

Research on Strategies for Improving Enterprise Innovation Performance in the Context of Digital Transformation

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Abstract

Under the innovation-driven development strategy, the improvement of enterprise innovation performance is an important way for enterprises to benefit, digital transformation provides a new path for enterprises to improve their innovation performance, and how to utilize the results of digital transformation to improve their innovation performance is an important issue for enterprises. This paper takes digital transformation as the background, introduces absorptive capacity theory, and establishes a model of the impact of digital transformation on enterprise innovation performance with absorptive capacity as the mediator. Finally, combined with the model, it proposes effective strategies for the improvement of enterprise innovation performance from the three aspects of digital transformation, absorptive capacity, and internal and external factors of enterprises.

Keywords

Digital Transformation, Enterprise innovation performance, Absorptive capacity.

1. Introduction

In recent years, China's digital economy has made great progress, and the scale of the digital economy has continued to rise. The China Academy of Information and Communication Research pointed out in the Research Report on the Development of China's Digital Economy (2023) that the scale of China's digital economy reached 50.2 trillion yuan in 2022, accounting for as much as 41.5% of GDP, and was higher than the growth rate of GDP in the same period for 11 consecutive years. Obviously, the digital economy has become the core driving force of China's economic development, providing support for the upgrading of production methods. The "14th Five-Year Plan" development plan clearly points out the need to promote the deep integration of digital technology and the real economy, and to empower the transformation of traditional industries. In the context of the digital economy, digital transformation is regarded as the most intuitive manifestation of the digital economy in the enterprise, and it is self-evident that digital transformation plays an important role in enterprise development. Digital transformation is defined in the White Paper on China's Digital Economy Development and Employment as the process of comprehensively integrating digital technology with industry, optimizing internal resource allocation, promoting business process improvement and production mode restructuring, and then improving internal operational efficiency. The report of the 20th Party Congress re-emphasized the importance of the innovation-driven development strategy, stating that the implementation of the innovation-driven development strategy should be accelerated. In this context, whether enterprises can seize the new opportunities of digital transformation, optimize resource allocation through digital transformation, improve innovation performance, and promote enterprise innovation and development has become a focus of theoretical exploration and industrial practice.

Academics have also made many explorations in this regard. Under the background of digital transformation, modern enterprises urgently need to improve innovation performance to enhance their competitiveness. Academic research on digital transformation and enterprise innovation performance is broadly divided into two categories: the first category is theory or case study. Yu Jiang and others explored the connotation and basic features of digital innovation theory from the theoretical aspect. Yao Xiaotao et al. believe that enterprise digital transformation is an inevitable product of internal and external joint action, which will bring new development power for enterprise innovation. Liu Jie and others explore the role of digital transformation in driving enterprise innovation with Gree Electric as an example. This type of research, whether theoretical analysis or case study, affirms the facilitating effect of digital transformation on enterprise innovation performance. The second type is quantitative analysis, Zhang Jichang et al. empirically examined that digital transformation significantly and positively affects enterprise innovation performance using the data of high-tech listed enterprises as a sample. Qiao Pengcheng et al. used text analysis to construct enterprise digital transformation index, and based on listed companies, they found that digital transformation positively affects significantly promote innovation performance.

Based on the above studies, the relationship between digital transformation and enterprise innovation performance is mainly analyzed, as well as the mechanism and path of the impact of digital transformation on enterprise innovation performance. There are fewer studies on how enterprises can improve their innovative performance in the context of digital transformation. Therefore, this paper introduces the theory of absorptive capacity and explores the strategy of enhancing the innovative performance of enterprises in the context of digital transformation, with a view to providing new decision-making support for the implementation of China's innovation-driven development strategy.

2. Literature Review

Innovation is the first driving force in building China-style modernization. It not only promotes economic transformation and upgrading, but also enhances competitiveness and national security, and promotes scientific and technological progress and sustainable development. Enterprise innovation performance is an important symbol of national innovation behavior and an important determinant of economic growth, and refers to the economic, scientific and technological, and social benefits and results obtained from the introduction and implementation of sustainable innovation projects by enterprises. Enterprise innovation performance is an overall minimal improvement brought about by the enterprise's technological progress or innovation ability, which is an important manifestation of the enterprise's innovation effect. Regarding the factors affecting enterprise innovation performance, some scholars start from within the enterprise and find that five aspects of entrepreneurial capabilities, namely strategy, relationship, innovation, learning, and organizational management, significantly affect the innovation performance of small and medium-sized enterprises (SMEs). Technology accumulation and R&D investment also have a significant positive impact on firms' innovation performance. And from the outside of the enterprise, financial support type, patent protection type of macroeconomic policies, government subsidies, social capital have a significant enhancement effect on enterprise innovation performance.

Digital transformation is regarded as a "compulsory course" for the survival and long-term development of enterprises, and many enterprises are now standing at the crossroads of digital transformation, and scholars are increasingly exploring the relationship between digital transformation and enterprise innovation performance. Scholars have conducted empirical tests on different types of enterprises, and most of the conclusions affirm the positive

contribution of digital transformation to enterprise innovation performance. Taking manufacturing enterprises as a sample, Wang Cai verified that digital transformation has a positive effect on enterprise innovation performance with dynamic capabilities as a mediator. Chi Maomao et al. concluded that digital transformation has a positive effect on innovation performance through a survey of 138 manufacturing enterprises in China, and at the same time, digital transformation is a necessary condition for innovation performance improvement. Zhang Jichang et al. concluded that digital transformation significantly improves the innovation performance of enterprises through the study of high-tech listed enterprises. Zheng Shuai et al. argued that digital transformation of enterprises helps hub enterprises to manage the multi-subject coupling relationship, which significantly contributes to the innovation performance of hub enterprises. Duan Huayou et al. took resource-based enterprises as a sample and concluded that digital transformation significantly improves the level of enterprise innovation performance. Guo Tongmei took national specialized and new listed enterprises as the research object, and found that the digital transformation of specialized and new enterprises has a significant promotion effect on innovation performance. Zhang Wei et al. took multinational enterprises as the research object, and found that digital transformation significantly enhances the innovation performance of multinational enterprises. Song Jianing et al. take manufacturing enterprises as the research object, and conclude that digital transformation has a significant enhancement effect on the innovation performance of manufacturing enterprises. Xin Lin et al. take "specialized, special and new" listed enterprises as the research object, and empirically found that the digital transformation of specialized, special and new enterprises not only helps to improve the innovation performance of enterprises, but also helps to improve the innovation efficiency of enterprises. Some scholars hold different views, Huang Jiegen et al. that China's enterprises comprehensively, the relationship between the level of digitization and enterprise innovation performance for the inverted "U" type. But overall, in addition to the information technology industry, wholesale and retail trade, social services and cultural communication industry, these leading industries in digital transformation, other industries are in the early stage of digital transformation, the low level of digitalization has not reached the inflection point. Therefore, China's digital transformation and enterprise innovation performance are still in a positive relationship. Ma Jun et al. took Chinese listed companies as the research object and empirically examined the existence of a U-shaped relationship between digital transformation and corporate innovation performance that first declines and then rises.

In summary, existing studies have conducted many explorations on the improvement of enterprise innovation performance, focusing on mining the correlation between enterprise digital transformation and innovation performance and the influence path, but the existing studies are still deficient. Firstly, there is no in-depth exploration on how the resources obtained in the process of digital transformation can be transformed into the innovation results of enterprises; secondly, when studying the impact of digital transformation on the innovation performance of enterprises based on absorptive capacity, it is only regarded as a link in the dynamic capacity to be studied, and is not analyzed in-depth; moreover, the existing studies have not elaborated on how to improve the innovation performance of enterprises. Based on the above analysis, this paper combines the theory of absorptive capacity and proposes effective methods to improve the innovation performance of enterprises in the context of digital transformation.

3. Model building

3.1. Theoretical Analysis

The concept of absorptive capacity was first proposed by Cohen & Levinthal and others, who believed that absorptive capacity is the ability of an enterprise to identify, evaluate and then accumulate external knowledge, and ultimately apply it to the business. He also pointed out the three dimensions of absorptive capacity in the model, namely identification, digestion and application. With the increasing research on absorptive capacity, Zahra et al classified absorptive capacity as a kind of dynamic capacity, and Lane considered absorptive capacity as a firm's ability to identify, acquire, internalize and apply external knowledge. And Patterson put absorptive capacity and innovation under the same research framework, and considered absorptive capacity as the ability of enterprises to search, acquire, absorb, transform, and apply external knowledge to ultimately achieve the purpose of enhancing innovation. Existing studies have not accurately defined absorptive capacity, combined with the research problem of this paper, this paper defines absorptive capacity as a dynamic ability of an enterprise to utilize its own advantages to identify and acquire valuable knowledge and information from the external environment, and then apply them after digestion to enhance the enterprise's innovation performance.

Digital transformation has accelerated the speed of knowledge and information circulation, broadened the diversity and breadth of knowledge and information dissemination, and made it more difficult for enterprises to manage knowledge and information. And absorptive capacity provides an effective guarantee for enterprises to cope with rapid changes in the market. The wide application of big data, blockchain and artificial intelligence technologies is the gradual increase in the degree of openness of the digital platform, and the platform data can accelerate the digital transformation process of enterprises through their absorption capacity. The digital platform provides a large number of data resources for enterprises, and the absorption capacity can rapidly identify effective information, integrate and process it and apply it to the innovative production process, so as to improve the innovative performance of enterprises.

In summary, this paper argues that absorptive capacity is a key mechanism for digital transformation to empower enterprise innovation performance.

3.2. Digital transformation and enterprise innovation performance

This paper summarizes the facilitating effect of digital transformation on enterprise innovation performance into three aspects: first, digital transformation accelerates the speed of enterprise's identification of innovation opportunities and increases enterprise innovation opportunities. The identification of innovation opportunities is the foundation of enterprise innovation performance improvement, which requires enterprises to have the ability to quickly capture, analyze, and integrate effective information. When enterprises adopt digital transformation technologies such as big data, they can quickly identify and acquire innovation opportunities in a large amount of external information. Second, digital transformation brings inter-enterprise relationships closer and improves innovation efficiency by building collaborative innovation complexes. In the context of digital transformation, information sharing has become a key part of improving innovation efficiency. Collaborative innovation complex makes information sharing possible, and upstream and downstream enterprises in the supply chain use it as a platform to exchange product information, shorten the production cycle, and accelerate the enterprise's response to the market to improve innovation performance. Third, digital transformation reduces innovation costs by simulating the analog production process through digital technology. Enterprise innovation is not overnight, with a long cycle, high risk characteristics, enterprise innovation process requires repeated attempts to spend a lot of money. Digital transformation can simulate this process, so that the trial and error process

of enterprise innovation is more efficient while the cost is greatly reduced. Reduced innovation costs and improved efficiency can also encourage enterprises to increase innovation investment, forming a virtuous cycle. Based on this, the following hypotheses are proposed:

H1: Digital transformation positively affects enterprise innovation performance.

3.3. The mediating role of absorptive capacity

The market in the context of digital transformation is complex and volatile, and if enterprises want to occupy a place in this environment, they must be able to adjust their coping strategies in a timely manner according to the external environment. Enterprises with strong absorptive capacity can not only make the quickest response to external heterogeneous technologies, but also improve the internal organizational mechanism of the enterprise to provide more adequate protection for the transformation of technology. With the continuous development of digital transformation, the cognitive boundaries of the enterprise gradually expand, the internal and external information cycle of the enterprise is more rapid, and the enterprise can obtain information from different partners through more channels, grasp the market demand and make feedback, so as to drive the innovation of the enterprise.

H2: Absorptive capacity mediates the relationship between digital transformation and enterprise innovation performance.

Based on the above discussion, the following theoretical model is constructed by combining Cohen & Levinthal's absorptive capacity model, as shown in Figure 1:

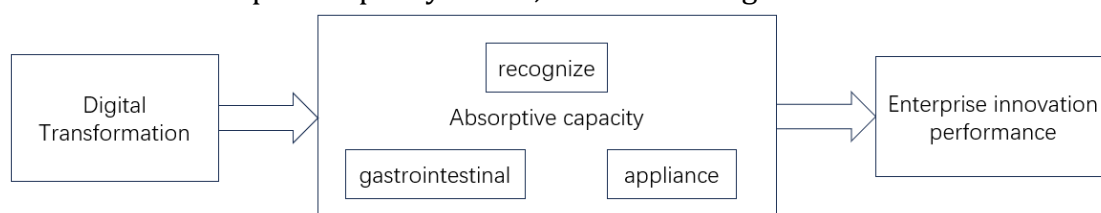


Figure 1: Conceptual model

4. Enhancement Strategies

4.1. Conform to the trend of the development of the digital economy and promote the process of digital transformation.

In the context of the innovation-driven development strategy, enterprises should accelerate the pace of digital transformation in light of their own circumstances. Focus on the fit between digital technology and enterprise innovation performance improvement. Strengthen the application of digital technology in all aspects of enterprise innovation and production, and at the same time examine whether the internal and external aspects of the enterprise need the deep embedding of digital technology. Application of digital technology to implement decision-making analysis and visualization of the current market situation, to maximize access to the value of the data, turn passive into active, grasp the market trends, and play a good innovation under the "first move".

4.2. Strengthen its absorption capacity and enhance its ability to perceive opportunities and adapt to the environment.

Absorption capacity provides a channel for the application of digital transformation results in practice. On the one hand, digital transformation will change the original way of communication between enterprises and provide a new platform for inter-enterprise communication. Digital tools strengthen the links between stakeholders and provide more convenient conditions for enterprises to identify innovation opportunities and access external resources. On the other hand, enterprises with high absorptive capacity can optimize their internal application

structure based on the acquired external information, break operational inertia, and become more adaptive to changes in the market environment.

4.3. Consider internal and external factors comprehensively and remain vigilant against uncertainties.

Under the background of digital transformation, enterprises are facing a turbulent market environment, and should comprehensively consider the influencing factors of absorptive capacity and the impact of various uncertainties. First of all, internal factors of enterprises have an important impact on absorptive capacity. Employees' abilities and skills should be upgraded through training and learning programs. At the same time, the vision of managers should be broadened and the flexibility of the company's organizational structure should be enhanced. Second, firms also need to pay attention to the impact of external competitive dynamics on absorptive capacity. Changes in market demand and strategic adjustments by competitors may have a significant impact on the firm. Therefore, firms should pay close attention to market trends and maintain good competitive relationships with competitors. Flexible market positioning and timely product adjustments will help firms adapt to market changes. The external competitive dynamics of the enterprise will also challenge the absorptive capacity, and it should pay attention to changes in market demand, changes in competitors' strategies, etc. Finally, there are many uncertainties in the process of digital transformation, such as technological changes, policy adjustments, and market fluctuations. Enterprises should always be vigilant and develop appropriate risk management strategies.

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