doi.org/10.1016/j.bar.2017.01.001

Haque, F., & Ntim, C. G. (2020). Executive Compensation, Sustainable Compensation Policy, Carbon Performance and Market Value. British Journal of Management, 31(3), 525–546. https://doi.org/10.1111/1467-8551.12395

Hart, S. L., & Ahuja, G. (1996). Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. Business Strategy and the Environment, 5(1), 30–37. https://doi.org/10.1002/(SICI)1099-0836(199603)5:1%3C30::AID-BSE38%3E3.0.CO;2-Q

Hemmings, D., Brennan, N. M., & Merkl-Davies, D. M. (2017). Explaining Communication Choices during Equity Offerings: Market Timing or Impression Management? In A. Laskin (Ed.), Handbook of Investor Relations and Financial Communications Wiley

Hoque, Z., and Hopper, T. (1997). Triangulation approach to management accounting research: A new direction. In 20th Annual Conference of European Accounting (pp. 23-25).

Hussain, N., Rigoni, U., & Orij, R. P. (2018). Corporate Governance and Sustainability Performance: Analysis of Triple Bottom Line Performance. Journal of Business Ethics, 149(2), 411–432. https://doi.org/10.1007/s10551-016-3099-5

Hussien, L. F., Alrawashedh, N. H., Deek, A., Alshaketheep, K., Zraqat, O., Al-Awamleh, H. K., & Zureigat, Q. (2025). Corporate governance and energy sector sustainability performance disclosure. International Journal of Energy Sector Management. https://doi.org/10.1108/IJESM-07-2024-0015

Hristov, I., & Searcy, C. (2024). Integrating sustainability with corporate governance: a framework to implement the corporate sustainability reporting directive through a balanced scorecard. Management Decision. https://doi.org/10.1108/MD-10-2023-1995

Hughes, E., & Dundon, T. (2025). A Multi-Level Systems Perspective on (Un)sustainable HRM in Adult Social Care. Human Resource Management. https://doi.org/10.1002/hrm.22298

Huq, A. M., Cieślak, K., & Sundberg, K. (2024). Board governance drivers of corporate sustainability levels in private firms: evidence from Sweden. Sustainability Accounting, Management and Policy Journal, 15(7), 106–132. https://doi.org/10.1108/SAMPJ-04-2024-0402

Hussain, N., Rigoni, U., & Orij, R. P. (2018). Corporate Governance and Sustainability Performance: Analysis of Triple Bottom Line Performance. Journal of Business Ethics, 149(2), 411–432. https://doi.org/10.1007/s10551-016-3099-5

Irwin, S. (2024). Addressing hardship and climate change: Citizens' perceptions of costs of living, social inequalities and priorities for policy. Social Policy and Administration. https://doi.org/10.1111/spol.13071

Irshad, A. ur R., Safdar, N., Younas, Z. I., & Manzoor, W. (2023). Impact of Corporate Governance on Firms' Environmental Performance: Case Study of Environmental Sustainability-Based Business Scenarios. Sustainability (Switzerland), 15(10). https://doi.org/10.3390/su15107775

Jensen and Meckling. (1976). THEORY OF THE FIRM: MANAGERIAL BEHAVIOR, AGENCY COSTS AND OWNERSHIP STRUCTURE. Journal of Financial Economics 3 (1976) 305-360. Q North-Holland Publishing Company, 72(10), 1671–1696. https://doi.org/10.1177/0018726718812602

Khatib, S. F. A. (2024). An assessment of methods to deal with endogeneity in corporate governance and reporting research. In Corporate Governance (Bingley). Emerald Publishing. https://doi.org/10.1108/CG-12-2023-0507

Khlifi, S., Chouaibi, Y., & Chouaibi, S. (2024). Do ESG practices mediate the relationship between board characteristics and tax avoidance in G20 countries? Corporate Governance (Bingley). https://doi.org/10.1108/CG-11-2023-0498

Kintu, G. J. (2025). Theorizing knowledge worker productivity: utilizing a multi-theoretical approach. Journal of Work-Applied Management. https://doi.org/10.1108/JWAM-09-2024-0127

Kwamboka, B., Githaiga, P. N., & Kinuthia, P. M. (2025). Audit committee and financial reporting fraud: the moderating role of firm size. Journal of Financial Reporting and Accounting. https://doi.org/10.1108/JFRA-07-2024-0432

Le, H. T. M., Ting, I. W. K., Kweh, Q. L., & Ngo, H. L. T. (2023). CEO duality, board size and firm performance: evidence in Vietnam. International Journal of Business Excellence, 29(1), 98–120. https://doi.org/10.1504/IJBEX.2020.10031019

Li, S., Jia, S., Liu, Y., & Li, R. (2024). The degree of population aging and carbon emissions: Analysis of mediation effect and multi-scenario simulation. Journal of Environmental Management, 367. https://doi.org/10.1016/j.jenvman.2024.121982

Liao, L., Luo, L., & Tang, Q. (2015). Gender diversity, board independence, environmental committee and greenhouse gas disclosure. British Accounting Review, 47(4), 409–424. https://doi.org/10.1016/j.bar.2014.01.002

Mehedi, S., Akhtaruzzaman, M., & Zaman, R. (2024). Board demographic, structural, and capital diversity, and corporate carbon performance: international evidence. Journal of Accounting Literature. Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JAL-05-2024-0104

Mehedi, S., Maniruzzaman, M., & Akhtaruzzaman, M. (2024,b). Board flexibility in diversity, experienced CEOs and corporate sustainability disclosure: Evidence from the emerging market. Global Journal of Flexible Systems Management, 25(2), 261-282. https://doi.org/10.1007/s40171-024-00387-y

Michelon, G., & Parbonetti, A. (2012). The effect of corporate governance on sustainability disclosure. Journal of Management and Governance, 16(3), 477–509. https://doi.org/10.1007/s10997-010-9160-3

Nguyen, L. T., & Thanh, C. Le. (2022). The influence of board characteristics on environmental performance: evidence from East Asian manufacturing industries. International Journal of Emerging Markets, 17(10), 2702–2720. https://doi.org/10.1108/IJOEM-07-2020-0744

Nguyen, P., Rahman, N., Tong, A., & Zhao, R. (2016). Board size and firm value: evidence from Australia. Journal of Management and Governance, 20(4), 851–873. https://doi.org/10.1007/s10997-015-9324-2

Nguyen, T. H. H., Elmagrhi, M. H., Ntim, C. G., & Wu, Y. (2021). Environmental performance, sustainability, governance and financial performance: Evidence from heavily polluting industries in China. Business Strategy and the Environment, 30(5), 2313–2331. https://doi.org/10.1002/bse.2748

Nguyen, T. H. H., Ntim, C. G., & Malagila, J. K. (2020). Women on corporate boards and corporate financial and non-financial performance: A systematic literature review and future research agenda. In International Review of Financial Analysis (Vol. 71). Elsevier Inc. https://doi.org/10.1016/j.irfa.2020.101554

Orazalin, N. (2020). Do board sustainability committees contribute to corporate environmental and social performance? The mediating role of corporate social responsibility strategy. Business Strategy and the Environment, 29(1), 140–153. https://doi.org/10.1002/bse.2354

Owusu, N. A., Sarpong, F. A., Tchuiendem, N. J., & Coleman, W. (2023). Breaking the chains of corporate compensation: Unraveling the complexities of non-executive director compensation in South Africa's boardrooms. Cogent Business and Management, 10(2). https://doi.org/10.1080/23311975.2023.2226935

Pandey, D. K., Al-ahdal, W. M., Moussa, F., & Hashim, H. A. (2024). Stock market reaction to mandatory climate change reporting: case of Bursa Malaysia. Review of Accounting and Finance. https://doi.org/10.1108/RAF-01-2024-0015

Pernelet, H. R., & Brennan, N. M. (2023). Challenge in the boardroom: Director–manager question-and-answer interactions at board meetings. Corporate Governance: An International Review, 31(4), 544–562. https://doi.org/10.1111/corg.12492

Prado-Lorenzo, J. M., & Garcia-Sanchez, I. M. (2010). The Role of the Board of Directors in Disseminating Relevant Information on Greenhouse Gases. Journal of Business Ethics, 97(3), 391–424. https://doi.org/10.1007/s10551-010-0515-0

Rashid, M. M., & Kabir, M. R. (2024). Corporate governance and corporate sustainability performance: the mediating role of CSR expenditure. Asian Review of Accounting. https://doi.org/10.1108/ARA-12-2023-0350

Sidney, M. T., & Liao, G. (2025). Deciphering the Intricate Influence of Greenwashing and Environmental Performance on Financial Outcome Through Panel VAR/GMM Analysis. Sustainability, 17(9), 3906. https://doi.org/10.3390/su17093906

Soana, M. G. (2024). Environmental strategies, environmental performance and board sustainability committees: Are financial and non-financial companies different? Research in International Business and Finance, 69. https://doi.org/10.1016/j.ribaf.2023.102208

Suchman, M. C. (1995). Managing Legitimacy: Strategic and Institutional Approaches Author (s): Mark C. Suchman Source: The Academy of Management Review, Vol. 20, No. 3 ((JJul.1995), pp. 571-610 Published by: Academy of Management Stable URL: https://doi.org/10.5465/amr.1995.9508080331

Tejedo-Romero, F., & Araujo, J. F. F. E. (2020). E-government-enabled transparency: The effect of electoral aspects and citizen's access to Internet on information disclosure. Journal of Information Technology and Politics, 17(3), 268–290. https://doi.org/10.1080/19331681.2020.1713958

Trireksani, T., & Djajadikerta, H. G. (2016). Corporate governance and environmental disclosure in the Indonesian mining industry. Australasian Accounting, Business and Finance Journal, 10(1). http://dx.doi.org/10.14453/aabfj.v10i1.3

Tarighi, H., Hosseiny, Z. N., Akbari, M., & Mohammadhosseini, E. (2023). The Moderating Effect of the COVID-19 Pandemic on the Relation between Corporate Governance and Firm Performance. Journal of Risk and Financial Management, 16(7). https://doi.org/10.3390/jrfm16070306

Vaupel, M., Bendig, D., Fischer-Kreer, D., & Brettel, M. (2023). The Role of Share Repurchases for Firms' Social and Environmental Sustainability. Journal of Business Ethics, 183(2), 401–428. https://doi.org/10.1007/s10551-022-05076-3

Wang, S., Yong, Y., Hussain, M., Maqsood, U. S., & Zahid, R. M. A. (2025). Evaluating Corporate Environmental Performance in the Context of Artificial Intelligence Implementation: The Contingent Roles of Ownership Type and External Monitoring. Business Strategy and the Environment. https://doi.org/10.1002/bse.4179

Wu, S., Zhou, X., & Zhu, Q. (2023). Green credit and enterprise environmental and economic performance: The mediating role of eco-innovation. Journal of Cleaner Production, 382(November 2022), 135248. https://doi.org/10.1016/j.jclepro.2022.135248

Xiang, Y., Ma, Y., Ji, M., & Su, Y. (2023). Interconnected Knowledge: Examining the Evolution of Graduate Student Innovation Ecosystems. Journal of the Knowledge Economy. https://doi.org/10.1007/s13132-023-01674-2

Zaman, R., Jain, T., Samara, G., & Jamali, D. (2022). Corporate Governance Meets Corporate Social Responsibility: Mapping the Interface. Business and Society, 61(3), 690–752. https://doi.org/10.1177/0007650320973415