TAF

Journal of Administrative and Business Studies

JABS

2024, **10**(3&4): 76-82

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PRIMARY RESEARCH

Development of a conceptual model : The influence of digital transformation on the value chain

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Keywords

Digital transformation
Performance
Value chain
Conceptual model
Gender

Received: 23 May 2024
Accepted: 02 September 2024
Published: 23 December 2024

Abstract

This article highlights the strategic importance of digital transformation for companies in the digital economy. It involves integrating information technologies to optimize business processes and improve organizational performance. The value chain, which encompasses all value-generating activities, is profoundly impacted by this transformation. Thanks to digital tools, companies can improve productivity, reduce costs and offer better-quality products and services. This article highlights the value of developing a conceptual model to analyze the interaction between digital transformation and value chain performance. This model makes it possible to identify optimization levers at each stage of the chain. It is a strategic decision-making tool for managers and executives. By reconfiguring internal and external activities, digitalization becomes a key factor in competitiveness. The study stresses the importance of adapting technologies to the specific needs of each company. This conceptual background paves the way for future empirically-based research.

INTRODUCTION

In the global economic fabric, the landscape of competitive modalities is constantly evolving in the business world. Indeed, this world is introduced to the fields of accelerated digital transformations has now become a determining criterion of competitiveness and relevance. The rapid integration of technologies has led to fundamental changes in operational paradigms, paving the way for a new era of opportunities and challenges for the economic positioning of any organization. Companies are therefore invited, in one way or another, to adopt digital transformation to improve operational efficiency, responsiveness to market dynamics, customer satisfaction and overall financial performance.

Nowadays, digital transformation is a major strategic challenge for companies worldwide. Technological advances are profoundly transforming all corporate functions, including the value chain. The value chain encompasses all activities involved in the design, production and delivery of a product or service to the end customer. Digital transformation takes place at different levels of this chain, modifying processes, products and business models.

The literature also highlights the importance of absorptive capacity in the effective exploitation of digital initiatives (Gutierrez-Gutierrez, Barrales-Molina, Fernandez-Giordano, & López-Morales, 2019). Ease of use of digital technology is a critical factor of technology empirically linked to increased productivity and positive experiences among its different users. Adding to this idea, consumer or end-recipient satisfaction has been studied in various contexts, demonstrating its influence on technology acceptance

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and overall organizational success. Plus, according to a recent study by Bughin, Deakin, and O'beirne (2019), implementing a digital strategy can significantly improve value chain performance. Companies that have embarked on this path have seen productivity increases of between 20% and 30%, accompanied by an estimated reduction in operating costs of between 4% and 6%. These results illustrate the potential of digital transformation to boost business competitiveness in a constantly changing environment. However, despite these promising prospects, many companies are struggling to take full advantage of this transition. A number of obstacles stand in the way of digital adoption, including resistance to change, the cost of investment and a lack of specific skills. It is therefore essential to better understand the mechanisms by which digital transformation affects the value chain, and to identify the conditions for successful implementation.

This study analyzes the impact of digital transformation on the performance of a company's value chain. It proposes a conceptual model to explore the relationships between the various dimensions of digital transformation and value chain performance indicators. The methodology adopted is based on a systematic literature review, which identified and synthesized previous work on the subject, with a view to developing a relevant analytical framework.

METHODOLOGY

This research aims to deepen the reflection on the multi-faceted impact of digital transformation in the specific context of a value chain, implementing reflections on its relationship with digital transformations. By exploring the implications of this digital metamorphosis, this study aims to shed light on the theoretical dimensions of a new era of opportunities and challenges. Companies are increasingly adopting digital strategies to navigate this dynamic landscape, understanding the complex relationships between digital transformation initiatives and organizations (Kraus, Ferraris, & Bertello, 2023). Specifically, digitalization focuses on the optimization of value chain activities, as the business landscape increasingly digitizes the sales sector. In particular, the integration of digital solutions has undergone a paradigm shift into the set of interconnected activities that contribute to the creation of value for a product or service (Wideł, Hacks, Ekstedt, Johnson, & Lagerström, 2023). The collection of several theoretical data put forward in this article allows us to understand how these transformations manifest themselves in the value chain while offering a nuanced perspective on the specific challenges and opportunities that this sector faces in the digital age. Digital transformation is therefore considered a pillar of the modern company.

RESULTS AND DISCUSSIONS

Fundamental concepts: value chain and digital transformation

The value chain refers to a series of related activities that work together to create value for a product or service (Porter, 2008). This encompasses supply logistics, production, distribution logistics, marketing, and support services. As a strategic management tool, the value chain helps companies pinpoint potential sources of competitive advantage and evaluate ways to enhance their overall performance.

Digital transformation involves the incorporation of digital technologies across all organizational processes to enhance performance (Westerman, Bonnet, & McAfee, 2014). This transformation impacts every aspect of an organization, including supply chain management and customer relations. Additionally, it changes how organizations generate value and engage with stakeholders within their ecosystem.

Digital transformation is becoming increasingly important as it changes the way organizations operate across various sectors. Researchers emphasize that this process is complex, involving the integration of advanced technologies along with the development of effective strategies and practices to manage economic shifts. Companies pursuing digital transformation aim to enhance their operational efficiency, responsiveness to the market, and overall competitiveness. The beneficial effects of digital technology on organizational performance are a significant focus in academic literature, with scholars investigating both the successes and challenges experienced by stakeholders. Recent digital tools are essential in shaping businesses, with their overall effectiveness relying on the ability to adopt and utilize them effectively. assimilate, and apply new technological knowledge. These distinctive traits are identified as a determining factor influencing the interpretation and implementation of digital transformation efforts for firms (Ho & Chen, 2023). Digital transformation is therefore considered an imperative strategy for agencies seeking to remain competitive in a rapidly changing environment that promotes agility, innovation, and the ability to respond to client impressions and needs. Mohamed (2024) emphasizes the importance of this transformation, particularly in the context of microfinance institutions, where digitalization can significantly enhance organizational resilience and performance, especially in challenging economic conditions.

Also, digital transformation is likely to have a significant impact on the company's value chain, by restructuring its ac-

ISSN: 2414-309X
DOI:https://doi.org/10.20474/jabs-10.3.3

tivities and modernizing its processes. These developments can lead to productivity gains, improved operational efficiency and greater flexibility in the face of market changes.

The impact of digitalization on optimization of value chain activities

Currently, digital transformation is a key strategic tool for companies navigating an increasingly unpredictable and complex landscape. As organizations encounter swift technological progress, evolving customer demands, and heightened global competition, they must reconsider their operational frameworks. Digital transformation fundamentally alters the corporate value chain by facilitating process improvement, encouraging innovation, and boosting organizational flexibility. It promotes the shift towards data-informed decision-making, automation of processes, and the development of new value propositions. Consequently, staying competitive now involves not just embracing technology, but also making strategic and cultural adjustments. In reaction to these changes, a significant amount of academic research has emerged to explore how digital transformation affects various aspects of value chain performance. This body of work emphasizes both the potential benefits and the challenges of incorporating digital technologies into essential business operations, highlighting the critical role of digital transformation in modern corporate management.

Many authors concur that digital transformation can profoundly affect value chain performance. Na, Chen, Li, Li, and Wang (2022) demonstrated that the digitization of value chains enhances corporate social responsibility (CSR) outcomes. On a similar note, Wilfinger (2020) emphasizes that digital transformation has a significant impact across the entire value chain. Reinartz, Wiegand, and Imschloss (2019) notes that this transformation alters the governance structure by shifting power to new economic players. In a fiercely competitive environment, Kochetkov and Zabavina (2021) argue that digital transformation, viewed as a series of internal modernization efforts, serves as a critical differentiating element. According to Fernández-Portillo, Hernández-Mogollón, Sánchez-Escobedo, and Coca Pérez (2017), the effects of digital transformation alone contribute to over 20% of the overall economic performance of companies. These findings support the notion that value chain digitization can lead to various outcomes, including operational enhancements and the development of new value models.

Moreover, several studies emphasize the crucial role of certain key factors in the success of digital transformation, such as the company's level of digital maturity, the digital strategy implemented, and the organization's digital culture. In this regard, (?, ?) points out that the most successful companies are those with a clear, coherent, and well-integrated digital transformation strategy aligned with their overall business objectives. Similarly, (Buvat et al., 2017) highlights the essential role of digital culture in fostering collective engagement and buy-in for digitalization initiatives.

The findings regarding the impact of digital maturity on value chain performance are still mixed. On one hand, Çallı and Çallı (2021) claims that digital maturity greatly enhances overall company performance. Conversely, Eremina (2019) reports that there is no significant effect of digital maturity on stock market performance, indicating that additional research is necessary to better understand this relationship.

Other authors highlight that the success of digital transformation relies heavily on its strategic alignment. According to (Matt, Hess, & Benlian, 2015), a digital strategy should be crafted in harmony with the company's other strategic aspects. Na (2022) supports the idea that digital transformation can enhance corporate social responsibility (CSR) performance. Ianenko, Ianenko, Kirillova, Amakhina, and Nikitina (n.d.) identifies three major trends: the optimization of digital information management methods, increased digital engagement with customers, and a greater capacity to respond to competitive changes. Ianenko et al. (n.d.) views digital transformation as a crucial strategy for the future, particularly in relation to emerging business models and the implementation of Industry 4.0 technologies.

Finally, digital culture seems to play a significant facilitating role. Hautala-Kankaanpää (2022) shows that digital platforms have a significant positive effect on supply chain capacity, which in turn has a positive impact on operational performance. Hautala-Kankaanpää (2022) notes that digital innovations contribute directly to improving company results. Alnoukari (2020) also confirms the transversal impact of digital transformation on the entire value chain. However, Pradana, Silvianita, Syarifuddin, and Renaldi (2022) qualifies this perspective, pointing out that digitization does not necessarily transform organizational values.

The development of the research conceptual framework

In this section of the paper, we introduce a conceptual framework for a research model aimed at examining how digital transformation affects the performance of a company's value chain. Our objective is to identify and detail

ISSN: 2414-309X
DOI:https://doi.org/10.20474/jabs-10.3.3

the key variables that may impact this performance.

This research highlights three essential latent variables that play a crucial role in a company's digital transformation journey. Firstly, digital maturity reflects how deeply integrated digital technologies are within the organization's processes, systems, and strategic mindset. It showcases the organization's preparedness and ability to effectively utilize digital tools. Secondly, the digital transformation strategy outlines the company's digital vision, strategic goals, and plan for implementing digital initiatives, ensuring that these efforts are consistent with overarching business objectives. Thirdly, organizational digital culture encompasses the attitudes, values, and behaviors of employees towards digital adoption, including openness to innovation, readiness for change, and internal support for technology integration. These three latent factors do not function independently; instead, they work together synergistically to affect the overall success of the digital transition. A robust digital culture, steered by a well-defined strategy and bolstered by high digital maturity, greatly enhances the chances of achieving a successful and sustainable transformation. The conceptual framework of our study is présente in this figure as follows :

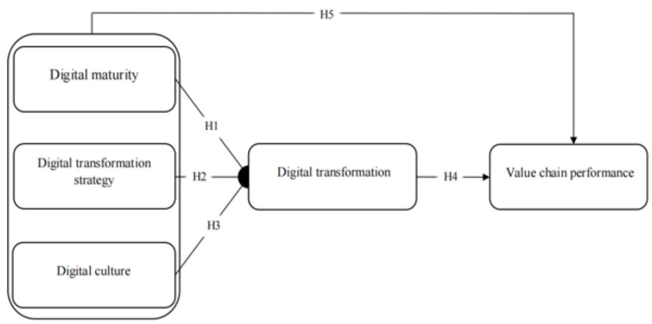

FIGURE 1. Conceptual framework of our study

These factors serve as crucial precursors to digital transformation, acting as initial influences that start and define the digitalization journey within organizations. In response, digital transformation acts as an essential mediating variable that significantly affects the performance and efficiency of a company's value chain. Following this reasoning, our research model is designed around a set of proposed relationships that highlight the dynamic interaction between internal capabilities and the outcomes of organizational performance.

To begin with, we assert that the degree of digital maturity within an organization (H1) significantly impacts the scope and depth of its digital transformation efforts. Organizations that exhibit high digital maturity tend to have the infrastructure, skills, and attitudes essential for tackling sophisticated digital initiatives. Additionally, the transformation strategy chosen by the organization (H2) acts as a framework that shapes the consistency, trajectory, and success of digital endeavors. A well-defined and progressive strategy guarantees that technological investments are in sync with business goals.

Moreover, a digital culture characterized by a receptiveness to innovation, adaptability, and an eagerness to accept change enhances the organization's ability to launch and maintain digital initiatives. These three aspects—digital maturity, strategic orientation, and cultural readiness—together drive the digital transformation process.

Digital transformation (H4) is anticipated to improve the efficiency, adaptability, and responsiveness of the value chain by optimizing operations, enhancing the flow of information, and facilitating data-driven decision-making. Ultimately, the model proposes a synergistic relationship (H5) in which the combined effects of digital maturity, strategy, and culture result in greater enhancements in value chain performance than any single factor could achieve individually. This synergy highlights the interconnectedness of these variables and emphasizes the necessity of a comprehensive approach.

In conclusion, this conceptual framework positions digital transformation as central to the value creation process, acting as a vital link between an organization's internal capabilities and the performance of its value chain. By mediating these connections, digital transformation emerges as a critical lever for attaining sustainable competitive advantage in the digital era.

Overall, the literature consistently highlights the vital role of a clearly defined digital strategy as a fundamental component in managing the intricacies of digital transforma-

ISSN: 2414-309X
DOI:https://doi.org/10.20474/jabs-10.3.3

tion. This strategy functions both as a blueprint for implementing technology and as a framework for ensuring that digital efforts align with overarching organizational objectives. Researchers contend that, amid swift technological advancements and increased market fluctuations, organizations need more than simply adopting digital tools; they must adopt a holistic, strategic method that weaves digital transformation into every aspect of the organization.

As organizations face the complex challenges and new opportunities brought about by digital transformation, scholars are emphasizing the need for a more detailed and comprehensive understanding of this phenomenon. This means looking beyond just the technological components to also consider the wider organizational factors such as leadership, culture, structure, and strategic goals. Therefore, digital transformation is viewed as a socio-technical process that requires harmony between human and technological resources.

Additionally, the literature underscores that organizational performance is context-dependent and dynamic, shaped by a complex interaction between internal strengths and external environmental factors. On the internal side, aspects like visionary leadership, digital skills, collaborative efforts across different functions, and strategic coherence are crucial for promoting adaptability and resilience. On the external front, changing customer demands, competitive challenges, and regulatory environments further impact how organizations execute and gain advantages from digital transformation.

Researchers underscore the significance of utilizing technological advancements to proactively adapt to market changes. This encompasses embracing data-driven decision-making, improving customer experiences, streamlining operations, and investigating new business models. By pursuing these strategies, organizations can generate value, maintain a competitive edge, and stay nimble in a progressively digital and interconnected global landscape. Ultimately, the literature converges around the notion that digital transformation should be strategically integrated into the organization's vision and operations to achieve substantial and enduring performance results.

CONCLUSION

In this article, we explored the connection between digital transformation and the effectiveness of the corporate value chain, offering a conceptual framework to enhance our understanding of this intricate relationship. Based on insights from recent studies, we identified an increasing agreement that digital transformation is crucial for improving organizational performance. This enhancement is primarily due to digital technologies' capacity to restructure, optimize, and integrate essential activities throughout the value chain. By leveraging automation, data analytics, and digital connectivity, organizations can attain higher efficiency, adaptability, and innovation. The literature also highlights the importance of aligning digital initiatives with overarching business objectives to ensure continued performance improvements. By reshaping conventional processes and facilitating real-time decision-making, digital transformation alters the methods of value creation and delivery. Our model lays a theoretical groundwork for examining these impacts and directing future empirical research in this dynamic area.

This research significantly enriches the current body of literature by illuminating the fundamental mechanisms through which digital transformation enhances corporate efficiency and boosts competitiveness. By stepping beyond a solely technological perspective, this study highlights the strategic and organizational aspects that influence the success of digital initiatives. The proposed conceptual model delivers a relevant and systematic analytical framework for researchers aiming to gain a deeper understanding of this intricate relationship. It pinpoints essential strategic levers—such as digital maturity, transformation strategy, and digital culture—as crucial facilitators of successful digital transformation. These components collaborate to promote innovation, agility, and operational excellence. By synthesizing these elements, the model offers a comprehensive view of how internal capabilities can be harnessed to improve value chain performance. This framework sets the stage for forthcoming empirical research and provides actionable insights for organizations facing the challenges of digital transformation.

From a managerial standpoint, the results of this study provide valuable and actionable insights. Organizations can leverage the suggested conceptual model as a diagnostic resource and a strategic framework to facilitate the organized execution of their digital transformation efforts. By pinpointing essential strategic factors—such as digital maturity, transformation strategy, and digital culture—managers can focus on specific areas for intervention to enhance the overall performance of the value chain. This focused strategy allows companies to better align their digital initiatives with their performance goals.

Despite this, the study has certain limitations. Firstly, the literature review largely relies on sources written in English, which may restrict the range of perspectives included, especially those from non-English-speaking regions. Sec-

ISSN: 2414-309X
DOI:https://doi.org/10.20474/jabs-10.3.3

ondly, although the conceptual model possesses theoretical significance, it has not been tested in practical settings. Consequently, empirical validation is essential to evaluate its strength, relevance across different sectors, and potential for broader application. Future research should focus on testing the model with both quantitative and qualitative approaches to validate its practical significance and to enhance its elements based on empirical findings.

Future research can explore several promising directions that build on this study. Empirical investigations could be conducted to evaluate the validity and applicability of the proposed model across different business sectors and geographic regions, thus examining its generalizability. Longitudinal studies, in particular, would provide valuable insights into the long-term impacts of digital transformation on value chain performance and organizational sustainability. Moreover, adding moderating or mediating variables—like company size, industry type, digital readiness, or the degree of technological integration—could enhance our understanding of the conditions that promote or obstruct successful digital transformation. These factors may affect both the intensity and effectiveness of digital initiatives, offering a more detailed perspective on their impact. Ultimately, as the pace of technological change accelerates and market demands evolve, ongoing research in this area is crucial. Such initiatives will enable organizations to acquire both conceptual frameworks and practical tools needed to navigate their digital transition and strategic adaptation.

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