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**Unpacking the role of digital dynamic capabilities in ESG performance: A social
exchange perspective on organizational trust and identification**

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Unpacking the role of digital dynamic capabilities in ESG performance: A social exchange perspective on organizational trust and identification

Abstract

This study examines the role of digital dynamic capabilities (DDCs) in enhancing ESG performance, integrating insights from social exchange theory (SET). By conceptualizing organizational trust and organizational identification as key antecedents of DDCs, we propose that firms fostering trust-based and identification-driven environments are more effective in leveraging digital transformation to advance sustainability initiatives. Utilizing a two-wave survey of 257 firms, we employ structural equation modeling to test our hypotheses. Findings reveal that organizational trust and identification positively influence DDCs, with DDCs serving as a partial mediator in the relationship between organizational trust and ESG performance. Moreover, organizational identification exhibits a direct effect on ESG performance rather than operating through DDCs. These results underscore the contingent role of digital transformation in sustainability strategies, emphasizing that trust and digital readiness are essential enablers of corporate ESG outcomes. The study contributes to both SET and dynamic capability perspectives by demonstrating how relational capital, when combined with digital adaptation mechanisms, facilitates ESG success.

Keywords: dynamic capabilities; organizational trust; organizational identification; ESG performance; social exchange theory

1. Introduction

In recent years, ESG (environmental, social, and governance) performance has become a critical concern for firms and society alike (Eccles et al., 2014; Khan et al., 2016). No longer perceived merely as an ethical responsibility, ESG is now recognized as a fundamental driver of long-term financial performance, strategic direction, and competitive advantage (Ioannou and Serafeim 2015). With sustainability rising on the agendas of investors, regulators, and consumers, understanding how firms manage and disclose their ESG initiatives has become increasingly important (Fatemi et al., 2018). This indicates that investigating firms' ESG performance, is not only timely, but also essential for both academic research and practical management decision-making (Chen et al., 2018).

To achieve superior ESG performance, firms must build organizational capabilities that allow them to respond quickly and effectively to evolving stakeholder expectations and regulatory pressures (Warner & Wäger, 2019). In this context, 'dynamic capabilities' (DCs), or the ability of firm to integrate, build, and reorganize internal and external competences, are essential for firms to maintain a competitive advantage in a rapidly changing environment and function as a catalyst for enabling firms to seize new opportunities, respond to threats, and pursue continuous innovation (Park and Xiao 2020; Winter 2003). Building on this foundation, the development of digital technologies has given rise to digital dynamic capabilities (DDCs), a new and increasingly vital form of DCs (Mele et al. 2024; Zia et al. 2023). Unlike traditional DCs, which focus broadly on reconfiguration and renewal, DDCs specifically capture the routines and competences required to leverage digital technologies in order to sense market shifts, design new digitally enabled business models, and enhance operational efficiency (Witschel et al. 2019). In this sense, DDCs represent the digital-era evolution of DCs, extending the classic framework of sensing, seizing, and reconfiguring (Warner and Wäger 2019) into the domain of digital transformation.

Against this backdrop, and despite growing scholarly attention, three critical gaps remain. First, the role of DDCs in advancing ESG performance has been largely ignored. Existing research overwhelmingly associates DDCs with innovation and digital competitiveness (Mele et al., 2024; Warner & Wäger, 2019; Zia et al., 2023), but we do not know whether and how these capabilities can enable firms to meet environmental and social obligations (Lee et al. 2024). This omission is striking given that ESG performance is now a critical determinant of legitimacy and long-term resilience. Instead, we argue that DDCs, as a unique form of DCs, should not only be seen as levers for efficiency and market responsiveness, but also as enablers of corporate sustainability. By theorizing this link, we shift the debate on dynamic capabilities toward the strategic challenge of embedding ESG into the digital transformation journey. Also, by theorizing how DDCs can function as enablers of ESG outcomes, we demonstrate that even firms with limited prior digital or sustainability capabilities can make meaningful progress toward achieving their ESG goals.

Second, the antecedents of DDCs remain under-theorized. Existing research tends to conceptualize DDCs primarily as technical or structural assets, emphasizing digital infrastructures, IT alignment, or process reconfiguration (e.g., Witschel et al., 2019; Warner & Wäger, 2019). This techno-centric view risks overlooking the social and relational foundations that make the development of such capabilities possible. In general, the DCs do not emerge in a vacuum; they are enacted through organizational routines shaped by trust, identity, and shared meaning (Eisenhardt and Martin 2017; Teece 2007). Yet, scholarship on DDCs has paid little attention to how *organizational trust* (the confidence employees place in managerial intentions and fairness) (Schoorman et al. 1996) and *organizational identification* (the degree of employees' sense of belonging and alignment with organizational values) can underpin the possession of DDCs. Indeed, we argue that these two social constructs are fundamental in this regard as they condition the willingness of employees to engage in

knowledge sharing, experimentation, and adoption of new digital practices (Lines et al. 2005; Morgan and Zeffane 2003). Without this social infrastructure, investments in developing DDCs risk producing superficial “capabilities on paper” rather than enacted routines that genuinely enhance effective adaptability (Helfat and Peteraf 2015; Zahra et al. 2006).

To address these research gaps, this paper aims to examine the effect of organizational trust and organizational identification on a firm’s DDCs, which, in turn, can enhance the firm’s ESG performance. To this end, we employ social exchange theory (SET) as our overarching theoretical lens in this process. SET provides a useful theoretical framework for understanding how organizational trust and organizational identification promote DDCs. According to SET, organizations that build trust-based relationships and encourage strong identification create environments in which employees are more engaged in learning, collaboration, and innovation (Fainshmidt and Frazier 2017). Thanks to this dynamic process, DDCs are developed, which eventually contributes to improving the firm’s ESG performance.

To further articulate this focus, we set our research questions as: 1) do organizational trust and organizational identification influence DDCs?; 2) what is the role of DDCs in the relationships between organizational trust, organizational identification, and ESG performance?; and 3) do DDCs boost a firm’s ESG performance? We address these questions using a two-wave survey of 257 global firms recognized for their ESG performance.

Overall, the study offers several theoretical contributions. Importantly, we extend the DCs perspective by theorizing DDCs as unique enablers of corporate sustainability and ESG performance. Existing work overwhelmingly associates DDCs with innovation, competitiveness, and agility (Warner & Wäger, 2019; Mele et al., 2024; Zia et al., 2023), but rarely explores how they contribute to environmental and social outcomes. By reframing DDCs not only as levers of market responsiveness but also as mechanisms that help firms

embed ESG objectives into digital transformation strategies, we advance a more holistic understanding of DCs (Teece, 2007; Helfat & Peteraf, 2015). In doing so, we broaden the scope of DC theory into the sustainability domain by offering novel conceptual and empirical insights to this domain (Buzzao and Rizzi 2021; Correggi et al. 2024).

In addition, this study expands the scope of the application of SET by documenting the role of organizational trust and organizational identification. Unlike previous studies that focus on analyzing the effect of interaction and relationship formation between individuals or within an organization on the attitudes and behavior of organization members, this study extends SET as a useful theoretical framework for elucidating a firm's macro strategy and sustainability management performance. It does so by verifying that organizational trust and identification function as pivotal variables in the process of depicting a serial relationship between DCs and a firm's ESG performance. Also, the process in which employees trust and identify with the organization fosters DDCs, thereby strengthening ESG performance, can be seen as an example of applying the core concepts of SET at the level of corporate strategy. These findings suggest that trust and identification at the organizational level go beyond simply nurturing internal collaboration and innovation and can also have a significant effect on sustainability and ESG performance. Through these research contributions, this study is expected to help provide an integrated understanding of SET in a more comprehensive context.

Finally, we advance the contextual scope of capability research. Unlike previous empirical studies that mainly focused on firms in developed countries (e.g., Autio et al., 2018; Teece, 2018), this study utilized a global sample of companies, including emerging market multinational enterprises (EMNEs) operating under varied market conditions. This approach allows us to capture how DDCs contribute to ESG performance in a variety of institutional environments, and helps fill the research gap left by prior studies that have primarily focused

on advanced countries. This global and cross-sectoral perspective broadens the relevance of our findings by suggesting that DDCs can be a strategic enablers of ESG performance regardless of a firm's current level of digital maturity or industry focus. Thus, the novelty of this study lies in its integration of the concept of DDCs into the context of ESG performance, exploring how these capabilities contribute to improving corporate sustainability performance. In particular, by utilizing data from global companies recognized for their ESG performance, this study extends existing understanding of the role that digital resources play in driving sustainability efforts across industries and regions.

2. Theoretical background and hypothesis development

In this study, we build on the SET to explore how organizational trust and identification enhance a firm's DDCs, which, in turn, contribute to ESG performance. The SET provides a well-established framework for understanding the reciprocal nature of relationships within organizations and how they influence organizational outcomes (Cropanzano and Mitchell 2005; Islam et al. 2022; Talukder and Barner-Rasmussen 2024).

Social exchange is commonly defined as “voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others” (Blau 1964: 91). A core principle of SET is that these exchanges are shaped by norms, rules, or principles that guide the exchange process (Cropanzano and Mitchell 2005), establishing a “normative definition of the situation that forms among or is adopted by the participants in an exchange relation” (Emerson 1976: 351). Individuals assess potential benefits (e.g., support, status, compensation, and information) and costs (e.g., time, effort, and psychological investment) when engaging in exchanges (Das and Teng 2002; Luo 2007).

Another key tenet of SET is that social exchanges are inherently interdependent and contingent upon the responses and actions of exchange partners. Resources are exchanged through processes of equity (Lind and Tyler 1988; Walker and Pettigrew 1984), reciprocity

and trust, which serve as foundational principles for maintaining relationships (Cropanzano et al. 2017; Cropanzano and Mitchell 2005; Dyer and Chu 2011). Without sufficient trust and reciprocity, social exchanges can become imbalanced, leading to relationship breakdowns, dissatisfaction, and disengagement. For instance, when employees show strong commitment, they expect organizational support in return. Similarly, when organizations provide meaningful support such as development opportunities, fair compensation, or a supportive work environment, employees are more likely to respond with increased effort, dedication, and loyalty. Within this framework, SET helps explain how mutual exchanges of trust and identification between employees and the organization facilitate the development of DDCs. These social mechanisms promote knowledge sharing, collaboration, and proactive engagement with digital initiatives, thereby enhancing ESG performance.

Building on this logic, we develop a conceptual framework, see Figure 1, that connects organizational trust and identification to a firm's DDCs and ESG performance. The framework presents DDCs, defined as to an organization's ability to sense, seize, and reconfigure digital technologies in response to changing environments (Warner and Wäger 2019; Yeow et al. 2018), as a critical driver of ESG performance. Firms with strong DDCs can sense digital opportunities and threats, seize them by designing digitally enabled business models and transform their operations, thereby enhancing strategic renewal and resilience in turbulent environments. This, in turn, can help these firms to implement sustainable practices, managing stakeholder relationships effectively, and adapting to evolving regulatory and societal expectations.

Together, by fostering organizational trust and identification, firms can enhance their DDCs, ultimately contributing to more successful ESG outcomes. Therefore, this study advances the literature by linking SET with DDCs and ESG performance, shedding light on the role of organizational trust and identification in driving sustainable business strategies in

the digital era.

[Insert Figure 1 about here]

2.1. Organizational trust and digital dynamic capabilities

Trust is commonly defined as “the willingness of a party [*the trustor*] to be vulnerable to the actions of another party [*the trustee*] based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer et al. 1995: 712, added italics). In this research, organizational trust refers to the extent to which employees are willing to place trust in their organizations and to be vulnerable to organizational actions and decision-making processes. Based on this definition, we posit that the degree of organizational trust plays a crucial role in shaping employees’ behavioral intentions, as it reflects their confidence in both the organization’s competence and its benevolent intentions. Accordingly, organizational trust embodies employees’ fundamental belief in a firm’s integrity and decision-making capabilities (Mayer et al. 1995), which is a necessary precondition for their engagement in initiatives involving risk, uncertainty, and change such as digital transformation.

Prior studies have systematically explored the role of organizational trust in facilitating effective business transactions (Nooteboom 2006; Williamson 1993) and its influence on employee-level outcomes, such as job satisfaction, turnover intention, and organizational commitment (Aryee et al. 2002; Doney and Cannon 1997; Morgan and Hunt 1994). Trust has also been linked to increased employee satisfaction (Doney and Cannon 1997; Morgan and Hunt 1994), motivation, and commitment (Aryee et al. 2002; Brockner et al. 1997). While these outcomes reflect the positive interpersonal and organizational climate that trust helps foster, we extend this body of work by theorizing and providing empirical evidence on how organizational trust may contribute to firm-level capability enhancement, particularly in the development of DDCs.

According to SET, trust serves as the foundation for favorable social exchange (Cropanzano and Mitchell 2005; Dirks and Ferrin 2002; Zhang and Liu 2022). In this context, when trust exists, employees are more likely to perceive organizational goals as aligned with their own interests, thereby increasing their willingness to exert discretionary effort and share intangible resources. Building on this premise, we argue that employees' trust in their organizations acts as a key enabler of organizational DDCs (cf. Davis et al., 2000), which are fundamentally dependent on knowledge integration, innovation, and adaptive collaboration across organizational units. More specifically, trust fosters cooperative behavior within organizations (Gulati and Westphal 1999; Williams 2001), enhances motivation (Dirks 1999), and promotes creativity, innovation, and knowledge transfer (Tsai and Ghoshal 1998; Zhang and Liu 2022), all of which are central to building DDCs. When employees trust their organizations, they are more likely, consistent with the principle of reciprocity, to take the initiative and engage in learning behaviors, experimentation, and open knowledge exchange. This includes a greater willingness to share valuable knowledge, skills, and ideas, whether directly or indirectly. Such contributions are essential for resource integration and technological innovation, which together represent key components of successful digital transformation. As a result, organizational trust enhances a firm's ability to sense, seize, and reconfigure its digital resources in response to evolving technological landscapes. From a mechanistic perspective, trust mitigates perceived personal risk associated with change initiatives and reduces psychological resistance to novel digital tools or platforms. Through the lens of reciprocity, trusted employees reciprocate organizational support by actively contributing to shared digital goals. More specifically, in high-trust environments, employees feel psychologically safe to share information, insights, and creative ideas without fear of judgment (Edmondson 1999; Joo et al. 2023). This trust fosters a culture of knowledge sharing and cross-functional collaboration, both of which are critical for sensing and

interpreting emerging digital technologies and navigating shifts in the digital landscape. In addition, organizational trust enhances a firm's ability to seize digital opportunities by reducing perceived interpersonal risk and fostering support for digital initiatives (Bannya et al. 2023; Kong et al. 2025). When employees trust their organization, they are more willing to embrace change, adopt emerging technologies (e.g., AI, big data analytics, blockchain), and experiment with digital solutions. This trust lowers resistance, accelerates resource mobilization, and facilitates faster strategic decision-making in response to identified digital opportunities. Organizational trust enhances a firm's ability to reconfigure digital resources in dynamic environments by fostering a learning-oriented culture where failures are viewed as opportunities rather than blame (Guinot et al. 2013). This supports organizational agility which is crucial for adapting to change and encourages employee engagement during digital transformation. Organizational trust also reduces friction in reallocating digital resources, enabling faster and more flexible responses to shifting priorities (Joo et al. 2023; MacDuffie 2011).

Furthermore, as noted earlier, employees in high-trust organizational environments exhibit greater proactivity and willingness to become vulnerable to their organization's behavior, rely on their organizations and thus support their organizations (Colquitt et al. 2007; Lewicki et al. 1998; Mayer et al. 1995). These organizational processes, in turn, are essential for navigating digital complexity, as they enable firms to reduce internal conflicts, lower communication costs, and more effectively coordinate cross-departmental collaboration. In this way, strong organizational trust cultivates psychological safety and a sense of mutual obligation, encouraging employees to reciprocate through collective engagement, open collaboration, and proactive problem-solving. These trust-driven behaviors foster a more adaptive and resilient organizational environment or culture that is better equipped to share knowledge, embrace change, and take initiative. Such behaviors are

essential for enhancing the firm's agility and responsiveness in navigating digital transformation. As a result, organizational trust serves as a critical enabler of DDCs, strengthening the firm's ability to sense emerging technologies, seize digital opportunities, and reconfigure resources effectively in rapidly evolving environments.

Therefore, organizational trust is not just a cultural environment but a strategic social asset in digital transformation. For example, Under Satya Nadella's leadership, Microsoft shifted from a competitive culture to one rooted in organizational trust and cross-functional collaboration (Jacob Morgan 2024). By promoting open communication, psychological safety, and knowledge sharing, Nadella fostered organizational trust that enabled the rapid development of Azure. This trust-based environment accelerated the integration of AI, data analytics, and cloud capabilities, highlighting the positive role of organizational trust in building digital dynamic capabilities.

In sum, organizational trust acts as a foundational mechanism that fosters employee engagement, facilitates interdepartmental collaboration, and promotes the continuous flow of knowledge and information sharing, all of which are essential processes for developing and enhancing a firm's DDCs. Given the need for organizations to rapidly adapt to new digital technologies, evolving market conditions, and shifting customer demands, organizational trust serves as a pivotal mechanism that facilitates the successful improvement of DDCs. We therefore hypothesize:

Hypothesis 1: Organizational trust is positively associated with digital dynamic capabilities.

2.2. Organizational identification and digital dynamic capabilities

Organizational identification, a critical form of psychological attachment, is generally defined as employees' perception of oneness with or belongingness to their organization (Ashforth et

al. 2008; Mael and Ashforth 1992). Building on the SET logic (Blau 1964), we argue that employees with strong organizational identification are more likely to align their personal goals with organizational norms, and values (Ashforth and Mael 1989), cooperate more fully with organizational strategic agendas, and engage in behaviors that required by the organization to coordinate members' actions (Ashforth and Mael 1989; Dutton et al. 1994). This sense of shared identity and belongings acts as a foundation for social exchange, in which employees are intrinsically motivated to contribute beyond contractual obligations. This alignment fosters increased motivation and commitment, leading employees to actively support and contribute to their organization's goals.

According to the SET, employees' efforts and commitments to their organization are typically influenced by expectations of rewards and reciprocity beliefs (Gouldner 1960). Social exchanges within organizations typically involve unspecified obligations (Blau 1964; Dutta et al. 2023), where employees reciprocate favorable organizational treatment with enhanced engagement and contributions (Karanika-Murray et al. 2015; Srivastava and Singh 2020; Yue 2022). In this regard, we argue that organizational identification, by reinforcing perceptions of mutual investment and loyalty, strengthens these reciprocal exchanges by fostering a sense of duty and shared purpose between employees and their organization. Employees identify the organization's successes and failures as their own, thereby increasing the psychological return on their investments in digital efforts. Employees who strongly identify with their organization are more likely to perceive their contributions as integral to collective success, reciprocate such desirable perceptions and beliefs (i.e., organizational belonging), and, in turn, engage in behaviors that enhance the organization's DDCs.

One key form of reciprocal behavior is employees' active engagement in improving their organization's DDCs. Employees with strong organizational identification are more inclined to make greater personal investments and contribute their knowledge, skills, and

innovative digital solutions to support organizational goals and values. This engagement stems not only from a sense of expected reciprocity but also from a deeper belief that their efforts contribute directly to the organization's success and identity. By applying their domain-specific expertise, operational insights, and contextual understanding to digital transformation initiatives, these employees help shape and tailor digital strategies that are more aligned with actual workflows, user needs, and organizational priorities. This integration of employee knowledge ensures that digital solutions are relevant, effectively adopted, and continuously refined, thereby enhancing the organization's ability to sense opportunities, seize digital innovations, and reconfigure digital resources in a rapidly evolving digital landscape. Ultimately, this process strengthens the firm's DDCs and enables it to remain agile and competitive in a fast-changing technological environment.

Furthermore, strong organizational identification fosters mutually beneficial exchange relationships and enhances intra-organizational cooperation (Schaubroeck et al. 2013). Social exchange relationships are built on trust and reciprocity (Leung et al. 2020; Peng et al. 2014). Employees who feel a strong sense of belonging are more likely to develop trust-based relationships with colleagues and demonstrate a shared responsibility or organizational success (Deery et al. 2006; Maguire and Phillips 2008). This, in turn, broadens the perceived scope of reciprocal obligations to include colleagues and teams, thereby cultivating a collaborative culture that facilitates digital knowledge sharing. This dynamic creates an environment in which employees are more willing to collaborate, share digital-related knowledge, and support one another in leveraging digital tools and strategies (Ho et al. 2012; Ma et al. 2022).

In addition, a strong degree of organizational identification can mitigate competitive tensions between employees, teams, or departments within an organization. Employees who strongly identify with their organization perceive themselves as integral members of a

collective team or entity rather than as individual competitors (Liu et al. 2011). Consequently, they are more likely to prioritize organizational benefits and success over personal or departmental interests. This collective mindset reduces siloed thinking and promotes the sharing of resources and digital insights that may otherwise be withheld. This view fosters a culture of cooperation, knowledge sharing, and joint problem-solving, all of which are essential for enhancing DDCs. By reducing social barriers and competitive tensions, organizational identification facilitates the integration of digital resources and capabilities, further enhancing the organization's DDCs. A notable example is Satya Nadella's transformation of Microsoft's culture during his tenure as CEO, where he shifted the organizational mindset from being "know-it-all" to "learn-it-all," anchored in the core narrative of a growth mindset. By embracing the values associated with a growth mindset, employees were encouraged to view themselves as part of a forward-looking, learning-driven tech company. As a result, employees, especially engineers and cross-functional teams, proactively sensed and explored cloud technologies, seized new opportunities through collaboration, and rapidly reconfigured their capabilities. This cultural shift energized digital innovation and played a pivotal role in making Azure one of the world's leading cloud platforms.

In sum, building upon the SET logic, we propose that organizational identification enhances employees' willingness to engage in knowledge sharing and cooperative behavior by fostering mutual trust, strengthening reciprocity beliefs, and reducing competitive barriers. These mechanisms, rooted in employees' perceived obligations, psychological attachment, and collective identity, directly support the behaviors that influence DDCs. Employees with a strong sense of belonging are more likely to contribute digital expertise, resources, and innovative ideas to assist their colleagues and support their organization as a whole, thereby enabling their organization to effectively integrate and optimize diverse digital resources and

capabilities to enhance organization's DDCs. As employees expect their contributions and commitments to be valued and reciprocated over time, they are further motivated to invest in the organization's digital transformation efforts and support their organization to improve DDCs. Thus, based on the above theoretical arguments and the principles of SET, we hypothesize:

Hypothesis 2: Organizational identification is positively associated with digital dynamic capabilities.

2.3. *Organizational trust and ESG performance*

Drawing insights from the SET, we propose that organizational trust contributes positively to organizational ESG performance. ESG performance captures a firm's commitments and efforts invested in pursuing ESG objectives and engaging and improving ESG practices which are key to assessing the firm's sustainability and social effect (*Gianfrate et al. 2024; Zaheer 2024*) and important standards for a firm's operations that socially conscious investors use to screen potential investments (*Albino-Pimentel et al. 2021; Gianfrate et al. 2024*).

According to SET, the transactions in exchange relationship involve various types of resources (*Blau 1964; Foa and Foa 1980*), and social exchange relationships are based more on unspecified exchanges of resources including acceptance, advice, assistance, and support (*Blau 1964*). In this theoretical context, organizational trust serves as a fundamental condition that facilitates these intangible exchanges. Following this SET argument, if employees receive assistance and support from their organization, these rewarding actions may make employees feel a strong obligation to reciprocate in kind (*Gouldner 1960; Kilroy et al. 2023*), by not only accepting and complying with organizational norms and actions but also investing their personal resources like time, relational networks and ideas to assist and support organizational initiatives, for instance, ESG. Thus, organizational trust facilitates the

reciprocity norm central to SET, motivating employees to replay the organization's goodwill by engaging in meaningful and discretionary efforts that support and benefit long-term ESG outcomes.

To discharge their obligations to the organization, organizational trust may play an important role in these social exchange relationships in organizations (Blau 1964; Cropanzano and Mitchell 2005) because "Since there is no way to assure an appropriate return for a favor, social exchange requires trusting others to discharge their obligations" (Blau 1964: 94). In this regard, organizational trust cultivates employees' confidence in the organization's transparency and integrity, encouraging them to navigate uncertainties and take responsible risks (Colquitt et al. 2007). This trust is rooted in the fundamental belief that their commitments and efforts will be honored and rewarded consistently, even without direct monitoring or reinforcement mechanisms. Such trust-based relationships reduce perceived risk and enhance employees' willingness to invest in voluntary, future-oriented activities such as ESG initiatives that reflect the firm's long-term values.

When employees trust their organization, they expect ethical and responsible decision-making that prioritizes collective and societal well-being over individual gains. Consequently, employees' trust in their organization fosters employees' proactive engagement, active collaboration, and innovation which are key drivers for advancing ESG performance by cultivating and reinforcing a shared commitment to ethical and sustainable practices. This is consistent with SET by demonstrating that trust enhances employees' sense of psychological safety and belonging, motivating them to go beyond transactional expectations and contribute to value creation through ESG engagement. Building on this reasoning, we argue that when employees trust their firms, they are more likely to support and actively engage in their efforts to address ESG challenges. Trust fosters a sense of alignment between employees and the firm's values, leading to greater commitment and proactive participation in ESG-related

initiatives. For example, when employees trust that their firm is genuinely committed to addressing climate change and transitioning to clean, renewable energy, they are more inclined to support and adopt environmentally responsible behaviors. This trust encourages employees to take practical actions such as minimizing waste, reducing energy consumption (e.g., turning off unused equipment, using sustainable materials), and adhering to eco-friendly workplace practices. Moreover, employees who believe in their firm's ESG vision are more likely to champion sustainability initiatives by actively participating in environmental programs and advocating for innovative solutions. This may involve suggesting diverse sustainable alternatives in product design and development, process optimization, and service enhancements, ultimately strengthening the firm's commitment to sustainability and accelerating progress toward achieving its ESG goals.

Taken together, the SET framework suggests that trust is a key driver of voluntary, extra-role behaviors such as ESG contributions, which rely on employees' internal motivation and alignment with organizational values. A notable example is Patagonia, an outdoor clothing company known for fostering strong organizational trust through flexible work policies, profit-sharing, and encouraging employee feedback, open communication, and involvement in decision-making (Qualtrics 2025). These trust-building leadership practices have led employees to actively support Patagonia's environmental goals, such as reducing carbon footprints and using sustainable materials, because they trust the company's values and leadership. To sum up, organizational trust serves as a driving force for employee-driven ESG engagement by inspiring employees not only to comply with existing sustainability ESG practices but also to actively contribute to refining, enhancing and innovating ESG strategies, thereby amplifying the firm's overall ESG performance. Thus, we propose:

Hypothesis 3: Organizational trust is positively associated with ESG performance.

2.4. Organizational identification and ESG performance

As discussed earlier, organizational identification, which is deeply embedded within the SET framework, reflects employees' perceptions of belonging and alignment with a particular organization (Ashforth and Mael 1989; Greco et al. 2022). Prior studies have highlighted the crucial role of organizational identification in fostering organizational commitment, interpersonal trust, and cooperative behaviors (Nakra 2006; Riketta 2005). This sense of attachment and belonging to their firm encourages employees to embrace their firm's core values, goals, and strategic initiatives including those related to ESG performance (cf. Smidts et al. 2001). Under the lens of SET, this identification is more than emotional affiliation, fostering a sense of obligation to reciprocate the organization's support and values, especially those aligned with ESG goals.

Within the SET framework, social exchange relationships are driven by the expectation of mutual benefits and perceived reciprocity between employees and their organization (Cropanzano and Mitchell 2005; Mitchell et al. 2012). Employees who strongly identify with their firm tend to perceive the firm's ESG values and initiatives not as external obligations but as an extension of their own beliefs and responsibilities. This psychological alignment between individual and organizational identity serves as a key mechanism through which employees adopt ESG behaviors, as employees perceive their support and contributions in ESG as both personally meaningful and socially valued within the organization's relational context. This organizational identification fosters a reciprocal relationship where employees are willing to support the firm's ESG goals, engage in sustainability initiatives, and align their behaviors with the firm's long-term vision of achieving ESG goals.

When employees perceive transparent and reciprocal exchanges within their firm through feeling organizational identification, they are more motivated to proactively contribute to the firm's ESG objectives. Strong organizational identification encourages employees to integrate the firm's ESG goals into their own individual beliefs and behaviors,

leading to greater commitment to ESG sustainability. This alignment is enhanced by SET's principle that employees seek to balance the exchange by engaging in discretionary behaviors, such as sustainability engagement, in turn for psychological rewards like identify affirmation and a sense of social belonging. For instance, employees who identify with a firm that prioritizes climate action and resource efficiency are more likely to actively engage in environmental protection behaviors, such as reducing carbon emissions and promoting recycling. This aligns with SET's premise that employees anticipate intangible rewards, such as a sense of belonging, recognition, and shared purpose, when they contribute to organizational goals (Colquitt et al. 2007; Van Dyne and Ang 1998).

Moreover, organizational identification strengthens employees' psychological ownership and a sense of responsibility for enhancing their firm's ESG performance. Employees with high organizational identification do not view their contributions as merely fulfilling job duties but as playing a vital role in the firm's sustainability efforts (Pratt 1998; Tangirala and Ramanujam 2008). Consequently, they are more inclined to align their decision-making and behaviors with the firm's long-term ESG strategies. This mechanism reflects a deeper reciprocity loop within SET, in which the organization's commitment to a socially responsible identity is reciprocated by employees through their personal investment in sustaining that identity through ESG engagement. Prior studies further emphasize the importance of organizational identification in fostering employees' pro-environmental and sustainability behaviors (Carmeli et al. 2017; Cheema et al. 2020; Zafar et al. 2022).

Building on the above-mentioned reasoning, we highlight that organizational identification transforms ESG participation from a formal requirement into a voluntary and value-driven behavior. Employees with a strong sense of organizational identification are more likely to invest additional commitment and effort in supporting their firm's ESG initiatives. For example, Patagonia's environmental mission, "We're in business to save our

home planet”, is reflected in its commitment to eco-friendly innovations, such as using environmental-friendly materials and reducing carbon emissions across its supply chain. To foster employees’ sense of belonging and alignment with the company’s mission and values, Patagonia integrates ESG principles into daily operations and decision-making. It encourages employees to go beyond their formal roles by actively participating in environmental activism and contributing to sustainability efforts. These practices strengthen organizational identification and reinforce a shared sense of purpose. Therefore, employees’ loyalty and strong motivation to enhance ESG performance stem from their perception of reciprocal social exchanges, reinforcing their willingness to contribute to sustainability efforts.

For example, Patagonia’s mission, “We’re in business to save our home planet”, is deeply reflected in its use of eco-friendly materials and efforts to reduce carbon emissions across its supply chain. To foster employee alignment with its values, Patagonia integrates ESG principles into daily operations and encourages employees’ participation in environmental activism (Medium 2017). These practices enhance employees’ organizational identification and a shared sense of purpose. As a result, employees show strong loyalty and motivation to improve ESG performance, driven by a sense of reciprocal commitment to the organization. As a result, organizational identification acts as a driving force for ESG performance improvement, as employees internalize ESG values and proactively engage in practices that enhance ESG performance. Therefore, we hypothesize:

Hypothesis 4: Organizational identification is positively associated with ESG performance.

2.5. Digital dynamic capabilities and ESG performance

Building on the DCs perspective (Barreto 2010; Teece et al. 1997), we further explain how organizational DDCs can influence organizational ESG performance. The fourth industrial

revolution has fundamentally transformed the industrial and business landscape by highlighting the role of digital technologies, such as artificial intelligence (AI), big data analytics, the Internet of Things (IoT), cloud computing, blockchain, as key catalysts of organizational competitive advantages and sustainability development (Goerzen et al. 2024; Luo and Zahra 2023). As dynamic and digital capabilities become more critical for competitive advantages, firms must integrate them into their sustainability strategies to achieve superior ESG performance. This is because digital technologies, when integrated into dynamic capabilities, not only enhance organizational responsiveness and adaptability but also provide firms with mechanisms to reconfigure operations in ways that directly advance ESG objective and support ESG outcomes. As firms navigate this increasingly digital and sustainability-focused business environment and organizational circumstances that give rise to more responsible and sustainable practices and outcomes, the ability to develop and leverage DDCs becomes essential for achieving ESG goals.

DCs have been broadly defined as a firm's "ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece et al. 1997: 516). Essentially, DCs reflect a firm's capacity to leverage its resources and capabilities to adapt to an evolving business landscape. More specifically, DCs are composed of three key organizational capabilities: (1) sensing and shaping emerging opportunities and threats, (2) seizing valuable opportunities, and (3) sustaining competitiveness by enhancing, combining, protecting, and when necessary, reconfiguring both tangible and intangible resources within the firm (Teece et al. 1997: 1319). These fundamental components are particularly relevant in addressing ESG challenges, where firms must continuously monitor evolving sustainability expectations, respond effectively to emerging ESG innovation opportunities, and reconfigure their operations to maintain long-term alignment within ESG principles.

When applied in a digital context, this DCs perspective provides critical insights into

how firms can strategically develop digital transformation capabilities by integrating digital technologies (Warner and Wäger 2019; Zia et al. 2023). Such integration enables firms to rapidly allocate resources and foster responsible and sustainable business practices. By integrating digital technologies into the processes of sensing, seizing, and reconfiguring, DDCs enable firms to identify ESG opportunities and risks more accurately, respond to them more effectively, and continuously adapt their sustainability strategies. As concerns about sustainability continue to grow and digital innovation accelerates, this DDCs perspective argues that firms must adapt, reconfigure, and enhance their DDCs to remain competitive in today's rapidly evolving business landscape. By effectively leveraging DDCs, firms can improve their ESG performance while simultaneously enhancing operational efficiency. In other words, the mechanism linking DDCs to ESG performance lies in their capability to transform digital insights into specific ESG advancements such as more efficient resource use, enhanced stakeholder transparency, and innovative sustainability solutions. This dual benefit can be achieved through the successful integration of digital transformation into business practices to foster a more responsible and sustainable ecosystem by aligning business operations and models with ESG-oriented principles and guidelines.

The DDCs perspective highlights the pivotal role of digital technologies in enabling firms to anticipate and respond proactively to dynamic market environments. By leveraging and integrating digital solutions, firms can optimize resource utilization, enhance transparency, and improve socially responsible decision-making. These mechanisms are core to how DDCs transform into ESG outcomes. This integration not only supports firms in mitigating ESG-related risks but also helps them capitalize on emerging opportunities for sustainability-driven innovation. Moreover, firms can strengthen their ESG performance by incorporating digital technologies into the development, implementation, and transformation of their business models and strategies (Correggi et al. 2024; Karimi and Walter 2015; Teece

2018). For instance, firms can improve environmental sustainability by enhancing digital sensing capabilities through AI and big data analytics, enabling real-time monitoring of carbon emissions. Similarly, blockchain technology can be leveraged to enhance supply chain transparency, ensuring ethical sourcing and fair labor practices. Additionally, firms can optimize their manufacturing processes and organizational structures by implementing AI and big data analytics to improve energy efficiency and reduce environmental waste.

In summary, extending the DCs perspective to the digital landscape, we highlight the critical role of DDCs in driving ESG performance. Through enhanced sensing, seizing, and reconfiguring capabilities enabled by digital technologies and solutions, firms are better equipped to pursue ESG outcomes as dynamic strategic priorities rather than merely fulfilling compliance obligations. Firms with strong DDCs can anticipate and mitigate environmental risks, optimize resource efficiency, and enhance circular economy practices through digital technologies such as AI, big data analytics, and blockchain. They can also promote socially responsible initiatives and improve social sustainability and governance by ensuring supply chain transparency, optimizing workforce conditions, identifying auditing and reporting discrepancies, and enhancing transparent decision-making processes. These mechanisms illustrate how DDCs serve as channels through which digital innovation is transformed into ESG performance. A notable example is Walmart which has attempted to improve ESG performance by sensing, seizing, and reconfigure digital technologies and resources in response to rapidly changing environment. By identifying and seizing emerging technologies such as AI, data analytics, machine learning, and supply chain efficiently, Walmart has successfully improved its ESG performance by tracking customer preferences for sustainable products and rising concerns over carbon emission, reducing food waste, lowering emission through enhanced delivery efficiently, and reconfiguring processes, structures, and cultures to integrate digital innovations, and use blockchain technology to trace food origins, ensuring

food safety and reducing waste.

Walmart has improved its ESG performance by leveraging digital dynamic capabilities, sensing, seizing, and reconfiguring technologies in response to shifting consumer and environmental demands. By adopting AI, data analytics, machine learning, and blockchain, Walmart tracked sustainable product demand, optimized supply chains, reduced waste, and lowered emissions (CoinGeek 2024). These initiatives show how digital capabilities can meaningfully advance ESG goals and help firms achieve better ESG performance. Thus, firms that develop strong DDCs are better positioned to sense ESG-related opportunities and threats, seize sustainable innovations, and transform their business practices to align with more responsible and sustainable ESG-related goals. Therefore, we hypothesize:

Hypothesis 5: Digital dynamic capabilities are positively related to ESG performance.

3. Data and method

3.1. Sample and data collection

To empirically test our hypotheses, we conducted a two-wave survey targeting firms recognized for their strong ESG performance across various countries. Specifically, we identified 500 firms from TIME's World's Most Sustainable Companies of 2024 (<https://time.com/collection/worlds-most-sustainable-companies-2024>).¹ Schneider Electric (Rank 1, Score: 88.86) is a French multinational specializing in energy management and automation solutions. At the other end of the list, CASIO (Rank 500, Score: 52.93) is a Japanese electronics manufacturer known for its watches, calculators, and digital devices.

¹ TIME and Statista list highlights firms with trackable sustainability commitments, high carbon disclosure project (CDP) scores, and alignment with science based targets initiative (SBTi) 1.5°C targets. It rigorously evaluates Scope 1 and 2 emissions, energy consumption, and renewable energy adoption, ensuring sustainability is embedded in business models.

The average score across all 500 companies is 63.44, reflecting a high but varied commitment to sustainability initiatives.

Our data collection process was designed to ensure the temporal ordering of variables while mitigating concerns related to common method variance (CMV). The official websites of the selected firms, as provided on TIME's webpage, were utilized to identify relevant contacts. We directly visited each company's website to locate the department responsible for ESG-related matters and ensured that the survey request was delivered to the most appropriate recipients, specifically targeting managers or higher-level executives. In our outreach, we provided a detailed explanation of the study's purpose and the importance of their participation, emphasizing the confidentiality of responses and the relevance of their insights. The surveys were either distributed via email by the research team or administered in person by trained research assistants. To mitigate concerns related to CMV stemming from single-source data, the second-wave survey was conducted approximately three months after the first wave (Adomako et al. 2023). In the first wave, we distributed surveys to 500 firms to measure key independent variables (i.e., organizational trust and identification) and DDCs. In the first wave (T1), 322 firms responded, of which 314 responses were deemed valid after excluding incomplete or missing data. In the second wave (T2), conducted approximately three months later, we re-contacted 314 firms, receiving 261 responses, of which 257 were deemed valid after excluding responses with significant missing data. Among the 322 valid responses received in the first wave, the initial response rate was 64.4%, and the majority were completed by managers responsible for sustainability strategy, ESG implementation, or corporate planning.

Our sample size of 257 is also appropriate given the model complexity and the estimation technique employed. We used partial least squares structural equation modeling (PLS-SEM), which is particularly well-suited for theory development in models with multiple

latent constructs and relatively small sample sizes (Hair et al., 2019). Following the “10-times rule” (Hair et al. 2017), the minimum required sample size is ten times the largest number of structural paths directed at any construct—in our case, four—yielding a minimum threshold of 40. Our sample substantially exceeds this benchmark. We also conducted an a priori power analysis using G*Power 3.1 (Faul et al. 2009), which indicated that a sample of 85 would be sufficient to detect medium-sized effects ($f^2 = 0.15$) at a power level of 0.80 and $\alpha = 0.05$. Thus, our final sample provides adequate statistical power to detect the hypothesized relationships.

Table 1 presents the demographics of the sample firms. Regarding firm age, 29.18% have been in operation for more than 40 years, whereas 4.67% have been operating for less than 10 years. Firms in the service sector account for 57.59% of the sample, exceeding those in the manufacturing sector (42.41%). With respect to firm size (measured by the number of full-time employees), the distribution is diverse: 25.29% employ fewer than 100 workers, while 19.07% employ more than 5,000. In terms of annual sales, 27.24% of firms generate less than USD 1 billion, whereas 14.79% report sales exceeding USD 100 billion

[Insert Table 1 here]

We then assessed potential non-response bias and CMV. To examine non-response bias, we compared key firm characteristics—including firm size, firm age, and industry—between early and late respondents. The t-test results revealed no significant differences in firm age ($t = 1.664, p > 0.05$), years since establishment ($t = 1.228, p > 0.05$), or industry type ($t = 1.356, p > 0.05$) between the early and late responding firms. These results suggest that non-response bias is unlikely to affect our study’s findings (Armstrong and Overton 1977).

To assess potential CMV, we conducted Harman’s one-factor analysis, following Podsakoff et al. (2003). The analysis showed that the first factor accounted for only 42.58% of the total variance, with no single factor dominating the unrotated factor structure,

indicating that CMV is unlikely to be a major concern in our dataset. Additionally, we employed the marker variable approach (Kusi et al. 2022; Lindell and Whitney 2001) to further examine CMV. Following Rönkkö and Ylitalo (2011), we conducted a marker variable test using respondents' attitudes toward the color blue (ATCB) as the marker variable. We compared the results of our conceptual model with an alternative model that included ATCB as a predictor for all endogenous constructs. The findings showed that all significant parameter estimates in our original model remained unchanged in the marker variable model, reinforcing that CMV is unlikely to pose a serious issue in our study.

3.2. Variables and measurement

All key variables, including independent and dependent constructs, were assessed using multi-item, seven-point Likert scales, where 1 = strongly disagree and 7 = strongly agree, unless otherwise noted. The selected measures were adapted from widely recognized scales in the literature to ensure construct validity.

Our independent variables include organizational trust and organizational identification, both of which were adapted from well-established scales in the literature. Organizational trust was measured using four items adapted from Guinot et al. (2013) and Aryee et al. (2002), a representative survey item is “employees fully trust that our company will treat them fairly.” Organizational identification was assessed using five items adapted from Mael and Ashforth (1992) and Vora et al. (2007), a representative item for this construct is “our company views its success as the success of each employee.” The variable, DDCs, was conceptualized as a multidimensional construct with three sub-dimensions: digital sensing, seizing, and reconfiguring (Kohtamäki et al. 2020; Zia et al. 2023).

Regarding ESG performance, our focal dependent variable, we clarify that it was measured through perceptual responses collected via a multi-item Likert scale. Specifically,

we adopted five items from Wang and Esperança (2023) that capture how firms embed ESG values into their strategic and operational practices. A representative item is: “We integrate ESG principles into our core business strategies and decision-making processes.” While we acknowledge the limitations associated with self-reported perceptual measures, this approach remains widely accepted in organizational research where standardized and externally verified ESG data is unavailable or inconsistent across firms and industries (Adomako et al. 2023; Dong et al. 2025).

Several control variables were included to account for potential confounding effects (Xiao et al. 2024). Firm size was measured based on the total revenue. Firm age was recorded as the number of years since the firm’s establishment. Industry classification was controlled using dummy variables to distinguish between manufacturing coded as “1” and service sectors coded as “0”. Finally, competitive intensity was measured using a multi-item scale, with a representative item being: “The level of competition in our industry is high”.

3.3. Analytical technique

This study employed PLS-SEM to empirically validate the proposed hypotheses (Richter et al. 2016). The PLS-SEM estimation technique has gained prominence as a preferred multivariate analytical method in strategic management research, as it was regarded as superior to covariance-based structural equation modeling (CB-SEM) in addressing complex modeling challenges (Obadia and Robson 2021). Prior literature (e.g., Hair et al. 2017) underscored that PLS-SEM produced more robust and precise parameter estimates than CB-SEM, particularly when dealing with moderate sample sizes (e.g., between 100 and 250 observations). Given that this study’s sample comprised 257 respondents, the adoption of PLS-SEM was deemed methodologically appropriate for testing the research framework (Hair et al. 2012).

Furthermore, this research aimed to elucidate the intricate interconnections between responsive and strategic CSR across diverse stakeholder groups through the development of a theoretical model. The PLS estimation technique was particularly well-suited for this study due to its inherent methodological advantages, including enhanced flexibility, fewer parametric constraints, and greater efficacy in exploratory research and theory development (Henseler et al. 2014). PLS-SEM operated as an iterative algorithm, initially estimating measurement model components independently before deriving path coefficients within the structural model (Hair Jr et al. 2021). In alignment with this analytical approach, we commenced the empirical examination of the hypotheses by rigorously assessing the reliability and validity of the constructs through the estimation of the measurement model, preceding the evaluation of the theoretical framework.

4. Results

4.1. Construct reliability and validity

Table 2 presents the results of the construct reliability and validity assessment, indicating that Cronbach's alpha values and composite reliability (CR) estimates for all constructs exceeded the recommended 0.70 threshold, thereby demonstrating strong internal consistency (Fornell and Larcker 1981). The Cronbach's alpha values ranged from 0.896 to 0.952, while the CR values varied between 0.896 and 0.950, affirming the reliability of the constructs. Furthermore, all standardized factor loadings (SFLs) were statistically significant, reinforcing the robustness of the measurement model.²

[Insert Table 2 here]

² We confirmed that DDCs, consisting of digital sensing, seizing, and reconfiguring, exhibited statistical significance both as a first-order construct and as a reflective-reflective second-order construct, meeting all necessary criteria (Sarstedt et al. 2019).

To verify convergent validity, we computed the average variance extracted (AVE) for all multi-item constructs. The results indicate that each construct's AVE exceeded the benchmark of 0.50, providing strong empirical support for convergent validity (Fornell and Larcker 1981). Specifically, AVE values ranged from 0.632 to 0.838, demonstrating that the majority of the variance in each construct was explained by its indicators.

[Insert Table 3 here]

To assess discriminant validity, we compared the square root of each construct's AVE with the absolute value of its correlations with other constructs. The results reported in Table 3 confirm that the square root of each AVE exceeded inter-construct correlations, thereby establishing adequate discriminant validity (Fornell and Larcker 1981). Additionally, to assess discriminant validity, we employed both the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio of correlations. First, the diagonal values in bold represent the square root of the AVE for each construct, while the values below the diagonal indicate the correlations between the constructs. The results confirm that the square root of the AVE for each construct exceeded its corresponding inter-construct correlations, thereby satisfying the Fornell and Larcker (1981)'s criterion. Subsequently, we also evaluated discriminant validity using the HTMT ratio of correlations, a more stringent measure where values below the conservative threshold of 0.85 indicate adequate discriminant validity (Henseler et al. 2015). The results indicated that all HTMT values for constructs were below the conservative threshold of 0.85, providing additional confirmation of discriminant validity. These findings confirm that constructs exhibit adequate discriminant validity, ensuring the measurement model's suitability for hypothesis testing and structural model estimation.

To assess model quality, we examine in-sample (R^2) and out-of-sample (PLSpredict) predictive power, along with cross-validated predictive ability test (CVPAT) (Hair et al. 2019; Ringle et al. 2023). The PLSpredict results confirm predictive relevance, as all Q^2_{predict}

values are positive. Moreover, PLS-SEM outperforms the linear benchmark (LM) for a majority of indicators, indicating medium to high predictive power based on the PLS-SEM_RMSE < LM_RMSE criterion (Lienggaard et al. 2021). CVPAT further supports the model's predictive validity, showing that PLS-SEM significantly outperforms the naïve indicator average (IA), confirming predictive validity ($p < 0.000$) (Capeau et al. 2024; Sharma et al. 2023).

4.2. Hypothesis testing

To assess potential multicollinearity issues, we examined the correlations among independent and control variables as well as variance inflation factor (VIF) values. Given that no correlation coefficients among variables exceeded the recommended threshold of 0.70 (Anderson et al. 2016) (see Table 2), multicollinearity was unlikely to pose a significant concern in this study. Furthermore, the VIF values for all predictors remained well below the conventional threshold of 5 (Hair et al. 2012; Hair et al. 2017), further mitigating concerns regarding multicollinearity.

[Insert Figure 2 and Table 4 here]

We tested the hypotheses using a bootstrapping procedure with 5,000 resamples to obtain bias-corrected confidence intervals and p -values. The results, presented in Figure 2 and Table 4, indicate that the explanation power (R^2) for the endogenous variables was 0.617 for DDCs and 0.674 for ESG performance, demonstrating satisfactory explanatory power of the proposed model. Moreover, the control variables—including firm size, firm age, manufacturing sector affiliation, and competitive intensity—did not exhibit statistically significant effects on ESG performance, as evidenced by their non-significant path coefficients ($p > 0.05$ for all predictors).

The findings revealed that organizational trust had a statistically significant positive

effect on DDCs ($\beta = 0.653, p < 0.001$), providing strong support for H1. Likewise, organizational identification was also found to be positively and significantly related to DDCs ($\beta = 0.193, p < 0.01$), supporting H2. These results indicate that higher levels of organizational trust and identification contribute to strengthening a firm's DDCs, in line with expectations.

However, contrary to our expectations, the direct effect of organizational trust on ESG performance was marginally statistically significant ($\beta = 0.144, p < 0.10$), indicating partial significance but failing to meet conventional statistical thresholds. Thus, H3 is not fully supported, necessitating further discussion to explore potential underlying factors that may influence this relationship. In contrast, organizational identification exhibited a strong and positive association with ESG performance ($\beta = 0.618, p < 0.001$), providing robust support for H4.

Regarding the direct effect of DDCs on ESG performance, the results demonstrate a significant positive relationship ($\beta = 0.145, p < 0.05$), thereby supporting H5. This suggests that organizations with greater DDCs tend to exhibit higher ESG performance by effectively leveraging digital technologies to enhance sustainability-related initiatives.

4.3. Supplementary analysis

To examine the potential mediating effects of DDCs, we conducted a supplementary analysis to test the indirect effects. The results, presented in Table 4, suggest that organizational trust and organizational identification may influence ESG performance through DDCs as a mediating variable. The indirect effect of organizational trust on ESG performance through DDCs was statistically significant ($\beta = 0.094, p < 0.05$), indicating that DDCs serve as a partial mediator in this relationship. Since both the direct and indirect effects are significant and share the same direction (both positive), this aligns with the definition of

complementary mediation (partial mediation) (Zhao et al. 2010). Conversely, the indirect effect of organizational identification on ESG performance through DDCs was not statistically significant ($\beta = 0.029, p = 0.117$). This result suggests that, while organizational identification positively affects DDCs, its influence on ESG performance is not significantly transmitted through this mediating pathway. Since the indirect effect is not significant, this does not qualify as mediation. Instead, it suggests a *direct-only non-mediation effect*—meaning organizational identification directly influences ESG performance without a significant mediating role of DDCs.

To further examine potential endogeneity, we conducted Gaussian Copula (GC) tests for all structural paths (Hult et al. 2018; Park and Gupta 2012). In Table 4, the results indicate that none of the GC terms were statistically significant at the 10% level, with p -values ranging from 0.262 to 0.960; for example, organizational trust $\rightarrow$ DDCs ($\beta = 0.142, p = 0.262$) and organizational identification $\rightarrow$ ESG performance ($\beta = 0.029, p = 0.712$). These findings suggest that endogeneity is unlikely to bias our estimates, thereby providing additional support for the robustness of our findings.

In addition, we conducted a multi-group analysis (MGA) by splitting the sample into manufacturing and service firms to examine potential boundary conditions across industries. The results showed no statistically significant differences in the path coefficients between the two groups (all two-tailed $p > 0.10$, except for one marginal case), suggesting that the hypothesized relationships are broadly consistent across different industry contexts. This robustness check provides further confidence in the stability of our findings.

5. Discussion and implications

This study contributes to the literature by integrating the digital dimension into dynamic capabilities and grounding the analysis in social exchange theory to explain the role of

organizational trust and identification in ESG performance. By conceptualizing DDCs as a key mechanism, our research provides a nuanced understanding of how firms translate internal relational assets into superior ESG outcomes.

The marginal significance of the direct effect of organizational trust on ESG performance suggests that while trust remains influential, its impact is primarily indirect through DDCs. A plausible explanation for this finding is that trust alone may not be sufficient to directly drive ESG performance. However, it likely creates an organizational environment that facilitates digital transformation, enabling firms to better integrate and operationalize ESG strategies, which in turn enhances overall ESG outcomes. From a DCs perspective, this finding suggests that trust functions as an enabling condition rather than a direct driver of ESG performance. Firms with high levels of trust can better mobilize digital technologies, data-driven decision-making, and adaptive strategies, reinforcing the idea that ESG success depends not only on relational capital but also on firms' ability to leverage digital capabilities. From the perspective of SET, organizational trust fosters reciprocity and cooperative behavior within firms, creating an environment where employees are more willing to engage in knowledge sharing, experimentation, and digital innovation—all of which are critical for advancing ESG initiatives. Prior research often treats organizational trust as an intrinsic driver of ESG success (Dong et al. 2025); however, our findings suggest that its influence may be contingent on firms' digital readiness. In other words, while organizational trust can partially influence ESG performance, its impact becomes more pronounced in the context of rapid digital transformation. As organizations undergo digital shifts, trust encourages members to actively seek, reconfigure, and internalize diverse digital information and knowledge. Rather than functioning as a direct driver, organizational trust serves as a foundation that facilitates digital adaptation, knowledge exchange, and organizational learning, which are essential for embedding ESG practices at a company-wide

level. The pattern of partial mediation reflects the enabling rather than deterministic role of organizational trust. Trust fosters psychological safety and cooperative norms, but translating these into ESG outcomes depends on firms' digital readiness and leadership alignment. Where digital infrastructures are underdeveloped, trust may still directly motivate sustainability engagement, explaining the residual direct effect. In digitally mature firms, however, trust operates more strongly through DDCs by facilitating digital sensing, seizing, and reconfiguring processes. Thus, partial mediation suggests that trust can act both as a direct motivator and as an indirect enabler via digital capabilities, with the relative strength of these pathways contingent on the firm's digital transformation context.

Furthermore, although organizational identification positively influences DDCs, its indirect effect on ESG performance was not significant. This could indicate that organizational identification shapes internal cohesion and alignment but does not necessarily translate into measurable ESG outcomes through digital capabilities. One explanation is that while identification encourages employee commitment and engagement, it may not significantly influence ESG performance unless it is coupled with robust strategic ESG alignment and leadership-driven digital transformation (Wang and Esperança 2023). Employees may feel connected to the organization, but without concrete digital leadership to link this commitment to ESG strategy execution, the impact remains direct rather than mediated.

Notably, none of the control variables (firm size, firm age, industry type, and competitive intensity) showed significant effects on ESG performance. This suggests that structural firm characteristics may play a less pivotal role compared to internal organizational factors, a pattern consistent with prior research highlighting the importance of managerial and cultural capabilities in shaping ESG outcomes (Eccles et al. 2014).

5.1. Theoretical implications

Our study offers the following theoretical contributions. First, our study extends the DCs perspective by integrating the role of DDCs in shaping ESG performance. While prior research has primarily examined DCs in the context of market adaptation and competitive advantage (Park and Xiao 2020), this study extends the theoretical application of DCs by illustrating their relevance in sustainability management. By demonstrating that DDCs partially mediate the relationship between organizational trust and ESG performance, we offer novel insights into how firms can leverage digital capabilities to enhance long-term sustainability outcomes. This finding advances the growing body of research exploring the intersection of digital transformation and ESG strategies, positioning DDCs as a key enabler of responsible and sustainable business practices.

Second, our study builds upon SET to explain the mechanisms through which organizational trust and identification contribute to sustainability performance. While SET has traditionally been used to analyze micro-level interpersonal relationships (Fainshmidt and Frazier 2017; Morgan and Zeffane 2003), we advance its application to the macro-organizational level by illustrating how trust and identification function as organizational-level social mechanisms that foster DDCs, ultimately enhancing ESG outcomes. This insight broadens the theoretical scope of SET by applying it to the digital transformation and sustainability management context.

Lastly, our supplementary analysis highlights the mediating role of DDCs in linking organizational trust to ESG performance. While previous studies have examined the direct effects of trust and identification on organizational outcomes (Dong et al. 2025), our study provides empirical evidence that their impact on ESG performance is channeled through firms' digital capabilities. This finding underscores the critical role of digital transformation in enabling organizations to convert social capital into sustainable business outcomes. By positioning DDCs as the key mechanism through which firms translate internal relational

assets into ESG performance, we contribute to a more comprehensive understanding of how digital transformation shapes corporate sustainability efforts. This insight is particularly relevant in light of increasing regulatory pressures and industry expectations surrounding ESG disclosures, suggesting that firms must not only commit to sustainability principles but also develop the necessary digital infrastructure to support their implementation.

5.2. Practical implications

Our findings provide valuable managerial insights into how firms can leverage DDCs to enhance ESG performance. First, managers should prioritize cultivating a climate of trust and strong organizational identification to accelerate their digital transformation. Prior research suggests that organizational trust fosters a culture of knowledge sharing, collaboration, and learning (Fainshmidt and Frazier 2017), all of which are critical for developing dynamic digital capabilities. Thus, Managers should focus on transparent communication, inclusive decision-making, and digital upskilling programs to reinforce trust and commitment among employees.

Second, given that regulatory policies and stakeholder expectations shape the sustainability landscape (Fatemi et al. 2018), firms must continuously adapt their digital governance models to ensure compliance while maintaining agility in responding to emerging ESG challenges. Integrating AI-powered sustainability reporting, blockchain for transparent supply chain management, and data analytics for carbon footprint reduction can reinforce an organization's commitment to ESG.

Finally, managers should recognize that DDCs do not automatically translate into ESG success unless accompanied by a strategic alignment between digital transformation and sustainability goals. As prior research has shown, digital initiatives that lack an explicit sustainability focus risk being perceived as symbolic rather than substantive efforts (Donia et

al. 2017). Therefore, firms should embed ESG objectives within their digital transformation agendas to ensure that technological investments yield measurable sustainability outcomes. By integrating DDCs with ESG priorities and fostering a trust-based organizational climate, firms can not only enhance their sustainability performance but also secure long-term stakeholder confidence and competitive positioning in an increasingly digital and sustainability-driven business environment.

Building on these insights, managers in ESG and international business departments should consider implementing regular cross-functional workshops and digital training sessions designed to strengthen organizational trust and foster employee identification. Such initiatives can also enhance employees' digital literacy and sustainability-oriented skills, thereby enabling firms to more effectively integrate digital transformation with ESG objectives. For example, Microsoft has launched the Microsoft Sustainability Academy, a free global webinar series to help professionals embed sustainability into business strategy, improve ESG data management, and manage environmental impact (ESG News 2024). By institutionalizing these practices, firms can turn trust and identification into practical digital practices that directly support long-term sustainability strategies.

5.3. Limitations and future research directions

Despite its contributions, this study has several limitations that provide avenues for future research. First, although we incorporated a two-wave approach to mitigate the limitations of cross-sectional survey data, it does not fully resolve the challenges of causal inference, making it difficult to establish definitive causal relationships between DDCs and ESG performance. While our theoretical framework suggests a directional relationship, the limited temporal scope of our design prevents firm conclusions about causality. We fully acknowledge this limitation and, in line with the reviewer's recommendation, suggest that

future research adopt longitudinal panel designs with multiple waves or experimental approaches to better establish causal directionality. A longitudinal approach would allow researchers to observe how organizational trust and identification shape the development of DDCs over time and how these, in turn, influence ESG outcomes in a dynamic and evolving business environment.

Second, while our data were collected from a global sample of 257 firms included in TIME's World's Most Sustainable Companies of 2024, our study's generalizability may still be somewhat constrained, as these firms are predominantly situated in advanced economies and already recognized for relatively strong ESG performance. This concentration raises concerns about the extent to which our findings apply to firms operating in different institutional environments, particularly those in emerging markets or in sectors with lower levels of digitalization. However, this limitation stems from the nature of our sample, making it challenging to incorporate a more diverse range of firms. To address this limitation, future research should extend the analysis to emerging-market firms and small- and medium-sized enterprises, and also consider triangulating perceptual survey data with objective ESG indicators to further enhance external validity and validate the robustness of our findings across broader contexts.

Third, while we propose linear and universally positive effects in this study, it is possible that the relationships among organizational trust, organizational identification, DDCs, and ESG performance are highly context-dependent and may even be negative in certain situations (e.g., digitalization may lead to greenwashing or employee resistance). Due to data limitations, we are unable to explore these potential effects in the current study. However, we hope future research can extend this line of inquiry by examining such

boundary conditions and exploring possible negative pathways.³

Finally, we recognize that the relationship between DDCs and ESG performance may be influenced by distinct mechanisms depending on the nature of the firm. Some firms may experience a more pronounced visibility effect, where even minor ESG efforts are highly noticeable, while others may require more substantial commitments to achieve similar recognition. Future research could delve deeper into these differentiated mechanisms, examining how firm characteristics shape the extent to which DDCs drive ESG outcomes. In addition, external contextual factors—such as the regulatory environment or competitive pressure—may also condition the effectiveness of DDCs in delivering ESG outcomes, and should be further explored in future research. Given the inherent causal ambiguity of ESG performance, further investigation could enhance clarity by distinguishing between ex-ante and ex-post ESG factors. Differentiating these dimensions may provide a more nuanced understanding of how DDCs influence ESG performance, helping to disentangle the directionality of this relationship.

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Table 1. Demographic of sample firms ($N = 257$)

Category	Frequency (N)	Percent (%)
<i>Industry</i>		
Service	148	57.59
Manufacturing	109	42.41
<i>Firm size (full-time employees)</i>		
Fewer than 100	65	25.29
100-500	58	22.57
501-1000	60	23.35
1001-5000	25	9.73
More than 5000	49	19.07
<i>Firm age (years)</i>		
< 10	12	4.67
11-20	53	20.62
21-30	62	24.12
31-40	55	21.40
> 40	75	29.18
<i>Annual sales (USD billion)</i>		
< 1	70	27.24
1-10	71	27.63
11-50	43	16.73
51-100	35	13.62
> 100	38	14.79

Table 2. Results of construct reliability and validity assessments

Construct	Indicator	SFL	Alpha	CR	AVE
Organizational trust	ORGTR1	0.817	0.888	0.896	0.750
	ORGTR2	0.801			
	ORGTR3	0.828			
	ORGTR4	0.799			
Organizational identification	ORGID1	0.867	0.952	0.952	0.838
	ORGID2	0.748			
	ORGID3	0.755			
	ORGID4	0.814			
	ORGID5	0.841			
Digital dynamic capabilities	DDC1	0.740	0.947	0.950	0.632
	DDC2	0.720			
	DDC3	0.800			
	DDC4	0.915			
	DDC5	0.918			
	DDC6	0.910			
	DDC7	0.945			
	DDC8	0.888			
	DDC9	0.859			
	DDC10	0.872			
	DDC11	0.932			
	DDC12	0.908			
ESG performance	ESGP1	0.909	0.939	0.940	0.803
	ESGP2	0.884			
	ESGP3	0.905			
	ESGP4	0.890			
	ESGP5	0.780			

Note: $N = 257$. SFL = standardized factor loading, Alpha = Cronbach's alpha, CR = composite reliability, AVE = average variance extracted.

Table 3. Construct correlations among variables of interest and discriminant validity

Variables	1	2	3	4	5	6	7	8
1 Firm size	–							
2 Firm age	0.448	–						
3 Manufacturing	0.062	0.078	–					
4 Competitive intensity	-0.013	-0.058	0.140	–				
5 Organizational trust	0.216	0.104	-0.048	0.049	0.866	0.675	0.833	0.689
6 Organizational identification	0.077	0.008	0.014	0.023	0.623	0.915	0.624	0.839
7 Digital dynamic capabilities	0.256	0.107	-0.037	0.030	0.771	0.598	0.795	0.648
8 ESG performance	0.082	-0.038	0.031	0.035	0.630	0.794	0.616	0.896

Note: $N = 257$. The bolded diagonal values represent the square root of the AVE for each construct. The values below the diagonal indicate correlations, while the values above the diagonal correspond to the HTMT ratio of correlations.

Table 4. Results of structural model assessment for direct and indirect effects

Effects	Estimate	T-statistics	P-values
<i>Direct effects</i>			
Firm size → ESG performance	-0.003	0.067	0.946
Firm age → ESG performance	-0.076	1.727	0.084
Manufacturing → ESG performance	0.041	1.366	0.172
Competitive intensity → ESG performance	-0.002	0.032	0.975
H1 Organizational trust → Digital dynamic capabilities	0.653	11.869	0.000
H2 Organizational identification → Digital dynamic capabilities	0.193	3.205	0.001
H3 Organizational trust → ESG performance	0.144	1.686	0.092
H4 Organizational identification → ESG performance	0.618	9.307	0.000
H5 Digital dynamic capabilities → ESG performance	0.145	2.046	0.041
<i>Indirect effects</i>			
Organizational trust → Digital dynamic capabilities → ESG performance	0.094	2.018	0.044
Organizational identification → Digital dynamic capabilities → ESG performance	0.029	1.569	0.117
<i>Gaussian Copula</i>			
Organizational trust → Digital dynamic capabilities	0.142	1.123	0.262
Organizational trust → ESG performance	0.168	1.410	0.171
Organizational identification → Digital dynamic capabilities	0.086	0.905	0.366
Organizational identification → ESG performance	0.029	0.483	0.712
Digital dynamic capabilities → ESG performance	-0.027	0.176	0.860

Figure 1. Research model

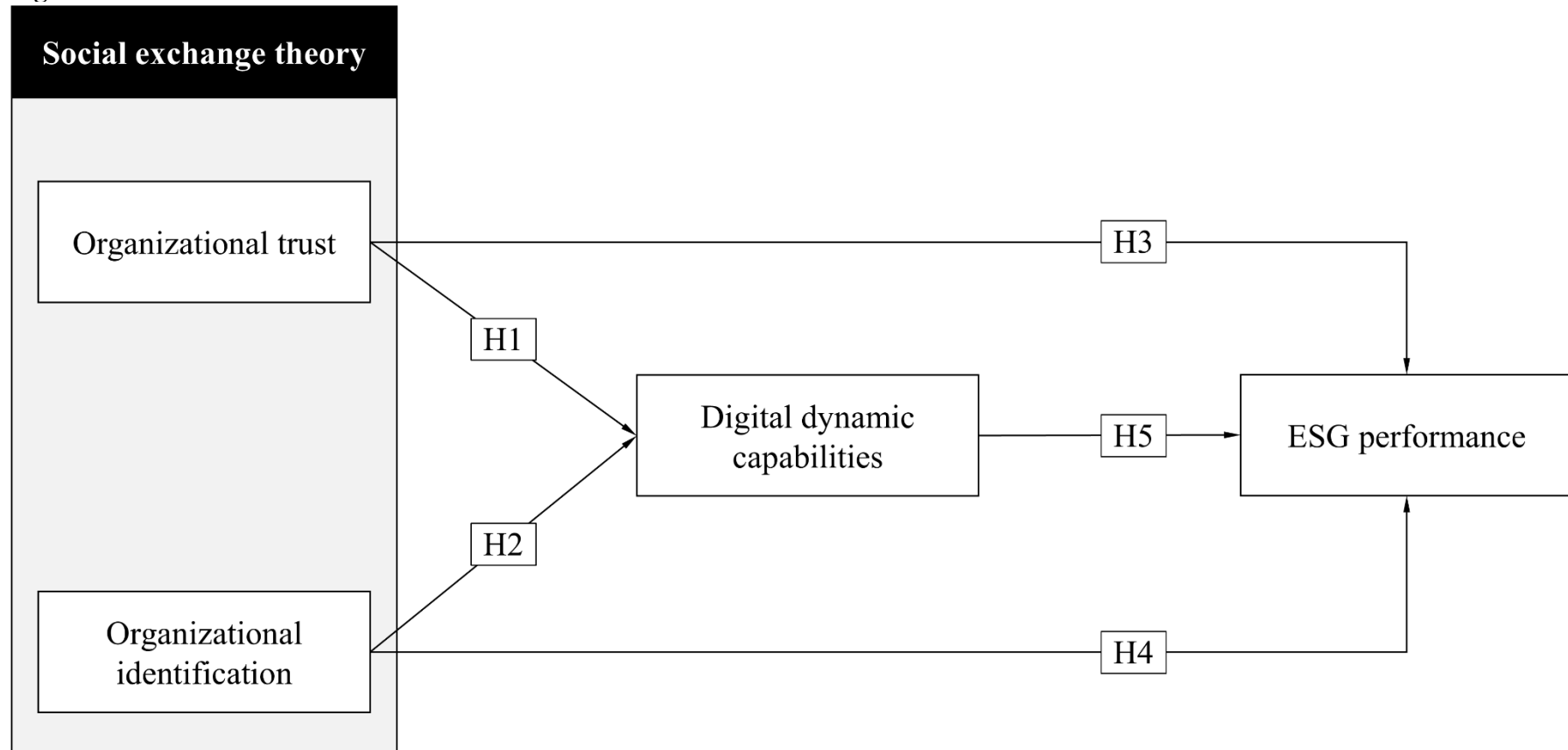
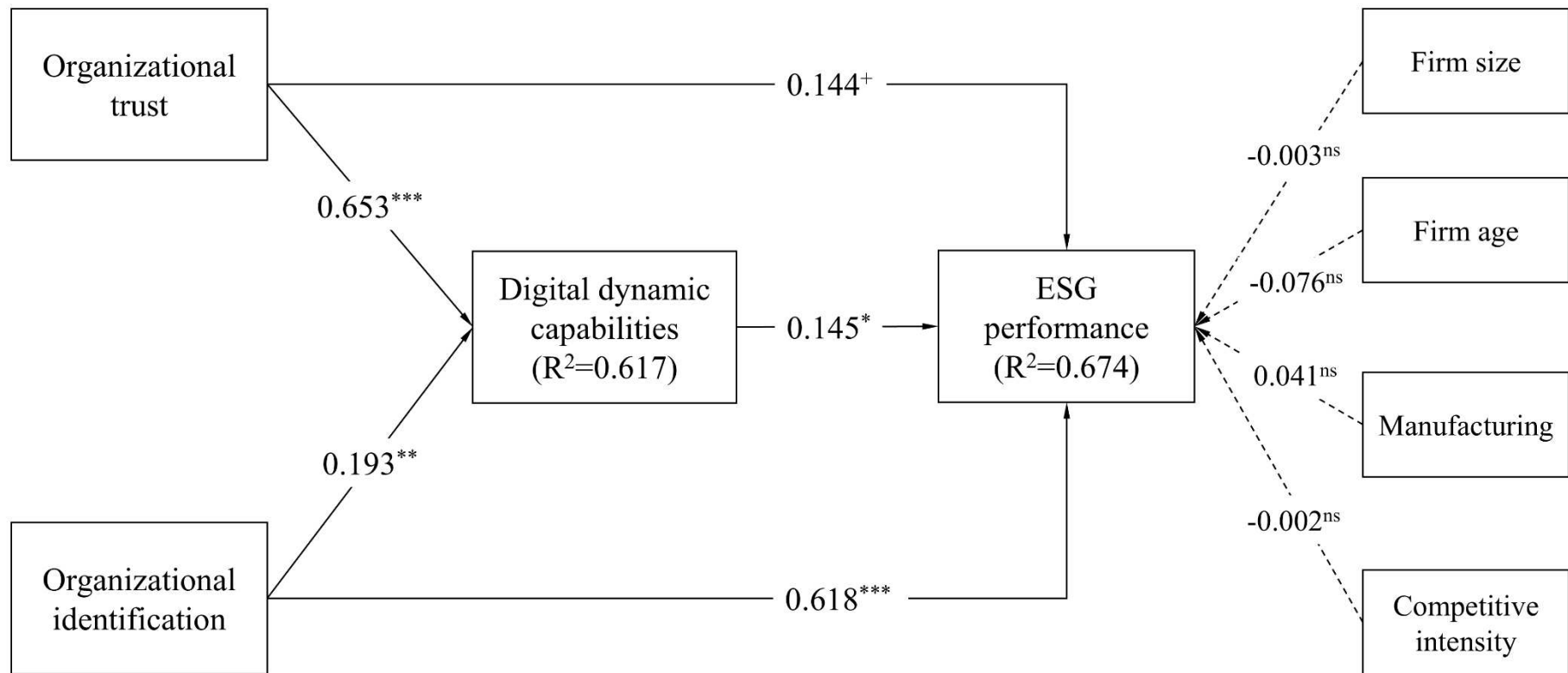


Figure 2. Estimated results of a structural equation analysis



Notes: ^{ns} non-significant, ⁺ $p < 0.1$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$.