

Research on the Impact of Digital Transformation on the High-quality Development of China's State-owned Enterprises

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Abstract

With the rise of the global digital wave, Chinese state-owned enterprises are in urgent need of improving their operational efficiency and competitiveness through digital transformation. This paper explores the role of digital transformation in promoting high-quality development of state-owned enterprises from theoretical and applied perspectives. By comprehensively analyzing existing literature, this paper clarifies the key technologies and processes involved in digital transformation and discusses the profound impact of these changes on the structure and management of state-owned enterprises. The paper emphasizes the key role of digital technology in optimizing corporate decision-making, enhancing innovation capabilities and improving service efficiency. At the same time, it analyzes the challenges encountered by state-owned enterprises in the process of digitalization, such as low technology acceptance, cultural resistance and lack of skills, and puts forward corresponding strategies and policy recommendations to promote the in-depth implementation of digital transformation. In addition, this paper explores the possible impact of future technological development on state-owned enterprises and provides insights on how to address these challenges through policy and management innovation. By analyzing successful digital transformation cases, this paper reveals the specific paths and strategies for achieving high-quality development, provides theoretical support and practical guidance for the digital transformation of Chinese state-owned enterprises, and aims to provide decision-making references for policymakers and enterprise managers.

Keywords

Digital Transformation; State-Owned Enterprises; High-quality Development; Technological Innovation.

1. Introduction

1.1. Research Background

As the global economy is rapidly digitizing, digital transformation has become a key strategy to drive sustained growth for enterprises. Especially in China, with the advancement of the "Digital China" strategy, the success of digital transformation of state-owned enterprises, as an important pillar of the national economy, is directly related to the country's strategic security and economic stability. Digitalization not only improves the data processing capabilities and business efficiency of enterprises, but also promotes the development of innovative services and products by introducing advanced cloud computing, big data, artificial intelligence and other technologies. For state-owned enterprises, this transformation process not only optimizes traditional work processes, but is also the key to their structural adjustment and strategic upgrade, helping to enhance their global competitiveness and market responsiveness.

1.2. Research Objectives

The main goal of this study is to explore and understand in depth how digital transformation can promote high-quality development of Chinese state-owned enterprises. This includes: first, evaluating the specific role of digital transformation in improving the decision-making process, improving operational efficiency, and enhancing customer service of state-owned enterprises; second, identifying the main challenges encountered in the process of promoting the digitalization of state-owned enterprises, such as cultural inertia, technology acceptance, and organizational structure adjustment; third, exploring strategies and implementation paths to promote the successful digital transformation of state-owned enterprises. Through these research objectives, this paper aims to provide a scientific basis for state-owned enterprises to formulate more effective digital strategies, and at the same time provide guidance for the formulation of relevant policies.

1.3. Research Significance

The significance of this study lies in its dual value to state-owned enterprise managers, policymakers, and digital economy researchers. First, for state-owned enterprise managers, this study can help them understand the core position of digital transformation in corporate strategy and how to effectively use digital technology to promote enterprise innovation and development. Second, for policymakers, this study provides policy recommendations for coping with challenges in the process of digital transformation, especially in formulating policies to support state-owned enterprises in technological innovation and digital capability improvement. In addition, for the academic community, this study expands the theoretical foundation of the digital economy field, provides empirical data and theoretical perspectives for subsequent research, and promotes the development and improvement of digital transformation theory. Ultimately, these research results will promote state-owned enterprises to achieve higher quality development and more effective market adaptation in the context of rapid development of globalization and informatization.

2. Literature Review

2.1. Research on Digital Transformation

Regarding the driving factors of digital transformation, Qi Yudong (2019) believes that digital transformation requires a lot of investment and R&D capabilities, which is the driving force of enterprise transformation. At the same time, the interconnection of data and the penetration of digital technology have promoted the deep integration of the industrial chain, value chain and cutting-edge technologies, and accelerated the emergence of breakthrough innovations. Gferer et al. (2021) The common belief of enterprise personnel in digital transformation preparation is the prerequisite for successfully guiding and implementing organizational change. Enterprises need to strengthen their internal information technology business capabilities, and senior managers also need to master information technology knowledge. At the same time, digital transformation also requires close cooperation between information technology departments and business departments to jointly promote the innovative development of digital transformation. Lu Yanqiu et al. (2023) The internal driving force of digital transformation lies in the organizational and management changes within the enterprise. Organizational and management changes are important steps and key guarantees for the realization of digital transformation, and need to be highly valued and actively promoted. Zhang Yongshen et al. (2021) measured the digital transformation of enterprises by calculating the proportion of intangible assets related to digital transformation. Li et al. (2022) measured the digital transformation of enterprises by the frequency of keywords in digital investment, digital technology, business model transformation, etc. in the annual reports of enterprises.

2.2. Research on the High-quality Development of State-owned Enterprises

Regarding high-quality development, at the macro level, Zhang Yang et al. (2022) used the Delphi-entropy method to determine the weights of each indicator and measured the level of high-quality economic development in 31 provinces in China from 2011 to 2019. They pointed out that China's high-quality economic development is uneven, with some regions performing well, such as Beijing, Shanghai, and Zhejiang. However, at the same time, differences in development levels between the eastern region and the central and western regions still exist. At the industrial level, Yu Donghua (2020) pointed out that to promote the high-quality development of the manufacturing industry, it is necessary to change the development thinking, break the inertial thinking, transform the development momentum, and promote the transformation of development paths and models. The high-quality development of the manufacturing industry is to achieve high-level sustainable development in the entire process of production, manufacturing, and sales. At the enterprise level, Li Yining (2020) believes that the organic combination of state-owned enterprise reform and private enterprise development should be promoted. By promoting the reform of the state-owned capital allocation system and the reform of the state-owned enterprise management system, the reform of state-owned enterprises can be standardized, open, and orderly, so as to promote the high-quality development of private enterprises.

2.3. Research on the Impact of Digital Transformation on the High-quality Development of State-owned Enterprises

Qi Yudong et al. (2021) pointed out that due to the different missions of different types of state-owned enterprises, different digital strategic transformation models should be formed according to the functional classification of state-owned enterprises. Public-function state-owned enterprises build a public-oriented digital strategic transformation model, strategic-function state-owned enterprises should choose a capability-oriented digital strategic transformation model, and commercial-function state-owned enterprises should establish a market-oriented digital strategic transformation model. Xie et al. (2022) The high-quality development of state-owned enterprises is the foundation of China's high-quality economic development and an important part of China's long-term development. Wu Haoqiang (2023) believes that as the scale of enterprises increases, the effect of digital transformation on promoting high-quality development of enterprises is relatively weak. Compared with state-owned enterprises, the role of digital transformation in promoting high-quality development of non-state-owned enterprises is more obvious and can promote their high-quality development. Therefore, we should attach great importance to and actively promote the high-quality development of state-owned enterprises. Literature on the impact of digital transformation on various aspects of enterprises, in terms of enterprise performance, Bai Fuping (2022) pointed out that digital transformation can further improve the financial performance of enterprises by improving the efficiency of human capital utilization, reducing the production costs of manufacturing enterprises and promoting technological innovation output. In terms of enterprise efficiency, Huang Dayu et al. (2022) found that enterprise digital transformation can effectively improve the total factor productivity of enterprises and reduce the level of inefficient investment of enterprises. In terms of corporate innovation, Li et al. (2022) used panel data from 930 A-share listed companies in China from 2015 to 2020 to conduct research. The research conclusions showed that corporate digital transformation significantly improved the efficiency of corporate technological innovation, and the impact was heterogeneous, mainly reflected in two aspects: factor intensity and ownership nature.

3. Theoretical Framework

3.1. Organizational Change Theory

Organizational change theory provides us with a framework to understand and analyze how digital transformation triggers profound changes in the structure and operation of state-owned enterprises. Under the guidance of this theory, we can see that digitalization is not just the introduction of technology, it also changes the decision-making structure, process management and internal communication methods of enterprises. For example, by introducing the ERP system (enterprise resource planning system), state-owned enterprises are able to achieve cross-departmental information flow and resource sharing, thereby improving decision-making efficiency and the speed of responding to market changes. In addition, digitalization also prompts enterprises to restructure their business processes to adapt to more dynamic market demands. The optimization of this structure is directly related to the improvement of the overall operational efficiency and competitiveness of the enterprise.

3.2. Innovation Theory

Innovation theory plays a key role in explaining how digital transformation promotes SOEs to develop new products, services and business models. This theory emphasizes that innovation is not only about product and technology innovation, but also about business models and service methods innovation. Digital tools such as data analysis, artificial intelligence and cloud computing provide SOEs with unprecedented capabilities to gain insights into market trends and consumer behavior, thereby promoting the development of customized and personalized services. For example, state-owned banks have improved the accuracy of loans and provided customers with faster and more personalized services by using big data analysis to optimize their credit assessment models. This service innovation directly enhances customer satisfaction and the market share of enterprises.

3.3. The Connection between Theory and Practice

This study constructs a conceptual framework that combines the theoretical foundations of digital transformation with the actual needs of high-quality development of state-owned enterprises. The framework not only integrates the core ideas of organizational change and innovation theory, but also takes into account the challenges and strategies in actual operations. This framework points out that the success of digital transformation depends on the comprehensive assessment and optimization of existing organizational culture, technological foundation, and employee capabilities. Through the application of this framework, state-owned enterprises can identify key digital advancement points, formulate transformation strategies that meet their own characteristics, and achieve high-quality development through continuous technological innovation and organizational learning. This combination of theory and practice not only provides a clear transformation roadmap for state-owned enterprises, but also provides policymakers and managers with practical decision-making tools.

4. Digital Transformation of State-owned Enterprises

4.1. Current State of Digitalization

Chinese SOEs have made significant progress in digital integration. Many have already started implementing core information systems, such as ERP (enterprise resource planning), CRM (customer relationship management), and SCM (supply chain management) systems, which have played an important role in improving operational efficiency and data transparency. In addition, with the introduction of cloud computing and big data technologies, SOEs are better able to handle large amounts of data and improve the quality and speed of decision-making. However, these advances are uneven, with some large enterprises and those in strategically

important industries further along the digital path, while some small or regional enterprises are still at a relatively early stage of technology adoption.

4.2. Challenges and Obstacles

Although state-owned enterprises have made some progress in digital transformation, they still face many challenges in the implementation process. First, the existence of legacy systems has greatly increased the complexity and cost of technology upgrades. These old systems are often incompatible with new technologies and require a lot of customized transformation. Secondly, cultural resistance is also an issue that cannot be ignored. Many employees are accustomed to traditional ways of working, and it takes time and training to accept and adapt to new technologies. In addition, the skills gap is also a major obstacle, especially in advanced technologies such as artificial intelligence and machine learning. There is a lack of sufficient professional talent to support the effective implementation and maintenance of these technologies.

4.3. Successful Cases

Despite the challenges, some SOEs have made remarkable achievements in digital transformation. For example, by implementing advanced smart grid technologies, State Grid Corporation of China has not only improved the operational efficiency of the power grid, but also more effectively managed energy and responded to demand, greatly improving the flexibility and reliability of energy utilization. Another example is China Petrochemical Corporation (Sinopec), which has achieved transparency and optimization of the supply chain process by establishing a digital supply chain management platform, significantly improving the responsiveness and cost efficiency of the supply chain. These success stories show that although the transformation path is full of challenges, through proper planning and execution, digital transformation can bring far-reaching positive impacts to SOEs.

5. Strategies for Digital Transformation to Enhance High-quality Development

5.1. Policy Recommendations

In order to encourage state-owned enterprises to carry out digital innovation, the government can formulate a series of incentive and guiding policy measures. First, the government should provide financial subsidies and tax incentives to reduce the cost pressure of enterprises in the initial digital transformation, especially when purchasing high-end digital equipment and technologies. In addition, a digital innovation fund can be established to support enterprises' R&D activities in key technology fields such as artificial intelligence, big data, and cloud computing. The policy should also include the establishment and improvement of digital talent training and introduction mechanisms, and accelerate the training of digital professionals through cooperation with colleges and universities and research institutions to meet the long-term development needs of enterprises. Finally, the government can formulate clear digital standards and specifications to guide enterprises to carry out digital transformation in a healthy and orderly manner under the premise of ensuring data security and privacy.

5.2. Management Strategy

For managers of state-owned enterprises, overcoming obstacles to digital transformation requires a multi-dimensional management strategy. First, it should start with top-level design to ensure that the digital transformation strategy is closely integrated with the company's overall development strategy and has the full support of senior management. This includes establishing a dedicated digital transformation team to develop transformation plans and oversee the implementation process. Secondly, companies need to strengthen internal training

to improve employees' understanding and acceptance of digital technology, especially to provide skills upgrade training for front-line operators to ensure the effective implementation of technology. In addition, the introduction of change management tools, such as continuous improvement and employee incentive mechanisms, can help management effectively manage resistance and difficulties that may arise during the change. Finally, by establishing a close working relationship with external stakeholders such as suppliers and customers, resources can be better integrated to jointly promote the digitalization process.

5.3. Future Trends

Looking ahead, several emerging technologies will have a significant impact on the digital transformation of state-owned enterprises. First, Internet of Things (IoT) technology will enable enterprises to monitor and manage their operating assets in real time, improve operational efficiency and service quality. Second, blockchain technology can provide more secure and transparent data management and transaction solutions, especially for state-owned enterprises that require a high degree of data security. In addition, artificial intelligence and machine learning will continue to drive the improvement of automation and intelligence levels, especially in data analysis and decision support systems. At the same time, with the widespread deployment of 5G technology, state-owned enterprises will be able to process large amounts of data more quickly, improve response speed and service quality. Understanding and leveraging these technological trends will help state-owned enterprises seize key opportunities for digital transformation and achieve high-quality development.

6. Conclusion

6.1. Summary of Research Findings

Through a comprehensive literature review and theoretical analysis, this paper reveals how digital transformation affects the high-quality development of Chinese state-owned enterprises at the structural, operational and cultural levels. The study shows that the introduction of digital technologies not only optimizes business processes and improves efficiency, but also enhances the innovation capabilities and market adaptability of enterprises. In addition, the challenges encountered in the digital transformation process, such as the integration of technology and culture, lack of talent and integration of legacy systems, have an important impact on the formulation of enterprise transformation strategies. Successful digital transformation cases provide strong evidence, showing the key role of active policy support and effective management strategies in promoting the digitalization of state-owned enterprises.

6.2. Practical Significance

This study provides practical guidance and recommendations for SOE managers and policymakers. For managers, it highlights the importance of developing a comprehensive digital strategy, improving employees' digital skills, and optimizing corporate culture to adapt to the rapidly changing technological environment. For policymakers, it emphasizes the need to develop incentives, cultivate digital talents, and establish a sound technical standards system, which will provide strong support and guarantees for the digital transformation of SOEs. These insights will not only help promote the continued development of SOEs, but also contribute to the overall digital strategy of the Chinese economy.

6.3. Areas for Further Research

Although this article provides preliminary insights into the digital transformation of state-owned enterprises, there are still many areas that need further research. First, future research can explore the differences in the performance of different types of state-owned enterprises in the digital transformation process and their causes. Second, with the rapid development of

emerging technologies such as artificial intelligence and the Internet of Things, it will be of great value to study the specific effects and challenges of their application in specific industries. Finally, considering the broad impact of digital transformation on society and the economy, exploring the ethical, legal and social issues in this process is also an important direction for future research, which will help build a more fair, transparent and sustainable digital development model.

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