



Study on the Mechanism of Value Creation Role of Enterprise Digital Transformation: A Theoretical Analysis Framework

Xiaoxuan Guo^(✉), Junbo Zhang, Shuhua Zhou, and Tianzi Geng

School of Management, Guangdong University of Technology, Guangzhou, Guangdong, China
2559897075@qq.com

Abstract. In the era of the rapid emergence of the digital economy, digital transformation is a new driving force for the high-quality growth of China's national economy, and also one of the important driving forces for the innovation of enterprises. However, the existing literature focuses on the specific areas of digital transformation, and there is no theoretical analysis framework for the study of the connotation, drivers, whether, how, and what value is created by digital transformation. Focusing on the existing literature, this paper develops a theoretical analysis around the issue of digital transformation and enterprise value creation, forms a theoretical analysis framework of enterprise value creation based on digital transformation, and gives a research outlook.

Keywords: digital transformation · value creation · drivers · action mechanism

1 Introduction

With the innovation of science and technology, digital information technology such as big data, blockchain, and cloud computing is developing rapidly and integrating deeply with business applications to promote the rapid development of the digital economy. The digitalization of enterprises is the main driving force behind the rapid development of the digital economy. According to the “China Digital Economy Development Report (2022)”, in 2021, the scale of China's enterprise digitalization will exceed 37.18 trillion, a nominal increase of 17.2 percent, accounting for 81.7 percent of China's digital economy. China's digital economy is expected to develop rapidly and vigorously, which will create huge development space for the digital transformation of enterprises. According to the newly released “2022 China Enterprise Digital Transformation Index”, the digitalization process of Chinese enterprises has been steadily advancing over the past five years and the proportion of enterprises with significant transformation results has climbed from 7% in 2018 to 17% this year. As the proportion of the effectiveness of enterprise digital transformation continues to climb, the output value of enterprise digital transformation will continue to rise in the future. It can be seen that the digital transformation of enterprises plays a huge role in practice and will face more opportunities and challenges in the future.

At this stage, the practice of digital transformation is in full swing and has become a popular research topic in academia. Although there are many theoretical research results on digital transformation, there is a lack of systematic theoretical analysis framework on the connotation of digital transformation, the driving factors, and whether, how, and what value is created by enterprises conducting digital transformation. Based on this, this paper refines the connotation of digital transformation, clarifies the drivers of digital transformation, sorts out the relationship between digital transformation and value creation, constructs a theoretical analysis framework of digital transformation and value creation, and proposes relevant research outlooks to facilitate the next research in theoretical and practical circles.

2 Refine the Connotation of Digital Transformation of Different Opinions

Along with the booming of the digital economy, digital transformation has become an important strategic direction for enterprises. The essence of digital transformation is to promote the deep integration of enterprise business and digital technology without fundamental changes in the core industry of enterprises, to achieve enterprise efficiency and cost reduction, and thus improve the operational performance of enterprises [1]. Existing scholars have made many explorations on the connotation of digitalization based on different perspectives, but there is no uniform definition of its connotation so far, and there is a lack of systematic summary overview. Academic research on the connotation of digital transformation has mainly focused on the technology perspective, organizational change perspective, and capability perspective. The organization is shown in Table 1.

Based on the technology perspective, digital transformation studies the effect that the application of technology has on the enterprise. Based on the organizational change perspective, digital transformation starts from the whole industrial chain of the enterprise and changes the strategic thinking, organizational structure, business process, and human resources of the organization. Based on the capability perspective, the core of digital transformation is to enhance the innovation capability, dynamic capability, and value creation capability of enterprises. The definitions of different perspectives have their theoretical bases. Based on this, this paper defines digital transformation as the process of digital transformation is the use of digital information technology by enterprises to make innovative combinations to promote changes in organizational strategies, structures, processes, and human resources to enhance the innovative and dynamic capabilities of enterprises, and ultimately achieve enterprise value creation.

3 Clarify the Drivers of Digital Transformation

Digital transformation is of great significance to the development of enterprises, and only by clarifying the drivers of digital transformation can we better help enterprises to carry out digital transformation. At the present stage, there are many studies on the drivers of digital transformation, but no systematic overview has been conducted. By

Table 1. Connotation of digital transformation from different perspectives

Perspective	Author	Connotation
Technical Perspective	Gilch PM [2]	Digital transformation is the process by which companies drive change and accelerate the transformation of their business models, products, processes, and organizational structures by leveraging a combination of innovative technologies such as big data, artificial intelligence, and blockchain to improve their competitiveness.
	Ni Kejin et al. [3]	Digital transformation of enterprises is the introduction of efficient digital technologies, such as the Internet, artificial intelligence, blockchain, etc., into production, operations, design, research, and innovation to promote business growth.
Organizational Change Perspective	Gregory Vial [2]	Digital transformation is the process by which companies respond strategically to the application of digital technology to transform their models, structures, and even value creation.
	Hu Qing [4]	Think of enterprise digital transformation as the process by which enterprises use digital information technology to drive changes in organizational structures and business processes related to the core products of the enterprise.
	Qian Jingjing et al. [5]	Digital transformation is the process of creating a value realization model with data as the core element by using digital information technology to reshape the company's business model and rationalize human resources.

(continued)

Table 1. (continued)

Perspective	Author	Connotation
Competence Perspective	Li et al. [6]	In the digital transformation of enterprises, the integration of the use of digital in business models and the strengthening of the application of digital technology in business realization can effectively improve the innovation capability of enterprises and inject a strong source of power in the creation of value.
	Zhang Jichang et al. [7]	Digital transformation subliminally drives the evolution of dynamic enterprise capabilities and plays a key role in the integration and reconfiguration of enterprise innovation resources and capabilities.
	Wang Qiang et al. [8]	Digitization is not just the use of devices to enhance the digital capabilities of the enterprise but captures the integration and anchoring of digital technologies in the consumer consumption process to optimize the enterprise value creation capabilities.

Source: Author's compilation based on relevant literature

combing the existing literature, it is found that digital transformation drivers mainly include four aspects: policy-driven, industry-driven, competition-driven, and internal demand-driven.

Policy-driven refers to government support and policy dividends for enterprises to achieve digital transformation policy incentives. In response to the strategic decision of building a strong Internet country and a large digital country, the government has actively formulated policies to guide local governments to help enterprises realize digital transformation. The Notice on Accelerating the Digital Transformation of State-owned Enterprises issued in 2022 clarifies the foundation, direction, focus, and initiatives for the digital transformation of state-owned enterprises, and requires accelerating the construction of industrial Internet platforms for state-owned enterprises and playing the leading role of industrial leaders. The Ministry of Industry and Information Technology has also issued the "Guide to Digital Transformation of Small and Medium Enterprises", which clearly proposes that local governments should increase support for the digital transformation resources of small and medium enterprises in terms of technology, capital, services, and human resources, and promote the high-quality development of small and medium enterprises with digital transformation. The state will use policy support and

policy dividends to leverage new market players, cultivate digital transformation forms of enterprises, and promote the accelerated generation of economic transformation scale effects.

Industry-driven is also called the driver of enterprise upstream and downstream industry chain linkage. Driven by digital technology, the whole industry chain has formed a mechanism of upstream and downstream connection with a certain degree of spontaneity and coordination. Enterprises also need to undergo digital transformation to better collaborate with upstream and downstream. According to Zhang Xiaoheng [9], with the support of digital technology, data collection within enterprises will be very effective, and there will no longer be a lack of communication between upstream and downstream in the industry, creating opportunities for the industry chain to jointly carry out digital transformation. Feng Xiaobin et al. [10] argue that driven by digital technologies, digital platforms, and digital markets, enterprises need to improve the cooperative interaction of enterprises through digital transformation and upgrading to promote more integrated products and services. With the empowerment of Internet technology, enterprises will extend the industrial chain through various means such as collaborative cooperation, when the integration of industries promotes enterprises to build digital platforms together to achieve win-win cooperation.

Competition-driven, also known as inter-firm competitive pressure-driven. Dynamic competition theory assumes that competition is dynamic and that a series of competitive activities of a firm will cause competitors to take a series of effective measures against peer competition accordingly. Chen Qingjiang et al. [11] found that when enterprises observe that their competitors significantly enhance their capabilities and improve their performance after implementing digital transformation, they will actively imitate and reinforce learning to alleviate competitive pressure. Zhao Lijin et al. [12] found that to survive and develop, the number of enterprises that carry out digital transformation to seize the market and strive to achieve performance will increase, and the transformation and upgrading of the industry as a whole will become deeper and deeper, thus forming a horizontal driving force to promote the digital transformation of the whole industry. Therefore, under the pressure of competition among enterprises, the enterprises that are the first to carry out digital transformation will have a cohort effect on the enterprises that have not implemented it, forcing them to take a series of chain reactions, which will eventually promote the transformation and upgrading of the whole industry.

Internal demand-driven refers to the purposeful transformation and upgrading of a company. First, digital technology driven by the digital economy induces companies to undergo digital transformation. Wu Mengyan [13] found that consumers' needs are more diverse in the new era, and enterprises can analyze consumer preferences through digital technologies to precisely position products and services to better meet consumer demand. Furthermore, digital transformation can eliminate organizational redundant production capacity and adjust the imbalance between supply and demand in enterprises. Rajiv Kohli [14] argues that companies need to review their capabilities to help them break through the limitations of organizational production capacity and organizational resources to better adapt to the era of rapid development of the digital economy. Finally, with the expansion of enterprises, there is a certain pressure to upgrade the internal management of top managers, and they must use the network to adjust the business

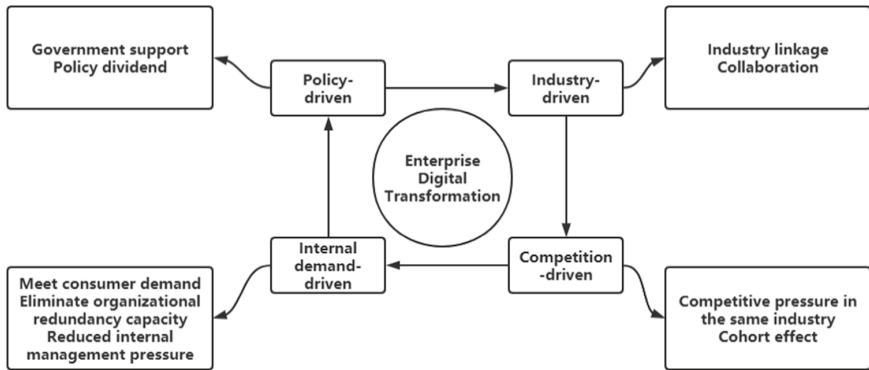


Fig. 1. Research analysis chart of digital transformation drivers

management strategy of enterprises. The willingness of top management to support digital transformation plays an important role in driving the digital transformation of the enterprise and actively leads the enterprise members to develop a sense of identity for digital transformation and form a sense of unity of battle [12].

The above answers the question of why companies undergo the digital transformation from four aspects: policy-driven, industry-driven, competition-driven, and internal demand-driven. The research analysis of digital transformation drivers is shown in Fig. 1. Under policy-driven, policy support and policy dividends are lures for enterprises to carry out digital transformation; under industry-driven, the transformation and upgrading of companies will bring a sense of wrapping up and forcing enterprises to join the ranks of digital transformation; under competition-driven, when competitors improve their business performance through digital transformation, enterprises will feel anxious and imitate the competitors to transform and upgrade; under internal demand-driven, enterprises purposefully carry out transformation and upgrading after satisfying consumer demand, eliminating redundant organizational production capacity, and reducing the pressure of internal management upgrading, etc. The driving factor at this time is the desire of enterprises for digital transformation, which is more targeted and motivated.

4 Sort out the Role Mechanism of Building Digital Transformation

4.1 Impact of Digital Transformation on Value Creation

With the rising attention to digital transformation, scholars have started to focus on the value creation of enterprise digital transformation. Digital value creation refers to the combined use of data technologies and data resources by enterprises to change the problem of value creation between enterprises and stakeholders in various collaborative processes to help themselves meet customer needs and gain a sustainable competitive advantage [15]. However, there is some academic controversy about whether the digital transformation of enterprises creates value.

The value destruction theory asserts that value destruction occurs when a firm fails to realize its value proposition and results in unexpected loss of resources [16]. Based

on the value destruction theory, there exist studies that argue that digital transformation produces a negative response to the value creation of the enterprise. When an enterprise's digital technology innovation approach cannot be adjusted in time with the changes in the environment, it will lead to the inability of the enterprise to adapt to the changing technological environment faster, thus experiencing technological threats and losing competitiveness [17]. Furthermore, enterprises are obsessed with introducing digital technology for business model innovation, but they ignore the difficulty of integrating and reorganizing digital technology with the original resources of the enterprise, which eventually leads to management disorder and thus does not create enterprise value substantially [18]. Digital transformation is an unpredictable innovation process with very high latent hidden costs, and if the transformation is unsuccessful, huge losses will be incurred, resulting in a hindrance to the process of realizing the economic value of the enterprise.

Value creation theory believes that everything is created to have value, and everything has the value to be created. Based on the value creation theory, more studies have concluded that digital transformation has a positive impact on enterprise value creation. Digital transformation in enterprise value creation mainly focuses on two aspects: economic value and social value. On the one hand, digital transformation promotes the creation of economic value for enterprises. Wang Ziqing et al. [19] found that Sany Heavy Industry has applied the underlying technology to interconnect equipment for the manufacturing process, digitize operation management, and network collaboration for supply chain management, thus reducing manufacturing cost, improving output efficiency, and promoting the company's business performance, to obtain the economic value at the enterprise level. Through digital transformation, Midea has reduced the explicit input of each implicit benefit of the enterprise; enhanced the comprehensive competitiveness of enterprise production through the digitalization of production process innovation; and innovated the enterprise business model through the establishment of an industrial value network, and then reached the enterprise economic value creation of Midea [20]. On the other hand, digital transformation can also promote the creation of social value. By studying the impact of digital transformation on enterprise value creation in the energy and power industry, Rao Ganggang [21] argues that the use of big data in power can be closely integrated with the digital government for better social management and macro-control. By studying the value creation of tourism services driven by digital transformation, Dang Hongyan [22] argues that with the help of digital technology, the tourism industry establishes new operating mechanisms, develops complementary markets, and creates social values such as big data support, which play a huge role in promoting the development of tourism.

The above mainly sorts out the question of whether digital transformation creates value and what value it creates. The combing reveals that digital transformation has positive and negative impacts on value creation based on value destruction theory and value creation theory. However, the positive impact of digital transformation is greater than the negative impact. Among the positive impacts, digital transformation promotes the creation of economic and social value for enterprises and has an important role in promoting the development of enterprises.

4.2 Mechanisms of Digital Transformation on Value Creation

Since scholars have studied the connotation of digital transformation in different perspectives differently, the impact mechanism on value creation has different dimensions in different perspectives. The dimensions of digital transformation on value creation are three dimensions: technology dimension, organizational change dimension, and capability dimension.

Based on the technology dimension, the digital transformation of enterprises takes digital technology as the underlying technical foundation to achieve cost reduction, efficiency improvement, and technological innovation for enterprises, which ultimately creates performance and value for enterprises. Tang Haodan et al. [23] argued that enterprises enhance production efficiency, optimize human capital structure, and strengthen service-oriented manufacturing with the help of digital technology so that enterprises can achieve cost reduction, efficiency increase, and quality improvement, which ultimately leads to market power enhancement. Xu Xianglong [24] showed that companies can use digital transformation to implement digital empowerment of their organizational structure to improve their technological innovation, which in turn shortens their product development and development cycle, improves their innovative production efficiency, and innovates product value.

Based on the organizational change dimension, organizational change is the key link between digital transformation and value creation. Liu Bojian et al. [25] argued that in the process of digital transformation, companies have to make organizational changes in the new market environment in terms of organizational structure, human structure, organizational culture, organizational processes, and leadership style to promote value addition and value innovation. An Jiayi et al. [26] believe that the digital transformation of manufacturing enterprises can follow the path of organizational change such as the strategic change of steel enterprises, the organizational structure change of new energy automobile enterprises, the process-led change of textile enterprises, and the human-centered change of home appliance enterprises to promote the all-round digital transformation of enterprises at the strategic end, structural end, process end, and talent end, to expand the new development space of enterprises.

Based on the capability dimension, enterprises need to have the ability to continuously self-innovate. If enterprises' digital transformation capability is insufficient, it will restrict their innovation capability and core competitiveness, thus failing to achieve sustainable value creation. Therefore, the capability of digital transformation is an essential mediating mechanism for enterprise value creation. Zhang Jichang et al. [27] argued that digital transformation promotes the improvement of dynamic capabilities such as innovation, absorptive capacity, and adaptive capacity of enterprises, thus enabling them to achieve innovation performance. Chi Maomao et al. [28] proposed that the research dual capability of research exploitation capability and research exploration capability plays an important mediating role, indicating that the digital transformation and new product development performance of small and medium-sized enterprises can be effectively promoted through the complementary relationship of research dual capability. Wang Qiang [29] et al. argued that the intermediary support for digital transformation is the digital capability and value creation capability. The ability to collect, integrate, and analyze under digitization enhances the data detection capability of enterprises

Table 2. Paths of digital transformation in different dimensions

Dimension	Path	Creating Value
Technology Dimension	Improve production efficiency, optimize human capital structure, and strengthen service-oriented manufacturing.	Make the market power up.
	Perform digital empowerment, promote digital product and service innovation, and improve enterprise technology innovation.	Realize product value.
Organizational Change Dimension	Conduct organizational structure, human structure, organizational culture, organizational processes, and leadership style changes.	Value added and value innovation.
	Conduct strategic changes in industrial layout, structural changes in research and development departments, process-led changes in production and sales, and human-centered changes.	Drive the digital transformation process.
Competence Dimension	Dynamic capabilities such as innovation, absorptive capacity, and adaptability.	Promote innovative performance
	Research dual capability of research utilization capability and research exploration capability.	Improve new product development performance.
	Digital Capabilities and Value Creation Capabilities.	Value creation and value capture.

Source: Author's compilation based on relevant literature

and improves the efficiency of resource utilization while enhancing the value creation capability based on digital elements helps to expand the communication space of enterprises, meet consumer needs, and ultimately improve business performance and obtain enterprise value.

The above combs the realization path of digital transformation under the technology dimension, organizational change dimension, and capability dimension, and illustrates how digital transformation creates value. The organization is shown in Table 2.

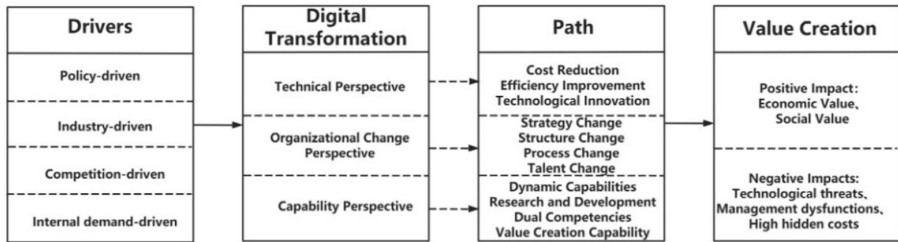


Fig. 2. Digital transformation integration theoretical framework

5 Conclusions

This paper reviews the literature related to digital transformation, sorts out the connotation and driving factors of enterprise digital transformation, as well as whether, how, and what value is created by digital transformation, and builds an integrated research framework of enterprise digital transformation and value creation, as shown in Fig. 2. The following conclusions are drawn: digital transformation has its intrinsic logic for different perspectives, but so far there is no unified concept widely accepted by society; the digital transformation of enterprises is influenced by policy-driven, industry-driven, competition-driven, and internal demand-driven aspects; digital transformation has both positive and negative impacts on enterprise value creation, but the positive impacts are greater than the negative impacts; digital transformation has corresponding transformation realization paths in technology dimension, organizational change dimension, and capability dimension, to promote enterprises to generate economic and social values, improve their competitive advantages and achieve high-quality development.

6 Future Prospects

To further promote digital transformation, this paper believes that future digital transformation can be studied as follows. First, find a clear definition of the concept of digital transformation. The existing definition of the concept of digital transformation is rather vague, and there exists a definition of the concept from various perspectives, but there is no unified view that is widely accepted by the public. Second, broaden the study of enterprise digital transformation drivers. The research on the drivers of digital transformation can start from the division of digital transformation phases to more accurately determine the impact of multiple factors of digital transformation. Third, deepen the study of the role mechanism of digital transformation. Digital transformation can focus on value co-creation, and deepen the investigation of the mechanism of upstream and downstream value co-creation by using digital transformation to better promote the process of digital transformation among enterprises.

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