

# Walking on the gender tightrope: Unlocking ESG potential through CEOs' dynamic capabilities and strategic board composition

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## Abstract

This study explores the relationship between chief executive officers (CEOs) and the board of directors in the context of environmental, social, and governance (ESG) performance. Based on a multi-theoretical approach, it examines whether dynamic CEO capabilities (DCCs) facilitate ESG performance by enabling capable CEOs to navigate complex stakeholder expectations effectively. Additionally, the impact of board gender diversity (BGD) on this relationship is tested, given its significance for ESG-related decision-making. Longitudinal analysis of S&P 900 manufacturing firms demonstrates that strong DCCs positively influence ESG performance, supporting dynamic managerial capabilities and upper echelons theories within the institutional and shareholder theory frameworks. The findings also corroborate that BGD has a moderating effect, initially strengthening the DCC–ESG relationship, in line with gender socialization and diversity theories. However, the study reveals a threshold effect, where ESG benefits from DCCs diminish once BGD reaches approximately 35%, providing a new perspective on critical mass theory.

## KEYWORDS

board of directors, chief executive officer, corporate sustainability, dynamic managerial capabilities, ESG, upper echelons theory

## 1 | INTRODUCTION

Environmental, social, and governance (ESG) performance has become a central concern for modern-day businesses (Issa, 2023; Jebe, 2019; Santamaria et al., 2021). Growing concerns related to climate change and resource depletion (*environmental issues*), societal impacts and labor practices (*social issues*), and corporate misconduct and lack of diversity (*governance issues*) have amplified the expectations of investors, consumers, and other stakeholders for greater transparency and accountability from businesses (Delgado-Ceballos et al., 2023; Liang & Li, 2023).

Because top managers face numerous stakeholder demands, effective sustainability strategies have become crucial for long-term

firm performance (Bansal, 2005; Buchholz, 1991; Carroll, 1991). The pivotal role assumed by managers within the domain of ESG enjoys widespread recognition (Bazel-Shoham et al., 2023; Issa, 2023; Tagliatela et al., 2023). Nevertheless, the existing literature predominantly focuses on firm-level capabilities as the bedrock of sustainable business strategies (e.g., Buzzao & Rizzi, 2021; Eikelenboom & de Jong, 2019; Mousavi et al., 2018). However, a significant gap within this literature landscape looms—an uncharted expanse concerning the micro-level capabilities that potentially steer firms toward greater ESG performance (Heubeck, 2023a).

Bridging this gap is particularly valuable to advance the micro-foundational research stream in the strategic management literature

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(e.g., Felin et al., 2012; Felin et al., 2015; Foss, 2021) and also imperative considering the dearth of research on the effects of micro-level capabilities on organizational outcomes (Helfat & Martin, 2015; Heubeck, 2023a). In light of this, filling this void in the literature not only enriches the scholarly discourse but also stands as an imperative step toward comprehending the intricate interplay between micro-level capabilities and organizational sustainability.

To address this research gap, this paper adopts a micro-level perspective on firms' ESG strategies by proposing that the unique dynamic capabilities of chief executive officers (CEOs) are critical facilitators of ESG performance. Drawing on the theoretical foundation of dynamic CEO capabilities (DCCs) to conceptualize the managerial impact on ESG performance (Heubeck & Meckl, 2022a, 2023) and institutional theory to contextualize sustainability strategies within the broader environment (DiMaggio & Powell, 1983; Scott, 2008), this study proposes that CEOs must possess efficient skills to identify, implement, and adapt ESG strategies. Further, they need these skills to establish measurable goals and allocate sufficient resources to support these initiatives (Ramani & Saltman, 2019; Rothstein et al., 2022). Consequently, CEOs are likely to play a critical role in making ESG investments due to the weight, uncertainty, and complexity of these strategic decisions (Chin et al., 2013; Petrenko et al., 2016). This argumentation leads to the following first research question:

Research Question 1. Do DCCs facilitate ESG performance?

ESG performance is a critical concern for a firm's board of directors (BoDs) (Ben-Amar et al., 2017; Issa, 2023; Nadeem, Bahadar, et al., 2020). BoDs have three functions in contemporary organizations. First, they ensure supervision and control to align the interests of shareholders and managers (Ashwin et al., 2016; Fama & Jensen, 1983). Second, they provide active support and counsel, offering resources, securing commitment, and giving advice to executives in strategic decision-making (Miller & Triana, 2009; Nadeem, Gyapong, & Ahmed, 2020; Ntim & Soobaroyen, 2013; Pfeffer & Salancik, 1978). Third, they promote business sustainability by enhancing transparency, demanding accountability, and considering different stakeholder interests (Hill & Jones, 1992; Manita et al., 2018; Nadeem, Bahadar, et al., 2020; Nadeem, Gyapong, & Ahmed, 2020).

The board's ability to perform these three functions efficiently depends on its composition (Galia & Zenou, 2012; Post et al., 2015; Rao & Tilt, 2016). Board gender diversity (BGD) is a critical indicator of board composition (Müller-Horn et al., 2022), particularly in the context of ESG (Carvajal et al., 2022; Manita et al., 2018; Nadeem, Gyapong, & Ahmed, 2020). Drawing on theories of gender diversity and socialization (Cucari et al., 2018; Glass et al., 2016; Issa, 2023; Nadeem, Bahadar, et al., 2020), females and males vary in their backgrounds, skills, and psychological characteristics (Adams & Ferreira, 2009; Croson & Gneezy, 2009; Eckes & Trautner, 2000; Miller & Triana, 2009).

Therefore, delving into the intricate nuances of gender diversity and its ramifications on ESG performance is paramount for firms

aiming to adeptly navigate the inherent tension between fostering gender diversity and capitalizing on the potential of CEOs' dynamic capabilities to propel ESG outcomes. However, a recent literature review on dynamic managerial capabilities (Heubeck, 2023a) reveals a conspicuous absence in addressing the contingent role of board composition within the ambit of micro-level capabilities. While board size and tenure have garnered some attention (Roelandt et al., 2022), an evident gap remains when exploring other distinct board characteristics through the lens of management capabilities.

In recognition of this research gap, this study extends its foundation from the first research question to examine the contingent role of BGD—a pivotal determinant shaping board composition—within the framework of ESG performance. By addressing this research gap, this study not only enriches the discourse surrounding the intricate dynamics of corporate governance and sustainability but also empowers decision-makers with a more comprehensive understanding of the intricate interplay at the intersection of leadership, diversity, and organizational performance. Anchored in these assertions, the second research question is formulated as follows:

Research Question 2. How does BGD influence the DCC-ESG performance relationship?

Overall, this study aims to advance an in-depth understanding of the factors that drive ESG performance from multiple levels of analysis, encompassing the individual-level perspective of DCCs, the team-level perspective of the BoDs, and the firm-level perspective of ESG performance. These findings also hold significant implications for management practices to achieve ESG targets, particularly regarding C-suite staffing and board composition.

The subsequent sections of this study are organized as follows: In Section 2, an overview of the existing literature is provided, leading to the formulation of the theoretical framework. Section 3 delineates the chosen research methodology. The obtained results are showcased in Section 4. Moving forward in Section 5, the findings are thoroughly discussed, encompassing both their theoretical significance and practical implications. A concise summary of this study's discoveries is encapsulated in Section 6. Furthermore, Section 7 delves into the limitations of the research and offers recommendations for future investigations.

## 2 | LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Freeman's (1984) stakeholder theory is the dominant lens for studying sustainable management practices (Camilleri, 2017; Velte, 2017). In contrast to the principal agency theory that posits shareholder value maximization as the primary objective of corporations (Fama & Jensen, 1983; Jensen & Meckling, 1976), stakeholder theory conjectures that corporations are part of society and obliged to meet different stakeholder expectations due to their externalities (Carroll, 1991; Freeman, 1984). Accordingly, the primary goal of modern

organizations is to establish reciprocal relationships with all stakeholder groups, while the management's ability to address various stakeholder interests affects organizational performance (Clarkson, 1995; Freeman, 1984; Roberts, 1992). While navigating an ever-evolving global landscape, contemporary research underscores the multifaceted benefits derived from integrating a wide array of stakeholders into the very fabric of business operations and overarching strategic pursuits (e.g., Adeneye & Kammoun, 2022; Kayikci et al., 2022; Linnenluecke, 2022; Sarkar & Shankar, 2021).

With the rising awareness of sustainability, modern corporations have made sustainability a core part of their business strategy (Bosch-Badia et al., 2013; Wood, 1991). The United Nation's (2015) sustainable development goals (SDGs) have emerged as a crucial framework for companies striving to achieve sustainable development (Sandberg et al., 2023; Tagliatela et al., 2023). These goals have garnered significant attention and adoption within the corporate world because they provide concrete and measurable targets for achieving sustainability (Pizzi et al., 2021; Tagliatela et al., 2023). Moreover, the external determination of SDGs contributes to increased accountability among companies (Silva, 2021; Tagliatela et al., 2023). With the advent of socially responsible investments (SRIs), ESG reporting has become the new standard for transparently reporting sustainability targets, thereby signaling legitimacy to all stakeholders (Delgado-Ceballos et al., 2023; Halbritter & Dorfleitner, 2015; Sandberg et al., 2023).

ESG performance significantly affects a firm's risk profile, reputation, and revenue, making it financially material for raising capital, attracting customers, and generating long-term profits (Botosan, 1997; Jebe, 2019; MacNeil & Esser, 2022). ESG ratings are also highly relevant for all other stakeholders to assess a company's current achievement of sustainable performance and predict its future performance (Amel-Zadeh & Serafeim, 2018). By pioneering ESG, businesses can gain a competitive advantage and achieve long-term performance (Delgado-Ceballos et al., 2023; Friede et al., 2015; Porter & Kramer, 2007). Thus, ESG investments have become a clear business case for organizations (Friede et al., 2015), leading to cost reductions and efficiency gains, enabling a holistic assessment and management of risks, and preventing organizations from missing critical opportunities (Jebe, 2019; Wang et al., 2023). Although the empirical evidence largely supports this conjecture (e.g., Barnett & Salomon, 2006; Godfrey et al., 2009; Halbritter & Dorfleitner, 2015; Huang, 2021), research also reports negative or nonsignificant results (e.g., Orlitzky et al., 2003; Velte, 2017).

## 2.1 | Dynamic CEO capabilities and ESG performance

CEOs play a crucial role in strategic decision-making, given their influential position within the organization (Quigley & Hambrick, 2015; Wasserman, 2003). They exhibit distinct characteristics compared to lower level managers and are responsible for realizing the organization's long-term vision (Barker & Mueller, 2002; Musteen et al., 2006;

Silberzahn & Arregle, 2019). To fulfill these functions, they must identify the need for change, initiate and advocate change initiatives, and oversee their successful implementation. Therefore, CEOs require a unique skill set to garner support, mobilize resources, and overcome obstacles hindering strategic change (Hitt & Tyler, 1991; Schein, 1990; Wai & Rindermann, 2015).

This study adopts a micro-level perspective on organizational change, building on the concept of DCCs to argue for the criticality of CEOs' dynamic capabilities in developing and sustaining competitive advantages. These capabilities facilitate the identification of opportunities and threats (*sensing*), the exploitation of these opportunities (*seizing*), and the transformation of the firm's resource portfolio (*reconfiguring*) (Helfat & Martin, 2015; Heubeck & Meckl, 2022a, 2023; Teece, 2007). Differences in strategic orientation among firms are attributed to the heterogeneous capabilities of CEOs (Adner & Helfat, 2003; Hambrick & Mason, 1984; Heubeck & Meckl, 2023).

This argumentation is rooted in two prominent management theories. The first is dynamic managerial capability theory (Adner & Helfat, 2003), which shifts the focus from organizational capabilities (e.g., Eisenhardt & Martin, 2000; Teece et al., 1997) to those of individual managers as a source of competitive advantages and firm performance (Helfat & Martin, 2015; Martin, 2011). Managers' dynamic capabilities shape their strategic decision-making (Adner & Helfat, 2003) and originate from three interdependent resources: *human capital*—the knowledge and expertise acquired from education, training, or professional experience (Becker, 1983; Mintzberg, 1973); *social capital*—the networks and relationships managers build and maintain with colleagues, industry professionals, customers, and other stakeholders (Adler & Kwon, 2002; Gant et al., 2002); and *cognition*—the manager's mental abilities, such as perception, interpretation, storage, and retrieval of information (Adner & Helfat, 2003; Durán & Aguado, 2022; Walsh, 1995). The second is the upper echelons theory, which posits that top managers make strategic decisions based on their distinct interpretations of strategic choice situations that originate from observable background characteristics (Cannella & Holcomb, 2005; Hambrick & Mason, 1984). In sum, the DCC perspective emphasizes the influence of individual top-level managers on strategic decision-making (Heubeck & Meckl, 2023).

DCCs play a crucial role in the context of ESG practices. First, DCCs enable organizations to adapt to the constantly changing ESG landscape because they allow CEOs to systematically monitor and understand ESG trends, assess their impact, and adjust organizational processes and strategies. These capabilities empower firms to stay ahead of regulatory requirements, societal expectations, and stakeholder demands for greater sustainability (Chen et al., 2022; Wu et al., 2012). Second, DCCs foster innovation (Heubeck & Meckl, 2022b, 2023; Khan et al., 2020), which is essential for developing and implementing sustainable practices (Bazel-Shoham et al., 2023). CEOs with strong DCCs can foster a climate that nurtures the discovery of innovative solutions to ESG challenges. By leveraging their unique capabilities, these CEOs can effectively drive organizational innovation processes to address ESG issues (Heubeck, 2023b). Furthermore, strong DCCs facilitate efficient risk

management, allowing managers to promptly anticipate and respond to ESG-related risks (Wu et al., 2012). Moreover, DCCs possess a social component that allows managers to engage and collaborate with diverse stakeholders. By doing so, managers can gain valuable insights into stakeholders' concerns and integrate various perspectives into their decision-making (Chen et al., 2022). Thus, DCCs promote effective stakeholder management and help organizations align their ESG practices with the interests and expectations of key stakeholders.

In conclusion, DCCs are critical for achieving ESG performance. They equip CEOs with the necessary skills to navigate the ever-changing ESG environment. Additionally, they foster innovation, facilitate efficient risk management, and enhance decision-making quality by considering the diverse needs of stakeholders. Organizations with strong DCCs can achieve better ESG performance by aligning ESG goals with overall business strategies, making informed investment decisions, and driving sustainable initiatives that generate value for all stakeholders. Further, taking institutional theory into account, DCCs enable firms to effectively address regulatory guidelines, societal demands, and industry-specific expectations regarding sustainability. Strong DCCs allow firms to avoid penalties from the financial market associated with non-compliance and ensure that their sustainable practices align with broader societal expectations (Escobar & Vredenburg, 2011; Issa, 2023; Scott, 2008). Recognizing the significance of DCCs empowers organizations to develop, implement, and uphold sustainable business practices that address ESG challenges while fulfilling their responsibilities to stakeholders and society. This argumentation leads to the first hypothesis:

**Hypothesis H1.** CEOs with strong DCCs contribute to improved ESG performance.

## 2.2 | Board gender diversity

BGD is a highly debated topic in the field of corporate governance, generating discussions not only in academia but also among practitioners (Laique et al., 2023; Manita et al., 2018; Saggese et al., 2021). The increase in female representation on corporate boards is driven by two main rationales (Pletzer et al., 2015). The first is the ethical case, which advocates for greater gender diversity based on principles of equality and inclusion (Brammer et al., 2007). The second is the business case, which suggests that greater gender diversity enhances financial performance by bringing different perspectives, skills, and knowledge (Fondas & Sassalos, 2000; Robinson & Dechant, 1997). Amplified by the regulatory measures promoting female representation on corporate boards (Ferreira, 2010), BGD has become a critical concern for shareholders, directors, and managers (Adams & Ferreira, 2009; Buallay et al., 2022; Cambrea et al., 2019; Guizani & Abdalkrim, 2021).

BGD diversity entails a trade-off between its benefits and costs (Ferreira, 2010; Pletzer et al., 2015). On the beneficial side, BGD enhances financial performance, improves governance and risk

management, and is critical for ESG-related decision-making (Erhardt et al., 2003; Galia & Zenou, 2012; Kaczmarek & Nyuur, 2022; Rubino et al., 2017). Female directors are generally presumed to act more ethically (Chen, Crossland, & Huang, 2016; Guizani & Abdalkrim, 2021; Smith & Rogers, 2000), stakeholder-oriented (McGuinness et al., 2017; Nadeem, 2022; Nadeem, Gyapong, & Ahmed, 2020), and considerate and long-term oriented in their decision-making (Duppati et al., 2020; Frink et al., 2003; Post & Byron, 2015; Rodríguez-Domínguez et al., 2012).

These arguments align with gender socialization theory, which suggests that females are more community-oriented due to their gender identities and behaviors (Carlson, 1972; Eagly & Johnson, 1990; Liu, 2018). Therefore, male and female directors have different decision-making priorities, leadership styles, and career trajectories, making female directors more stakeholder oriented, less confirmative, and more likely to encourage innovation (Adams & Funk, 2012; Eagly et al., 2003; Glass et al., 2016; Torchia et al., 2011). Research indicates that women are more rule-compliant and less inclined to engage in unethical behavior than men (Haque & Jones, 2020; Issa & Zaid, 2023).

Based on the resource-dependence view (Pfeffer & Salancik, 1978), gender diversity theory suggests that female directors bring valuable skills and perspectives to the boardroom, making them a valuable resource and enabler of efficient board functioning (Atif et al., 2021; Forbes & Milliken, 1999; Issa, 2023). Ferreira (2010) identifies several mechanisms through which BGD benefits organizations: (1) increased receptiveness to new ideas and diverse perspectives; (2) improved access to different resources and capabilities; (3) positive spillover effects, such as increased board activity; (4) provision of career incentives and mentoring for all employees; and (5) gaining legitimacy in society and with the media, the investors, and the government.

In summary, female board members possess several characteristics that make them more inclined to pursue ESG initiatives and prioritize stakeholder value compared to their male counterparts (Bear et al., 2010; Issa, 2023; Issa & Zaid, 2023; Rao & Tilt, 2016). Empirical evidence supports this claim, showing that female directors exhibit greater awareness of sustainability-related issues (e.g., He & Jiang, 2019; Kyaw et al., 2022; Liu, 2018; Lu & Herremans, 2019) and that BGD contributes to improved environmental performance (e.g., Carvajal et al., 2022; Glass et al., 2016; Issa et al., 2021; Issa et al., 2022; Post et al., 2015).

On the contrary, BGD can also entail significant costs. First, gender is a highly salient demographic characteristic that can create faultlines, dividing a group into subgroups based on gender attributes (Lau & Murnighan, 1998). This division between female and male directors threatens efficient board functioning by reducing communication between subgroups and undermining overall group cohesiveness (Lau & Murnighan, 1998; Li & Hambrick, 2005; Pletzer et al., 2015). Additionally, research suggests that men tend to behave more cooperatively in teamwork than women (Brown-Kruse & Hummels, 1993), and homogenous teams often perform better on group tasks than heterogenous ones (Hambrick et al., 1996).

Second, as regulatory policies and societal pressures push organizations to achieve gender diversity on boards, directors may be appointed based on their demographic group rather than their qualifications and expertise (Ferreira, 2010). This can create a high demand for female directors, while the pool of skilled female directors remains limited. Hence, the task of identifying the most qualified candidates for director positions may become even more challenging, as companies might feel compelled to appoint minority directors who already have numerous other commitments, thereby limiting their capacity to fulfill their directorial responsibilities effectively (Ferreira, 2010; Ferris et al., 2003; Harris & Shimizu, 2004). Studies indicate that women appointed based on gender quotas may yield adverse organizational outcomes (Adams & Ferreira, 2009; Ahern & Dittmar, 2012).

Third, the male-dominated boardroom, combined with challenging negotiations on significant decisions, creates a context that is highly susceptible to role conflicts and ambiguities (Burgess & Tharenou, 2002; Koenig et al., 2011; Tuggle et al., 2022). Fourth, women tend to be more risk-averse than men (Cox & Blake, 1991; Croson & Gneezy, 2009), making them less likely to invest resources in initiatives with uncertain outcomes, such as ESG (Bazel-Shoham et al., 2023). Finally, women directors may engage in over-monitor executives and micro-management, leading to decreased firm performance due to reduced team functioning (Adams & Ferreira, 2009; Chen, Ni, & Tong, 2016; Laique et al., 2023; Lim et al., 2019).

Drawing from the arguments above, BGD poses a threat to board functioning by causing non-functional conflicts, eroding trust between directors, and promoting narrow-mindedness in decision-making (Adams & Ferreira, 2009; Ahern & Dittmar, 2012; Miller et al., 1998). Furthermore, the mere presence of women on the board does not guarantee that their diverse viewpoints and valuable insights will be considered. In particular, demographic faultlines and role conflicts can negatively impact board dynamics, create tensions and conflicts, limit trust and collaboration, and reduce cohesion (Kanter, 1993; Saggese et al., 2021; Schwartz-Ziv, 2017).

While women may bring valuable skills and perspectives to enhance corporate governance efficiency, their unique contributions may be unrealized. This underutilization of female skills undermines efficient problem-solving, slows strategic decision-making, and stifles innovation (Kanter, 1977, 1993; Pletzer et al., 2015). Highly gender-diverse boards may, therefore, exhibit inertia in their decision-making and require additional resources and time to address these issues (Kyereboah-Coleman, 2006). These inert tendencies can be further amplified by the higher risk aversion observed among females (Croson & Gneezy, 2009). In today's fast-paced environment, conflicts can jeopardize efficient corporate governance and group functioning by impeding strategic consensus, cohesion, and trust among board members (Amason, 1996; Knight et al., 1999; Williams & O'Reilly, 1998).

Based on these divergent viewpoints, this study posits that BGD exhibits a nonlinear effect on the relationship between DCCs and ESG performance. By adopting this approach, the study aims to present a more nuanced perspective on how BGD influences organizational decision-making regarding ESG. This argument directly

addresses Müller-Horn et al.' (2022) call to consider the trade-off between the costs and benefits of BGD by examining nonlinear effects. Existing research has struggled to establish a robust significant relationship between demographic diversity and performance outcomes due to oversimplistic and unidimensional approaches (Hellerstedt et al., 2022; Pletzer et al., 2015; Triana et al., 2021). Additionally, meta-analyses offer limited support for the business case of diversity (Pletzer et al., 2015; Post & Byron, 2015), contrasting studies that provide evidence for a positive (e.g., Carvajal et al., 2022; Glass et al., 2016; Issa et al., 2021; Mahadeo et al., 2012) or negative effect (e.g., Chapple & Humphrey, 2014; Pathan & Faff, 2013; Saeed & Sameer, 2017) of gender diversity on performance outcomes.

Building upon the preceding arguments, the second hypothesis is grounded in the interplay of two opposing forces: While BGD can initially enhance efficient board functioning, an excessive increase in BGD may lead to dysfunctional conflicts and a divide between female and male directors. Therefore, this study proposes that BGD diversity represents a double-edged sword that initially has a positive effect on the DCC–ESG performance relationship, but beyond a certain threshold, increasing BGD diminishes this relationship. Formally stated,

**Hypothesis H2.** BGD nonlinearly moderates the relationship between DCCs and ESG performance. Specifically, BGD amplifies the positive DCC–ESG relationship until a certain threshold, after which increasing BGD diminishes this relationship.

Figure 1 illustrates the conceptual framework of this study.

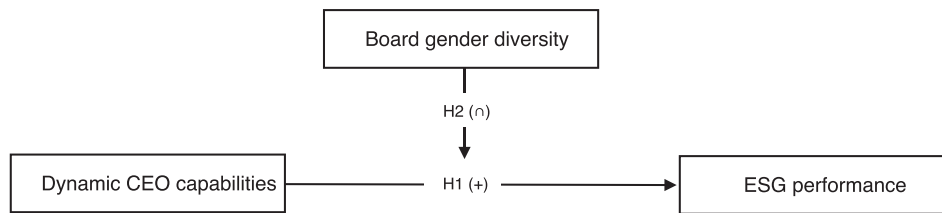
## 3 | METHODS

### 3.1 | Data collection and sample description

This study utilizes a unique dataset encompassing S&P 900 firms from 2016 to 2019. The S&P 900 index consolidates the mid- and large-cap segments of the US equity market (S&P 900, 2023). The dataset includes firms listed at least once during the observation period to mitigate survivorship bias (Brown et al., 1992). Given the variation in industries' inclination to adopt ESG measures (Frink et al., 2003; Solakoglu, 2013), this study focused on the manufacturing industries, which face substantial pressure to enhance their sustainability practices (Buallay, 2019; Mani et al., 2014). The years 2016 to 2019 were chosen to avoid the influence of two major crises in recent history—the Global Financial Crisis and the COVID-19 pandemic (Hermundsdottir et al., 2022; Nicola et al., 2020). Consequently, a final sample of 322 manufacturing firms was obtained. Table 1 provides an overview of the sample's composition, comprising 1,083 firm-year observations.

The data for this research were retrieved from Thomson Reuters' Refinitiv Eikon, and additional data were collected from annual statements, corporate or university websites, and other reliable third-party





**FIGURE 1** Research model. Note: CEO, chief executive officer, ESG, environmental, social, and governance.

**TABLE 1** Final sample composition.

	2016	2017	2018	2019
Number of firms	279	281	295	294

websites. The dominant CEO was selected, defined as the person holding the position for the longest during the respective financial year, in case multiple individuals served as CEO within the same year (Quigley & Hambrick, 2015).

## 3.2 | Measurement of variables

### 3.2.1 | Study variables

Data for the dependent variable, *ESG performance*, were obtained from Thomson Reuters' Refinitiv Eikon, a prominent and reputable source widely recognized for its transparent and objective assessment of ESG (Refinitiv, 2022). This database is commonly used in empirical research (e.g., Delgado-Ceballos et al., 2023; Orazalin & Baydauletov, 2020; Velte, 2016). The ESG score, ranging from 0% to 100%, measures a firm's relative ESG performance based on the three underlying pillars (Refinitiv, 2022).

The independent variable, *DCCs*, was operationalized using its three subdimensions. First, human capital encompasses both firm-specific and generic aspects, quantified by a CEO's years of tenure and their highest degree of formal education (Heubeck & Meckl, 2022a, 2023). Second, social capital is the number of a CEO's active or past directorships (Heubeck & Meckl, 2023; Holzmayer & Schmidt, 2020). Third, cognition is captured through the CEO's educational background, as CEOs possess diverse cognitive foundations for decision-making based on variations in their educational pursuits. The measurement scale assigns values from 1 to 10, taking into account the field of education (i.e., technical, business, and neither technical nor business) and the level of education (i.e., bachelor's, master's, or doctorate) (Heubeck & Meckl, 2022a, 2023). This scale is rooted in the argument that a CEO's cognitive processes are influenced by their educational background (Daellenbach et al., 1999; Rodenbach & Brettel, 2012), and the strength of their attachment to cognitive frameworks intensifies with higher levels of education in a specific field (Geletkanycz & Black, 2001; Musteen et al., 2006). The composite variable *DCCs* is the sum of all three subcomponents.

The moderator, *BGD*, is the percentage of female directors in relation to the total board size (Carvajal et al., 2022; Glass et al., 2016;

Nadeem, Gyapong, & Ahmed, 2020; Orazalin & Baydauletov, 2020; Tagliatalata et al., 2023).

### 3.2.2 | Control variables

The research model incorporated several control variables commonly used in empirical research. At the organizational level, the following six controls were included: (1) *firm age*, representing the number of years since incorporation (Audia & Greve, 2006; Shukla & Teraiya, 2022); (2) *firm size*, calculated as the natural logarithm of the number of employees (He & Jiang, 2019); (3) *firm performance*, proxied by return on assets (ROA) (He & Jiang, 2019; Tagliatalata et al., 2023; Velte, 2016); (4) *research and development (R&D) intensity*, determined by the R&D spending to sales ratio (Manita et al., 2018; Velte, 2017); (5) *slack resources*, measured by a firm's level of available slack (He & Jiang, 2019; Marlin & Geiger, 2015); and (6) *leverage*, indicated by the debt to assets ratio (Manita et al., 2018; Velte, 2016, 2017).

Furthermore, the model controlled for 11 variables related to a firm's governance structures: (1) *CSR sustainability committee*, taking a value of one if the company has a CSR committee or team (zero otherwise) (Issa & Bensalem, 2023; Velte, 2016); (2) *board diversity policy*, assigned a value of one if the company has a policy regarding the diversity of its board (zero otherwise) (Buse et al., 2016); (3) *board size*, measured as the number of directors to capture variations in decision-making effectiveness on environmental matters (X. He & Jiang, 2019; Velte, 2016); (4) *board independence*, represented by the proportion of independent directors (Bazel-Shoham et al., 2023; He & Jiang, 2019); (5) *board tenure*, calculated as the average number of years directors have served on the firm's board (Issa & Zaid, 2023); (6) *board affiliations*, indicating the average number of external directorates among board members (Kiel & Nicholson, 2006; Kim, 2005); (7) *board functional background*, proxied by the percentage of directors with an industry-specific or financial background (He & Jiang, 2019); (8) *board remuneration*, measured as the total compensation of the board in a million USD (Dogan & Smyth, 2002; Main et al., 1996); (9) *number of board meetings*, which is the number of times the board meets during a fiscal year (Atif et al., 2021; Issa & Zaid, 2023); (10) *board meeting attendance*, captured by the average attendance during board meetings in a fiscal year (Conger et al., 1998; Lipton & Lorsch, 1992); and (11) *CEO duality*, which is one if the current CEO is also chairman of the board (zero otherwise) (Bazel-Shoham et al., 2023; He & Jiang, 2019).

Third, the following four controls at the management level were included: (1) *CEO age*, calculated as the number of years between birth

and the fiscal year (Glass et al., 2016; Ortiz-de-Mandojana et al., 2019); (2) *CEO gender*, which is coded one if the CEO is male and one if female (Faccio et al., 2016; He et al., 2022); (3) *management compensation*, measured as the total compensation paid to all senior executives in the respective fiscal year in million USD (Frydman & Jenter, 2010); and (4) *sustainability compensation incentives*, which is coded one if the senior executive's compensation is linked to CSR, health and safety, or sustainability targets (zero otherwise) (Cordeiro & Sarkis, 2008; Ortiz-de-Mandojana et al., 2019).

### 3.3 | Statistical procedure

The data were analyzed with the Stata 17 statistical software. The Breusch-Pagan Lagrange Multiplier Test demonstrated that panel data regression is preferred over simple Ordinary Least Squares regression due to significant differences across years (Breusch & Pagan, 1980). The Durbin-Wu-Hausman test confirmed the fixed-effects model as a consistent estimator (Baltagi, 2021; Greene, 2019). The modified Wald test advocated heteroscedasticity-robust standard errors (Greene, 2019). A fixed-effects panel data regression with robust standard errors was chosen based on these tests. The choice of regression analysis as the primary methodological approach in this study is well grounded and justified based on the theoretical frameworks and prior literature in the field (e.g., Henry et al., 2019; Heubeck & Meckl, 2023; Holzmayer & Schmidt, 2020; Weerasinghe et al., 2023).

## 4 | RESULTS

Table 2 presents the means, standard deviations, and correlations of all model variables. Companies in the sample have a mean ESG performance of 55.83, which places the sampled firms in the third quartile with a B- rating indicating "good relative ESG performance" (Refinitiv, 2022, p. 7). Regarding the studied board factors, the statistics show that the average board has 8.88 directors, with 22.40% women and 58.10% of directors with a strong industry-specific or financial background.

Hierarchical regression analysis was performed to test the hypotheses. Model 1 tests the control variables, Model 2 adds the study variables, and Model 3 contains all variables, including the mean-centered interaction terms. The data do not suffer from multicollinearity, as evident from the variance inflation factors (Johnston et al., 2018), as well as correlation coefficients (Kennedy, 2008) below critical values.

While not the primary focus of this study, the findings from Model 1 provide valuable insights into the control variables and their relationship with ESG performance. The results highlight several factors that positively contribute to ESG performance, including firm size, board independence, board affiliations, board meeting attendance, and sustainability compensation incentives. These findings suggest important implications: First, larger firms may possess greater

resources and capacity to implement sustainable practices. Second, boards with higher levels of independence are less likely to be influenced by external interests. Third, external affiliations may give directors access to knowledge, expertise, and resources required to promote ESG practices. Fourth, higher meeting attendance enhances information exchange and trust between directors. Finally, when companies align executive compensation with ESG objectives, it motivates sustainability-oriented behavior.

Conversely, two control variables demonstrate a negative association with ESG performance. The findings indicate that higher leverage levels and management compensation are associated with lower ESG performance, possibly due to excessive debt burdens or misaligned incentives that may hinder companies from allocating resources toward sustainable initiatives.

Hypothesis H1 states that the presence of DCCs positively impacts ESG performance. All model variables were regressed on the dependent variable in Model 2 to examine this hypothesis. The results of Model 2, as displayed in Table 3, reveal a significant and positive coefficient ( $b = 0.121$ ,  $se = 0.045$ ,  $p = .007$ ) associated with DCCs. Notably, this positive relationship holds consistently across all other models. The findings from Model 2 provide strong support for Hypothesis H1, suggesting that strong DCCs increase ESG performance. Thus, these capabilities enable organizations to adapt and respond effectively to dynamic environmental and social challenges, allowing them to integrate sustainability practices into their operations and decision-making processes.

Hypothesis H2 argues that BGD nonlinearly moderates the relationship between DCCs and ESG performance. The results contained in Model 3 show that the linear interaction term is positive and significant ( $b = 0.025$ ,  $se = 0.009$ ,  $p = .004$ ), and the nonlinear interaction term is negative and significant ( $b = -0.001$ ,  $se = 0.000$ ,  $p < .001$ ). In line with statistical recommendations (Hameed et al., 2013; Li, 2018), these results establish that the moderation effect of BGD on the DCC-ESG performance relationship follows an invertedly U-shaped progression. This effect implies that increasing BGD initially enhances the positive effect of DCCs on ESG performance, yet high shares of female directors negatively affect this relationship after reaching a certain threshold of BGD.

An additional regression analysis was performed to determine the turning point of the invertedly U-shaped effect. Model 2 shows a significant positive direct effect of BGD on ESG performance ( $b = 0.301$ ,  $se = 0.069$ ,  $p < .001$ ), prompting further analysis to confirm the presence of an invertedly U-shaped relationship. For this purpose, an additional regression analysis was conducted as part of Model 4. This analysis reveals a significant negative effect of BGD squared on ESG performance ( $b = -0.301$ ,  $se = 0.069$ ,  $p < .001$ ). These findings suggest that an invertedly U-shaped relationship is likely to exist but additional tests are necessary to verify its robustness (Haans et al., 2016).

The significance of the invertedly U-shaped relationship was assessed using Lind and Mehlum's (2010) three-step procedure. The first step involved Sasabuchi's (1980) test, which confirmed the existence of an invertedly U-shaped relationship between the two variables ( $p < .001$ ). In the second step, the extreme point was

TABLE 2 Descriptive statistics and correlations.

	Mean	Std. dev.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) ESG performance	55.829	18.801	1										
(2) Dynamic CEO capabilities	24.921	11.595	.140***	1									
(3) Board gender diversity	22.399	10.026	.409***	.064*	1								
(4) Firm age	70.655	46.900	-.053 <sup>†</sup>	-.037	-.008	1							
(5) Firm size	9.398	1.373	.590***	.172***	.262***	-.039	1						
(6) Firm performance	0.194	0.280	.059 <sup>†</sup>	.067*	.027	-.089**	.034	1					
(7) R&D intensity	0.555	0.515	-.089**	-.013	-.057 <sup>†</sup>	-.005	-.192***	.108***	1				
(8) Slack resources	1.447	1.121	-.316***	.060*	-.224***	.027	-.528***	-.041	.441***	1			
(9) Leverage	5.947	32.824	-.139***	-.047	-.064*	.053 <sup>†</sup>	-.204***	-.041	-.024	.077**	1		
(10) CSR sustainability committee	0.524	0.500	-.025	.007	.006	.173***	-.032	-.042	-.013	.044	.108***	1	
(11) Board diversity policy	0.893	0.309	.055 <sup>†</sup>	.026	.046	.043	-.006	-.004	-.010	.019	.000	.142***	1
(12) Board size	10.102	2.787	.340***	.096**	.165***	-.033	.379***	.048	-.049	-.198***	-.088**	.040	.020
(13) Board independence	83.943	9.462	.288***	-.044	.196***	.002	.118***	.026	-.080**	-.123***	-.030	-.006	.018
(14) Board tenure	8.881	3.536	-.121***	.300***	-.041	-.005	-.088**	.172***	.025	.220**	-.005	-.001	.010
(15) Board affiliations	0.929	0.454	.383***	-.039	.269***	.014	.385***	-.032	-.022	-.248***	-.103***	.030	.013
(16) Board functional background	58.101	17.714	-.078*	-.066*	-.036	.005	-.127***	-.030	.045	.129***	.081**	.007	-.040
(17) Board remuneration	2.673	2.548	.170***	.040	.083**	-.001	.246**	.004	-.001	-.095**	-.064*	.013	-.033
(18) Number of board meetings	7.692	3.502	.105***	-.085**	.077*	-.019	.082**	-.060*	.028	-.075*	-.019	.003	-.007
(19) Board meeting attendance	79.895	9.499	.282***	.046	.162***	-.014	.225***	.050	-.089**	-.190***	-.046	-.020	-.007
(20) CEO duality	0.669	0.471	.080**	.209***	.114***	.000	.227***	.098**	-.114***	-.093**	-.076*	.023	.023
(21) CEO age	56.181	6.540	.010	.001	.004	.107***	-.007	.026	.010	.014	.012	.023	-.007
(22) CEO gender	0.054	0.227	-.051 <sup>†</sup>	-.023	-.027	-.041	-.037	-.001	-.023	.004	.004	.033	.031
(23) Management compensation	30.092	73.339	.089**	.020	.063*	-.007	.163***	-.030	.029	-.086**	-.034	.030	.007
(24) Sustainability compensation incentives	0.242	0.428	.263***	-.043	.132***	-.012	.154***	-.045	-.044	-.141***	.010	.034	-.014

Note: Number of observations = 1,083; number of groups = 322.

Abbreviations: CEO, chief executive officer; CSR, corporate social responsibility; R&D, research and development.

<sup>†</sup> $p < .10$ .

\* $p < .05$ , \*\* $p < .01$ , and \*\*\* $p < .001$ .



TABLE 2 (Continued)

	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
(1) ESG performance													
(2) Dynamic CEO capabilities													
(3) Board gender diversity													
(4) Firm age													
(5) Firm size													
(6) Firm performance													
(7) R&D intensity													
(8) Slack resources													
(9) Leverage													
(10) CSR sustainability committee													
(11) Board diversity policy													
(12) Board size	1												
(13) Board independence	.147***	1											
(14) Board tenure	-.028	-.133***	1										
(15) Board affiliations	.280***	.206***	-.342***	1									
(16) Board functional background	-.101***	-.020	-.003	.059 <sup>†</sup>	1								
(17) Board remuneration	.204***	.040	.015	.117***	-.057 <sup>†</sup>	1							
(18) Number of board meetings	.067*	.054 <sup>†</sup>	-.122***	.073*	.015	.105***	1						
(19) Board meeting attendance	.112***	.095***	-.039	.110***	-.093**	.051 <sup>†</sup>	.034	1					
(20) CEO duality	.096**	-.051 <sup>†</sup>	.265***	-.032	-.037	.086**	-.039	.039	1				
(21) CEO age	-.020	-.007	-.060 <sup>†</sup>	.031	.037	.017	-.009	.004	-.017	1			
(22) CEO gender	-.023	-.038	.069*	-.027	-.004	-.010	.004	-.035	-.004	.006	1		
(23) Management compensation	.092**	.021	-.031	.090**	-.058 <sup>†</sup>	.719***	.125***	.026	.049	-.017	-.018	1	
(24) Sustainability compensation incentives	.078*	.101***	-.083**	.077*	.011	.006	.043	.060*	.022	.002	.026	.013	1

Note: Number of observations = 1,083; number of groups = 322.

Abbreviations: CEO, chief executive officer; CSR, corporate social responsibility; R&D, research and development.

<sup>†</sup> $p < .10$ .

\* $p < .05$ , \*\* $p < .01$ , and \*\*\* $p < .001$ .

TABLE 3 Regression results.

ESG performance	Model 1		Model 2		Model 3		Model 4	
	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error
Study variables								
Dynamic CEO capabilities			.121**	0.045	.147**	0.046	.121**	0.043
Board gender diversity			.301***	0.069	.400***	0.057	1.128***	0.136
Board gender diversity <sup>2</sup>							-.016***	0.002
Interactions								
Dynamic CEO capabilities x board gender diversity					.025**	0.009		
Dynamic CEO capabilities x board gender diversity <sup>2</sup>					-.001***	0.000		
Control variables								
Firm age	.481	0.373	.506	0.358	.492	0.349	.583	0.355
Firm size	6.373***	0.560	6.084***	0.563	5.945***	0.535	5.798***	0.525
Firm performance	4.316	3.517	4.091	3.114	3.731***	2.949	4.129	2.846
R&D intensity	-.782	1.550	-.999	1.438	-1.024	1.377	-1.317	1.432
Slack resources	.829	0.608	1.150 <sup>†</sup>	0.597	1.270*	0.600	1.217*	0.600
Leverage	-.017 <sup>†</sup>	0.010	-.016 <sup>†</sup>	0.009	-.015*	0.008	-.018*	0.009
CSR sustainability committee	1.842	2.040	1.751	2.064	1.418	2.100	1.553	1.989
Board diversity policy	6.930**	2.685	6.068*	2.570	6.183*	2.583	6.335*	2.493
Board size	.628	0.444	.551	0.448	.427	0.407	.388	0.385
Board independence	.305***	0.060	.271***	0.056	.273***	0.056	.224***	0.052
Board tenure	.090	0.166	-.126	0.176	-.049	0.169	-.002	0.162
Board affiliations	4.743***	1.227	3.763***	1.169	3.253**	1.175	3.463**	1.132
Board functional background	-.024	0.030	-.022	0.030	-.032	0.029	-.032	0.029
Board remuneration	.299	0.217	.313	0.223	.264	0.228	.190	0.214
Number of board meetings	.259 <sup>†</sup>	0.133	.223 <sup>†</sup>	0.122	.204 <sup>†</sup>	0.121	.216	0.120
Board meeting attendance	.244***	0.051	.216***	0.050	.218***	0.050	.227***	0.050
CEO duality	-1.052	1.172	-1.738	1.116	-2.172 <sup>†</sup>	1.113	-1.995	1.102
CEO age	.146	0.128	.143	0.117	.122	0.115	.163	0.115
CEO gender	1.905	3.301	1.621	3.024	1.193	3.113	.359	2.909
Management compensation	-.014*	0.006	-.015*	0.006	-.014*	0.006	-.012**	0.006
Sustainability compensation incentives	8.087***	1.167	7.567***	1.109	7.566***	1.120	7.509***	1.097
Constant	-113.839***	27.772	-112.552***	26.972	-110.042***	26.358	-120.430***	26.605
R <sup>2</sup>	.475***		.514***		.525***		.536***	
R <sup>2</sup> <sub>adjusted</sub>	.465***		.503***		.514***		.525***	

Note: Fixed-effects panel data regression with heteroscedasticity-robust standard errors; number of observations = 1,083; number of groups = 322.  $p \leq .001$ .

Abbreviations: CEO, chief executive officer; CSR, corporate social responsibility; R&D, research and development.

<sup>†</sup> $p < .10$ .

\* $p < .05$ , \*\* $p < .01$ , and \*\*\* $p < .001$ .

determined at 35.364. Finally, the 95% confidence interval was calculated using Fieller's standard errors, yielding a range of [34.156; 43.120]. As the extreme point falls within the 95% confidence interval, the results establish a robust invertedly U-shaped relationship

between BGD and ESG performance. Specifically, the findings indicate that an increase in BGD enhances ESG performance up to the point at which the board is composed of more than 35.36% women directors. Beyond this threshold, a higher proportion of female

directors in the boardroom has a detrimental effect on ESG performance, reversing its initial advantage. The implications of these findings are discussed in the following section.

## 5 | DISCUSSION, CONTRIBUTIONS, AND LIMITATIONS

### 5.1 | Discussion

In the current business landscape, achieving high ESG performance has become increasingly imperative for corporations (Delgado-Ceballos et al., 2023; Jebe, 2019; Liang & Li, 2023). Due to the complexities of ESG, managers must address different demands from various stakeholder groups, realize the commercial potential of ESG investments, and cope with the increasing demands of ESG investing (Bazel-Shoham et al., 2023; De Masi et al., 2021; Issa, 2023; Tagliatalata et al., 2023). Against this backdrop, this study adopted a multi-theoretical perspective to examine the role of CEOs' dynamic capabilities for ESG performance. As board composition is highly relevant in the ESG context (de Masi et al., 2021; He & Jiang, 2019; Manita et al., 2018), BGD was proposed to influence the potential of CEOs' dynamic capabilities to drive ESG outcomes.

In answering the first research question, this study adopted a micro-level perspective on ESG. Its findings provide valuable evidence for the importance of CEOs for ESG performance, suggesting that CEOs with strong DCCs are more likely to prioritize ESG practices. CEOs with sufficient skills in dynamic capabilities can efficiently recognize the significance of ESG issues and take proactive measures to address them.

The finding that CEOs play a critical role in prioritizing ESG practices aligns with the growing recognition of the CEO's influence within organizations. As the firm's single most influential decision-maker, CEOs are responsible for determining the organization's direction and making critical decisions that impact its long-term sustainability and success (Barker & Mueller, 2002; Quigley & Hambrick, 2015). By actively considering and integrating ESG practices into their decision-making, CEOs demonstrate their commitment to meeting stakeholder demands and aligning business activities with broader societal and environmental goals.

Furthermore, the results imply that CEOs with strong dynamic capabilities possess the necessary skills to identify, implement, and transform ESG strategies. This ability is essential as ESG practices are multifaceted and require a comprehensive approach encompassing various aspects of the organization's operations, supply chain, and stakeholder engagement (de Masi et al., 2021; Halbritter & Dorfleitner, 2015; Velte, 2016). CEOs with the skills to navigate and transform these strategies effectively are more likely to foster positive change and achieve meaningful ESG outcomes.

In answering the second research question, this study examines the critical role of BGD in the relationship between DCCs and ESG performance. The results reveal that the ESG benefits derived from DCCs are contingent on the level of BGD. Initially, the presence of

female directors enhances the positive relationship between DCCs and ESG performance due to their benefits for sustainability and responsible business practices within the organization, including more heterogeneous perspectives, greater accountability, and stakeholder orientation, as found in previous research (e.g., Issa, 2023; Kyaw et al., 2022; Nadeem, Bahadar, et al., 2020; Post et al., 2015).

The findings reveal a novel threshold effect. After reaching a certain level of BGD, approximately 35% or four female directors, the positive association between DCCs and ESG performance diminishes. This suggests that increasing BGD beyond this threshold reduces the ESG benefits associated with DCCs.

To explain these counteracting mechanisms, two factors may come into play. First, the initial positive impact of female boardroom representation can be attributed to the diverse perspectives and experiences that women bring to the decision-making process (Chen, Crossland, & Huang, 2016; Croson & Gneezy, 2009; Pletzer et al., 2015). Their stakeholder orientation and long-term perspective contribute to more comprehensive assessments of ESG risks and opportunities (Kyaw et al., 2022; Laique et al., 2023; McGuinness et al., 2017). On the other hand, when BGD exceeds a certain threshold, there may be diminishing returns or challenges associated with managing a more diverse board. Factors such as communication dynamics, group cohesion, and efficiency of decision-making processes may be reduced by increasing female boardroom participation (Adams & Ferreira, 2009; Ahern & Dittmar, 2012; Burgess & Tharenou, 2002; Lau & Murnighan, 1998; Li & Hambrick, 2005; Pletzer et al., 2015). Therefore, it is crucial to balance board composition to leverage the benefits of diversity without encountering potential challenges that may arise from an imbalanced representation.

### 5.2 | Theoretical contributions

This study offers several contributions to theory by providing valuable insights into the relationship between CEOs, BoDs, and ESG. Its findings generally contribute to the existing literature by examining the role of DCCs in enhancing ESG performance contingent on the level of BGD.

This study advances the theories of dynamic managerial capabilities (Adner & Helfat, 2003) and upper echelons (Hambrick & Mason, 1984) within the institutional (DiMaggio & Powell, 1983; Scott, 2008) and stakeholder theory frameworks (Carroll, 1991; Clarkson, 1995). Its findings demonstrate that CEOs' individual-level capabilities play a significant role in the transformed context of ESG performance. Research on dynamic managerial capabilities generally supports the notion that managers are critical for strategic change owing to the adaptability benefits of strong dynamic managerial capabilities (e.g., Heubeck, 2023b; Holzmayer & Schmidt, 2020; Jammulamadaka, 2020), while research on upper echelons shows that the unique characteristics of top-level executives materialize in distinct organizational strategies (e.g., Schilke, 2014; Schilke et al., 2018). However, this is the first study to analyze the impact of CEOs' dynamic managerial capabilities on firms' ESG performance.

Because this study analyzes DCCs from a holistic perspective and demonstrates that these capabilities are critical for ESG performance, it presents an up-to-date analysis of both dynamic managerial capabilities and upper echelons theory in the context of growing institutional pressures toward greater sustainability. Therefore, this study adds valuable evidence to the micro-level stream in the management literature (e.g., Aguinis et al., 2022; Felin et al., 2015; Foss, 2021) and corroborates the theoretical assumption that microfoundational research could benefit from the integration of upper echelons theory (Arndt et al., 2022; Bendig et al., 2018; Felin et al., 2015).

Relatedly, this study provides a stakeholder perspective on the theories of dynamic managerial capabilities and upper echelons. Its findings advance the current understanding of the ESG performance benefits of DCCs, thereby departing from the focus on the financial benefits of these capabilities as contained in a shareholder perspective (e.g., Adner & Helfat, 2003; Arrfelt et al., 2015; Sirmon & Hitt, 2009).

Furthermore, this study advances an in-depth understanding by demonstrating a complex interaction of BGD with DCCs to influence ESG performance. Initially, BGD accentuates the ESG performance benefits of DCCs, which aligns with gender socialization and diversity theories (Cucari et al., 2018; Glass et al., 2016; Issa, 2023; Nadeem, Bahadar, et al., 2020). Thus, this study supports research arguing that women directors bring different skills, experiences, and perspectives to the boardroom, benefitting decision-making processes (Buallay et al., 2022; Issa et al., 2022; Nadeem, Bahadar, et al., 2020). This study transfers existent research to the context of DCCs, corroborating the notion that female directors prioritize sustainability in their decision-making, leading to increased ESG performance (e.g., Bazal-Shoham et al., 2023; Issa & Zaid, 2023; Manita et al., 2018; Nadeem, Bahadar, et al., 2020).

At the same time, this study reveals that when BGD diversity exceeds the threshold of approximately 35% female directors, it decreases the benefits of DCCs for ESG performance. These findings provide a new perspective on critical mass theory (Kanter, 1993), opposing research that finds that female directors need to exceed a certain threshold to overcome their token status and provide benefits to the firm (e.g., Konrad et al., 2008; Schwartz-Ziv, 2017; Torchia et al., 2011). This study suggests that there may be an optimal level of BGD, after which its positive effect on ESG performance reverses. This finding aligns with research that accentuates the performance detriments of increasing gender diversity owing to, for example, the reduction of efficient group functioning (Lau & Murnighan, 1998; Li & Hambrick, 2005; Pletzer et al., 2015), the appointment of directors based on their demographic characteristics rather than their qualifications (Adams & Ferreira, 2009; Ahern & Dittmar, 2012; Ferreira, 2010), or the potential over-monitoring of female directors (Chen, Ni, & Tong, 2016; Laique et al., 2023; Lim et al., 2019).

This study contributes to the literature by demonstrating that DCCs are critical for achieving ESG performance. Further, its findings emphasize that BGD is a critical factor of board composition in the context of ESG performance, as it influences the potential of capable CEOs to drive ESG outcomes. Therefore, this study contributes to the

broader academic discourse on the antecedent factors of ESG-compliant behavior and their contingencies. It highlights the potential conflicts and challenges associated with BGD and accentuates that firms must carefully manage these tensions to leverage the ESG performance benefits of DCCs.

### 5.3 | Managerial implications

This study offers significant implications for organizations to improve their ESG performance, as summarized in Table 4.

On the one hand, these implications relate to the CEOs' crucial role in driving ESG initiatives. First, the findings urge boards to empower and support capable CEOs to prioritize and implement ESG strategies. Second, they highlight the significance of developing and nurturing dynamic capabilities among top-level executives. Firms should invest in training programs that enhance these capabilities to navigate and address ESG issues. Third, firms must foster a culture that promotes sustainability, transparency, and accountability. Encouraging and incentivizing employees to actively contribute to reaching ESG targets can be achieved through increased cross-functional communication and collaboration, training, and recognition programs. By investing in leadership development and cultivating organizational values of sustainable and responsible business practices, organizations can empower their CEOs to prioritize and implement ESG strategies. Fourth, this study underscores the importance of selecting and retaining highly skilled CEOs who can effectively contribute to ESG performance. Boards should carefully assess the skill level of potential CEOs, considering their track record in driving sustainability initiatives

**TABLE 4** Summary of practical implications.

Implications for CEOs' dynamic capabilities	Implications for board composition
1. Empower and support capable CEOs	1. Thoroughly evaluate board composition to balance between board gender diversity and effective decision-making
2. Develop and nurture top managers' dynamic capabilities	2. Carefully consider board gender makeup to circumvent possibly decreased group cohesion and communication that may deter decision-making processes
3. Foster a culture of sustainability, transparency, and accountability within the organization	3. Monitor and adjust board composition as needed to address sustainability challenges
4. Select and retain highly skilled CEOs	
5. Support the continuous growth of CEOs through, for example, coaching and training	

and their ability to handle complex ESG challenges. Additionally, organizations should prioritize succession planning and search for successors with the necessary skills and mindset to enhance ESG performance. Lastly, organizations should support the continuous growth of their CEO by offering coaching, exposing them to best practices in the field, and encouraging them to participate in sustainability-related workshops or conferences. These efforts ensure that ESG remains a top management priority and that CEOs possess the necessary skills to realize ESG strategies.

On the other hand, this study also has significant management implications regarding the gender composition of the board. The findings show that firms should carefully consider the composition of their board, striving for a balance between gender diversity and effective decision-making. The analysis revealed that after a certain level of BGD, around 35% or four women directors, increasing female participation harms ESG performance. Based on these findings, this study suggests that while BGD can benefit ESG, firms are advised to carefully consider their board's gender makeup to circumvent decreased group cohesion and communication that lead to inefficient decision-making processes and nonfunctional conflicts. Therefore, it is crucial to balance gender diversity and board effectiveness to ensure optimal ESG performance and leverage DCCs. Finally, in light of the complex relationships between DCCs, BGD, and ESG performance, managers should regularly assess the composition and dynamics of the board. By monitoring the impact of BGD on ESG performance and adjusting board composition as needed, organizations can maintain a strategic advantage in addressing sustainability challenges and maximizing their ESG performance.

## 6 | CONCLUSION

This study examined how CEOs' dynamic capabilities relate to firms' ESG performance and whether this relationship is contingent on BGD as a critical component of board composition. Based on a multi-theoretical approach, this study leveraged a unique dataset of 332 manufacturing firms from the S&P 900 index between 2016 and 2019.

The study's findings demonstrated that strong DCCs are critical micro-level facilitators enabling firms to navigate institutional pressures toward greater sustainability. This is the first empirical evidence substantiating the facilitative effect of DCCs on ESG performance. Taken together, these findings address the research gap concerning the micro-level antecedents of ESG performance.

This study also contributes novel insights to the literature on the contingent role of board composition. The findings revealed that BGD moderates the relationship between DCCs and ESG performance. In line with gender socialization and diversity theories, the results indicated that an increase in BGD initially enhances the impact of DCCs on ESG performance. However, beyond a certain threshold, BGD was found to hinder ESG performance. These findings present a fresh perspective on Kanter's (1993) critical mass theory, which suggests that women need

to surpass a specific percentage or number of directors to overcome marginalization and positively influence team performance (also see, e.g., Konrad et al., 2008; Schwartz-Ziv, 2017; Torchia et al., 2011).

This study addressed two significant gaps in the existent research: First, it elucidates the relationship between CEOs' dynamic capabilities and firms' ESG performance; second, it delves into the contingent role of BGD as a moderator of this relationship. Taken together, this is the first study to advance managers' dynamic capabilities to the context of ESG performance and portray a nuanced understanding of this relationship by considering BGD as a critical contingency factor. Altogether, this study brings attention to the intricate balance organizations need to strike in managing gender diversity and its influence on ESG performance. It emphasizes the importance of carefully navigating the tension between promoting gender diversity and harnessing the dynamic capabilities of CEOs to drive positive ESG outcomes. By effectively leveraging these factors, organizations can unlock the full potential of their ESG initiatives.

## 7 | RESEARCH LIMITATIONS AND RECOMMENDATIONS

The limitations of this study offer several recommendations for future research. First, this study adopted a micro-level perspective on ESG performance through the lens of DCCs. Future research could explore additional factors or contextual variables influencing the relationship between CEOs and ESG practices. These might include CEO-related variables such as awareness of sustainability issues, stakeholder orientation, or risk propensity. Second, future research could also study the impact of CEO succession and board dynamics on ESG performance to provide further insights into the broader governance aspects of sustainable decision-making. Third, further research could explore additional factors contributing to the observed threshold effect and examine the specific dynamics at play when BGD exceeds the threshold. Fourth, investigating the interaction effects of other board diversity dimensions, such as ethnic and cultural diversity, could provide a more comprehensive understanding of how different diversity factors interact to shape the relationship between DCCs and ESG performance. Fifth, this study employed gender as a proxy for underlying psychological and behavioral traits that may lead to stereotyping or overgeneralization. Future research is needed to develop a more inclusive and comprehensive method to assess individual characteristics rather than relying solely on gender as the defining factor. Finally, the study focused on S&P 900 manufacturing firms, which may limit the finding's generalizability to other industries or companies. Therefore, future research is needed to test these causal mechanisms in other industries, countries, cultural contexts, or regulatory environments.

### AUTHOR CONTRIBUTIONS

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.



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## CONFLICT OF INTEREST STATEMENT

The author declares no relevant financial or nonfinancial conflict of interest to disclose. He certifies that he has no affiliations with or involvement in any organization or entity with any financial or nonfinancial interest in the subject matter or materials discussed in this manuscript. The author has no financial or proprietary interest in any material discussed in this article.

## DATA AVAILABILITY STATEMENT

The datasets generated and/or analyzed during the current study are available from the author upon reasonable request.

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