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Research on the Impact of Digital Transformation on Enterprise Innovation Capabilities

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Abstract

Waves of digital transformation such as mobile Internet, artificial intelligence, big data, and cloud computing are coming one after another. Digital transformation is a strategy being implemented by most large enterprises. Enterprises invest huge amounts of money and a large amount of technical capital to carry out business systems and infrastructure. Digitalization and information transformation are important ways to achieve sustainable development. The key for enterprises to use the dividends of the digital economy to quickly improve their innovation capabilities is to achieve high-quality development. Only enterprises that adapt to the changing digital transformation of the market can achieve continuous innovation and development in the market. In the context of deepening digital transformation, this article will study at the micro level whether and how digital transformation affects the overall innovation process of enterprises, hoping to provide reference for the digital development of enterprises. The research results show that digital transformation has a direct positive impact on the improvement of corporate innovation capabilities, and digital transformation has an indirect impact on corporate innovation capabilities through the intermediary effect of corporate innovation atmosphere.

Keywords

Digital Transformation; Digital Economy; Corporate Innovation Capabilities; Financing Constraints; Human Capital.

1. Introduction

"Digital China" is proposed in the report of the 19th National Congress as the top priority of my country's construction of an innovative country. Digital economy refers to the use of modern information networks, the rational use of information technology, and the use of digitized information and knowledge as the most important factor of production, a series of economic activities that promote the optimization of the economic structure and the improvement of productivity [1]. The digital economy is an important pillar of the national economy that has developed in recent years. Digital transformation is the deep integration of big data technology and the real economy. Through big data smart technology, the entire process and operation management of an enterprise's business operations are integrated into it, and big data is carried out in all aspects of the enterprise's production, sales, operations, and after-sales services. Empowerment and comprehensive control of enterprise operations, thereby improving the overall level of enterprise operations, in order to achieve the core strategy of enterprise value growth [2]. Enterprise innovation is no longer carried out in a one-way manner. The innovative experience of companies such as Sany Heavy Industry and Xiaoxiong Group proves that digital technology and smart technology have been used to achieve digital transformation at both levels of manufacturing and sales, thus achieving a complete understanding of the manufacturing and sales processes. reverse drive. As a new strategy for enterprises under the

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background of the new economy, digital transformation can promote the smooth flow and use of data between the market and various departments of the enterprise, and can transform and optimize the original production and operation processes, thereby improving the operational efficiency of the enterprise [3]. Digital transformation not only improves the efficiency of the company's existing human resources, but also adds new digital elements to the company's original manufacturing elements in a more reasonable proportion to save human resources and improve the company's performance. Realization of overall competitive benefits. Whether it is operating or investing, it requires financial support and organizational coordination. Innovation activities are an important source for enterprises to gain competitive advantages and achieve sustainable development. Technological innovation projects are endogenous activities of the company and must continue to be injected with funds, how to alleviate innovation investment and financing constraints has become an urgent problem for enterprises to solve. Especially in the context of digital transformation, when disruptive changes are taking place in all aspects of enterprise operation and management, whether financing constraints have an intermediary effect on the impact of enterprise digital transformation on innovation capabilities is a practical issue worth exploring.

2. Related Concepts and Research Hypotheses

2.1. Digital Transformation

Digital transformation is for enterprises to elevate their production and business models to a new level based on the digitization and digital upgrading of production, operations, and management [4]. Digital transformation accelerates the improvement of enterprise productivity and strengthens collaboration among various departments. The digital transformation has led to the innovative development of new enterprise models and new business models. Digital transformation can accelerate the process of enterprise informatization, significantly improve the operational level of enterprises, promote the transformation of traditional manufacturing enterprises into intelligent manufacturing enterprises, and improve their innovation capabilities and sustainable development capabilities [5]. In the process of digital transformation, only when enterprises achieve universal digital transformation can they promote the overall development of the digital economy, accelerate the development of industrial clusters of digital enterprises, and promote the digital transformation of industrial enterprises as a whole to a certain extent, only then can they systematically create digital economy, digital transformation and The comprehensive competitiveness of industrial digitalization has been improved.

2.2. Enterprise Innovation

Enterprise innovation capabilities include three aspects. First, at the technical level, enterprises apply advanced digital technologies in various chain links such as product research and development, product manufacturing, and product logistics and transportation. Secondly, at the market level, the market recognition and customer satisfaction of new products using digital technology, and the market's acceptance of the product are key points to measure the effectiveness of new product promotion. Finally, in terms of income, whether a series of production and operation management carried out by enterprises using advanced digital technology can bring benefits to the enterprise, or whether it can broaden the profit margin of the enterprise to achieve sustainable growth of enterprise efficiency.

Enterprise technological innovation is an inevitable product after the market economy develops to a certain extent. The subjects of enterprise technological innovation are diversified. Generally speaking, it involves the collaborative cooperation of enterprises, governments, and university research institutes [6]. For enterprises, through corporate management, this

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information is made public to improve the efficiency of decision-making, thereby forming a rapid response mechanism related to the market. From a management perspective, innovation is a process in which entrepreneurs take advantage of potentially profitable market opportunities, change production conditions and inputs, create a more efficient, effective and profitable production and management system, and realize business interests. The introduction of new products and production (technical) processes can be said to open new markets and discover new sources of raw materials and semi-finished products. and creating new facilities for businesses.

2.3. Research Hypothesis

Digital enterprise transformation accelerates the transformation of enterprise professional management. Comprehensive digital transformation enhances enterprise business commercial transformation [7]. The enterprise digital transformation strategy can dynamically analyze the enterprise's multi-dimensional average data, track and obtain updates of core information data, and make full use of big data's high-speed data processing capabilities and the accuracy of analysis data rankings to help the innovation and reform of the enterprise's daily business. Enterprise products can use the convenience and advantages of digital platforms to carry out multi-dimensional innovative technology research and development, and use big data technology and experience to strengthen multi-dimensional data statistics and real-time analysis [8]. Enterprises should combine their own development status and future development plans to optimize and improve the shortcomings and deficiencies in the current transformation process of private enterprises, quickly and effectively promote the further improvement of enterprise innovation work, and ensure the stable and healthy growth of enterprises.

Regarding the connection between the innovation atmosphere of enterprises and the creativity of enterprises, many experts in our country believe that there is a positive correlation between the creativity of enterprises and the innovation atmosphere of enterprises [9]. In an innovation environment, an enterprise's innovation activities will not be restricted by human resources. The organizational innovation climate promotes communication and interaction among various departments and levels within the organization, and promotes the exchange and sharing of information, knowledge and ideas among organizational members.

In our research, it is assumed that digital transformation has a direct positive impact on the innovation capabilities of enterprises; digital transformation indirectly affects the innovation capabilities of enterprises by positively affecting the innovation atmosphere of enterprises [10].

3. Data Analysis Methods and Research Conclusions

3.1. Data Collection

Based on the research methods and experiences of previous scholars, the commonly used method of obtaining sample data in subject research is the questionnaire method. This article also draws on this method to collect sample data required for empirical research. The questionnaire used in the study involves variables including digital transformation, innovation atmosphere and innovation ability [11]. They are all measured using mature scales compiled by domestic and foreign scholars, and multiple items are used to explain and analyze one variable.

In terms of sample selection, this article mainly follows the principle of random sampling during the questionnaire survey. Random sampling can be specifically divided into simple random sampling, stratified random sampling and cluster sampling.

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In terms of research methods, this article mainly adopts various methods such as on-site distribution, questionnaire website distribution, telephone consultation, email, and hiring third-party agency surveys to collect questionnaires.

In terms of selection of research objects, this article takes manufacturing companies that are undergoing digital transformation across the country as the main research objects [12]. The article focuses on studying the relationship between an enterprise's digital transformation and its innovation capabilities, clarifying the complex mechanism between digital transformation and enterprise innovation, and exploring the role of innovation atmosphere in the relationship between an enterprise's digital transformation and its innovation capabilities.

In terms of survey arrangements, a combination of pre-survey and formal survey was adopted. First, a small sample pre-research was conducted. A small number of 50 questionnaires were distributed first [13]. Some questions that caused ambiguity or errors in the respondent's understanding were adaptively modified based on the responses, and then formal large-scale sample data collection was carried out.

3.2. Data Analysis Methods

Correlation analysis is an analysis method that tests whether there is a relationship between two variables. This article uses the Pearson test of SPSS to measure the correlation between variables. During the reliability and validity analysis, reliability testing and validity testing were conducted respectively [14]. Reliability refers to the reliability and stability of measurement results. It is a prerequisite for validity and an important indicator of the stability, consistency, and accuracy of research data and test results. The higher the reliability coefficient, the more stable the test results are. Validity refers to the extent to which the measured results can reflect the content to be examined. After the reliability test, the measurement results need to be tested for validity. Validity can determine the effectiveness of the scale.

In terms of testing the relationship between digital transformation and corporate innovation capabilities, regression analysis constructs equations to reflect the interrelationship between variables, and uses SPSS software to set up a regression model and conduct hypothesis testing. To test the main effect of digital transformation, we hypothesize that digital transformation has a direct positive impact on the innovation capabilities of enterprises. To test this hypothesis, we first put the control variables company age, company size, and location into the regression model, and then added the independent variable digital transformation.

In terms of testing the mediating effect of innovation climate, we hypothesize that digital transformation indirectly affects the innovation capabilities of enterprises through positive corporate innovation climate [15]. By incorporating digital transformation, innovation atmosphere, and innovation capabilities into the regression model at the same time, it can be concluded that digital transformation has a positive impact on corporate innovation atmosphere. The intermediary effect of corporate innovation atmosphere is significant, and digital transformation plays an indirect impact on the improvement of corporate innovation capabilities.

3.3. Analysis Conclusion

Digital transformation can effectively improve the innovation capabilities of enterprises and play a direct and positive role in the digitalization process. At the same time, it can also indirectly affect the innovation capabilities of enterprises by improving factors such as innovation atmosphere. Enterprises achieve continuous innovation through digital transformation. Such innovation accelerates enterprises to adapt to the new environment of the digital economy and achieve breakthrough results. Under the current opportunities of "digital economy and new infrastructure" in China, companies should accelerate their own digital transformation process and seize the opportunity to achieve breakthrough innovation.

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The digital transformation of enterprises will significantly enhance the innovation atmosphere inside and outside the enterprise. Driven by the innovation atmosphere, the innovation capabilities of enterprises will ultimately be improved.

Digital transformation provides theoretical support for corporate innovation behavior selection and innovation strategy formulation. When enterprises formulate digital strategies, they need to consider not only developing data-driven strategies for the enterprise's digital infrastructure, but also cultivating digital thinking and digital awareness from the perspective of the enterprise organization, and gradually changing the traditional working habits and working methods of members. It is necessary to adjust the company's inherent work processes and organizational structure to adapt to innovation, support new digital services and business model changes, and comprehensively enhance the company's digital capabilities.

4. Conclusion

The rapid development of digital transformation plays an important role in the high-quality development of enterprises. The rapid development of global digital transformation has put forward higher and more urgent requirements for the digital transformation of enterprises. The fundamental force driving digital transformation comes from the upgrade of basic technology and the convenience of information circulation, which gives enterprises the ability to describe, diagnose, predict, and analyze external information. On the basis of the vigorous development of digital transformation, the digital transformation of enterprises will further affect the company's core business, fundamentally stimulate the vitality of the internal and external business environment of the enterprise, and ultimately promote the enterprise to continuously realize new product development, new process creation, The process of changing the new management model and building a new platform structure coincides with the previous theoretical analysis and empirical results. Digital transformation plays a direct and active role in the digitalization process. The innovation ability of enterprises will be indirectly affected by factors such as the improvement of innovation atmosphere. Digital transformation is the driving force for enterprise innovation, which can stimulate enterprise innovation and accelerate independent innovation. Only by actively accelerating digital transformation and significantly improving innovation capabilities in the era of digital economy can enterprises continue to improve their competitiveness and accelerate high-quality development.

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