

Digital Transformation Towards Corporate Sustainability

Summary

Digital transformation (DT) is increasingly central to corporate sustainability, yet prevailing research often frames its impact through the triple bottom line (TBL) or environmental, social, and governance (ESG) perspectives. However, these approaches tend to overlook governance as a dynamic mechanism that both shapes and is shaped by DT. Governance is not merely an enabler of DT but evolves alongside it, responding to its affordances and constraints. This study adopts a socio-technical perspective to examine the co-evolution of DT and governance in fostering corporate sustainability. Through an in-depth case study of a leading Chinese high-tech firm, the research develops a framework illustrating how this interplay reconfigures organisational practices to achieve economic, social, and environmental sustainability. The findings contribute to a more nuanced understanding of how firms can leverage DT for sustainable transformation. This study advances corporate sustainability literature by reconceptualizing governance as a dynamic, co-evolving force that shapes and is shaped by DT, rather than a static dimension. It also enriches the DT literature by developing a research framework that highlights the reciprocal relationship between DT and governance, offering both theoretical insights and practical guidance for firms aiming to leverage DT for sustainability transformation.

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1. Introduction

Digital transformation (DT) plays a crucial role in addressing pressing sustainability challenges, including climate change, environmental degradation, and social inequality (ElMassah and Mohieldin 2020, Del Río Castro et al. 2021, Wang and Esperança 2023). Vial (2019, p. 118) defines DT as a complex process that drives significant organisational changes through the integration of “information, computing, communication, and connectivity technologies.” Emerging technologies such as Artificial Intelligence (AI), big data analytics, cloud computing, and the Internet of Things (IoT) not only enhance operational efficiency and reduce costs but also serve as critical enablers of corporate sustainability (Verhoef et al. 2021).

The relationship between DT and corporate sustainability has been explored from multiple theoretical perspectives (Chanias et al. 2019, Feroz et al. 2021, Zhao et al. 2021, Ahn and Chen 2022, Maiurova et al. 2022, Okorie et al. 2023). One prevalent strand of literature employs the triple bottom line (TBL) framework, emphasising economic, social, and environmental sustainability dimensions (Dyllick and Muff 2016, Guandalini 2022). Another perspective evaluates sustainability performance through environmental, social, and governance (ESG) criteria (Ding et al. 2024, Lu et al. 2024). While these approaches offer valuable insights, they often oversimplify the complexities inherent in leveraging DT for corporate sustainability (Cantele et al. 2024). In particular, they tend to marginalise the role of governance as a critical guiding mechanism in this process. Governance should not be viewed merely as a performance metric but as a strategic force that directs how DT is deployed to achieve sustainability goals. At the same time, governance is shaped by the affordances and constraints of DT, fostering a co-evolutionary relationship where both elements influence and adapt to one another. Overlooking this interplay results in an incomplete understanding of how organisations employ DT to drive corporate sustainability. Given the significance of this dynamic, existing research has yet to sufficiently examine its implications.

To address this gap, we adopt a socio-technical perspective as our theoretical foundation. This well-established lens within the management discipline provides a comprehensive framework for analysing the interaction between digital technologies, governance, and organisational practices. It is particularly suitable for studying DT’s transformative potential, as it acknowledges the mutual evolution of technical and social components within organisations. We conduct an in-depth case study of a leading high-tech firm in China, recognised for its effective use of DT to achieve sustainable outcomes (Yin 2014). Data was collected through semi-structured interviews with executives and senior managers, offering rich insights into the mechanisms through which DT and governance collectively shape organisational sustainability practices.

Our research extends emerging perspectives on corporate sustainability by incorporating a four-dimensional view—economic, social, environmental, and governance—capturing the multi-faceted nature of sustainability (Cantele et al. 2024). We find that governance functions as a strategic force, co-evolving with DT to help firms achieve sustainability objectives across these dimensions. Additionally, our future analysis will contribute to the DT literature by uncovering the mechanisms through which DT fosters corporate sustainability. By positioning governance as an active and co-evolving force, this research offers a more nuanced understanding of how firms can harness DT’s transformative potential for corporate sustainability.

2. Literature Review

This research examines recent literature on DT and its relationship with corporate sustainability. The literature review aims to provide a comprehensive overview of the current state of research on DT and corporate sustainability while introducing the socio-technical perspective, which serves as the theoretical lens for this study.

There has been significant growth in literature on DT, with increasing focus on how DT impacts corporate sustainability, especially through the TBL and ESG perspectives (Chanas et al. 2019, Feroz et al. 2021, Zhao et al. 2021, Ahn and Chen 2022, Maiurova et al. 2022, Okorie et al. 2023). DT enables firms to address economic, social, and environmental dimensions by improving efficiency, reducing waste, fostering innovation, and enhancing social well-being (Vial 2019). Technologies such as big data analytics and IoT help optimise resource use and reduce environmental impact, while AI and big data enhance transparency and accountability in ESG efforts (Vial 2019).

Recent studies attempt to integrate these perspectives, conceptualising corporate sustainability as encompassing economic, social, environmental, and governance dimensions (Cantele et al. 2024). While valuable, these studies often overlook the complex interrelationships between these elements, particularly the role of governance. Governance is not only a result of sustainability but also a key factor in co-evolving with DT, guiding its deployment towards sustainability goals. As technologies like AI and IoT advance, governance must adapt to ensure alignment with sustainability objectives.

To address this gap, we propose exploring how DT and governance co-evolve to drive corporate sustainability. A socio-technical perspective is ideal for examining the interactions between technological systems and social components, offering a holistic view of how DT and governance influence sustainability outcomes (Mumford 2000). The socio-technical perspective is a key theoretical framework that highlights the interdependence of social and technical elements in the design, implementation, and

use of digital technologies (Sarker et al. 2019). It examines how technological systems interact with organisational contexts, focusing on how these interactions reshape practices.

The socio-technical perspective is crucial in exploring organisational change driven by technology integration, particularly when organisational practices and technology are mutually adapted. Research by Wareham et al. (2009) and Münch et al. (2022) demonstrates how technology and social structures shape each other. This perspective is especially relevant to this research as DT involves significant organisational changes through the integration of advanced digital technologies. Governance plays a vital role in guiding the deployment of these technologies and aligning them with sustainability goals (Lu et al. 2024). Governance is not static but co-evolves with DT, balancing technological capabilities and social considerations, such as ethics and compliance (Ding et al. 2024). This study therefore adopts the socio-technical perspective to explore how DT and governance co-evolve to drive economic, social, and environmental sustainability outcomes. It aims to develop a comprehensive research framework that captures the dynamics between social and technical systems, offering valuable insights for organisations navigating DT and sustainability challenges.

3. Research Method

This study investigates how DT drives corporate sustainability through an in-depth case study of a leading high-tech firm. Adopting a socio-technical perspective, the research examines the co-evolution of DT and governance, providing insights into their dynamic interplay. The study employs systematic combining, an iterative approach that integrates theoretical frameworks, empirical data, and case analysis, ensuring both theoretical depth and adaptability (Dubois and Gadde 2002). This method enables the research framework to evolve in response to emerging insights, facilitating a nuanced understanding of how DT and governance shape organisational practices.

The study follows a three-phase data collection process. Phase 1 involves secondary data collection from company reports and industry publications to contextualise how the firm leverages DT for corporate sustainability. Phase 2 comprises interviews with 20 executives, exploring DT's role in corporate sustainability. Phase 3 includes follow-up interviews with five additional executives to refine and validate the findings, ensuring both theoretical rigour and practical relevance.

For data analysis, this study applies Gioia et al.'s (2012) approach to thematic analysis. The process involves three stages: (1) open coding using NVivo to identify key concepts, (2) first-order analysis to categorise emerging themes, and (3) second-order analysis to refine these themes based on existing literature. The final stage synthesises

the findings into a DT-sustainability framework, illustrating how DT and governance co-evolve to drive corporate sustainability.

4. Findings

The findings based on phase 1 and phase 2 data reveal that DT and governance evolve in a mutually reinforcing manner, with governance serving as a strategic mechanism that directs DT toward sustainability objectives. Simultaneously, DT reshapes governance structures, leading to a continuous, reciprocal interaction. Overlooking this dynamic results in an incomplete understanding of how DT facilitates corporate sustainability.

To uncover this relationship, we applied Gioia et al.'s (2012) analytical approach, systematically structuring the data into hierarchical categories. First-order concepts were derived from interview data, followed by the development of second-order themes, which were further refined into aggregate dimensions. This iterative process led to the formulation of a conceptual framework that captures the interdependence between DT, governance, and sustainability outcomes. Figure 1 provides a partial illustration of the data structure, highlighting key thematic linkages.

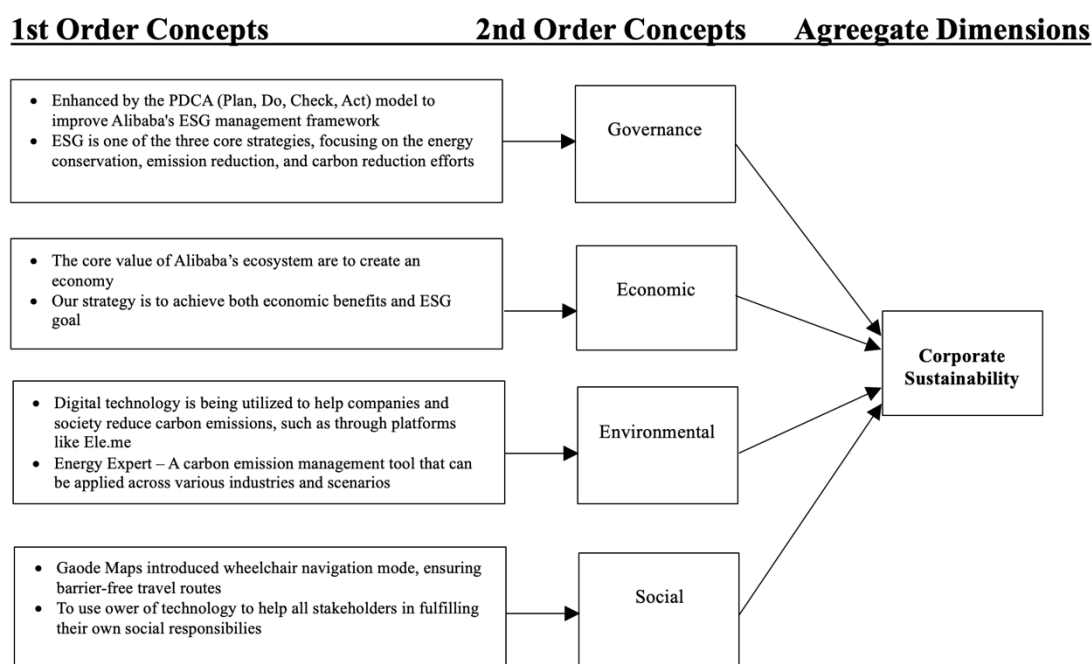


Figure 1 Partial illustration of data structure.

The iterative analysis led to the development of a research framework that conceptualises the co-evolutionary relationship between DT and governance in shaping corporate sustainability. As illustrated in Figure 2, this framework highlights the reciprocal nature of this interaction, where DT acts as the foundation of corporate

sustainability, while governance functions as a guiding force that directs DT toward sustainability objectives. This evolving dynamic contributes to economic, social, and environmental sustainability outcomes, reinforcing the need for an adaptive approach to corporate sustainability.

As this is a developmental paper, our analysis is ongoing, and we are still examining how organisational practices are reshaped through the interaction between DT and governance. Future stages of this research will focus on identifying specific organisational practices that mediate this co-evolution, exploring how firms integrate DT and governance to respond to emerging sustainability imperatives. Additionally, we will further investigate how the feedback loop between sustainability outcomes and governance adaptation ensures long-term organisational responsiveness. By continuing this analysis, we aim to provide a more nuanced understanding of how DT and governance jointly drive corporate sustainability in a dynamic and evolving way.

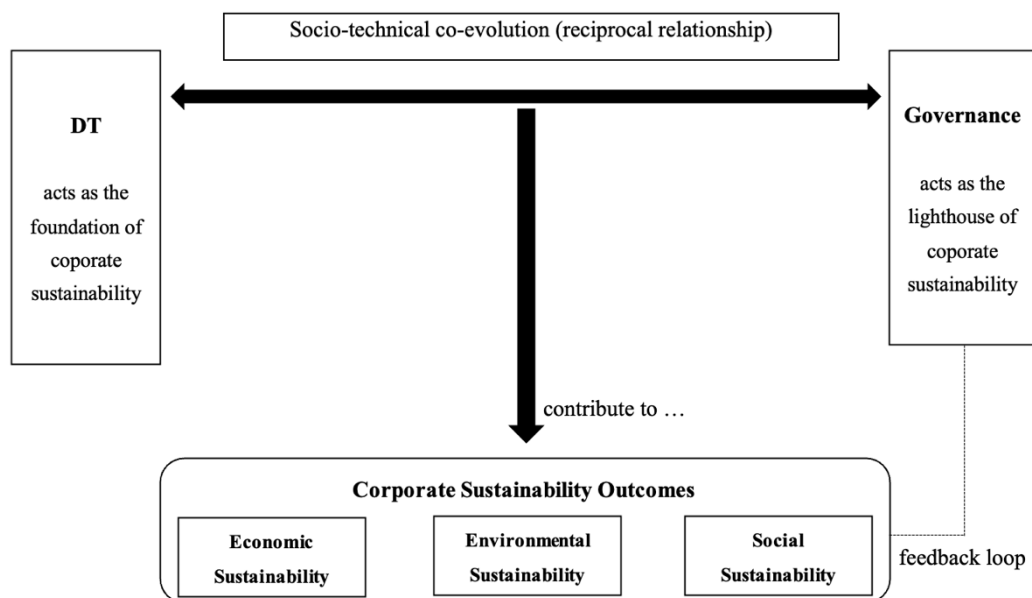


Figure 2 Research framework.

5. Further Work and Contributions

Our future work will focus on refining the research framework by identifying the specific organisational practices that evolve through the interaction between DT and governance. As our analysis progresses, we aim to uncover the mechanisms through

which this co-evolution reshapes corporate sustainability, providing a more granular understanding of how firms navigate the dynamic interplay between technology and governance in pursuit of sustainability objectives.

This research makes two key contributions. First, it advances the corporate sustainability literature by reconceptualising governance as a dynamic, co-evolving force rather than a static dimension of sustainability. While prior studies position governance alongside economic, social, and environmental dimensions (Cantele et al., 2024), we demonstrate that governance actively shapes and is shaped by DT, functioning as a strategic guide rather than a mere evaluative criterion. Second, this study enriches the DT literature by addressing the DT's role in corporate sustainability. Existing research acknowledges DT's transformative potential but lacks detailed insights into its mechanisms. By adopting a socio-technical perspective, we will develop a research framework that illustrates the reciprocal relationship between DT and governance, shedding light on the evolving organisational practices that drive sustainability outcomes. This framework not only enhances theoretical understanding but also offers practical insights for firms aiming to leverage DT strategically for sustainability transformation.

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