

The Impacts of Digital Economy on the Digital Transformation of Small and Medium-sized Enterprises

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Abstract: Digital economy, as a new economic model after agriculture and industrial economy, is rising rapidly and gradually, becoming the main economic form of current society. This economic model is based on Internet information technology and regards big data as a core production factor. The digital economy contributes significantly to resource allocation optimization and the transformation of traditional sectors through precise identification and deep integration of data resources. In the meantime, small and medium-sized businesses, which are a significant component of the national economy, consistently hold a significant position in employment and technical innovation. The trend of small and medium-sized businesses going digital has become unavoidable in order to keep up with the growth of the digital economy. The purpose of this paper is to examine how the digital economy affects small and medium-sized businesses' digital transformations and to examine the relationship, present state, and difficulties between the two. The specific effects of the digital economy on the transformation of small and medium-sized businesses from the perspectives of production process, operation management, and product services, as well as the opportunities and difficulties posed by digital transformation, are then discussed in order to offer helpful resources and motivation for this process.

Keywords: Digital economy, national economy, small and medium-sized enterprises, digital transformation.

1. Introduction

As a new economic development model, the digital economy is gradually becoming the main economic form after the agricultural economy and the industrial economy. It is based on Internet information technology and regards big data technology as one of the main production factors. To be more specific, it optimizes the efficiency of resource allocation and helps the traditional industrial economy to achieve rapid transformation, upgrading, and optimized development under the guidance of scientific strategies, through accurate identification, efficient screening, deep integration, and innovative use of data [1]. Against the backdrop of rapid economic development, the digital economy is developing rapidly, and its significant status in China's national economy is becoming increasingly prominent. The "Research Report on the Development of China's Digital Economy (2024)" points out that in 2023, China's digital economy will grow to a size of 53.9 trillion yuan, which is 42.8% of GDP. Moreover, its growth will contribute 66.45% to GDP growth, effectively supporting the

sustained and stable growth of the economy [2]. The digital economy has become a key core force for high-quality economic development.

Simultaneously, small and medium-sized firms hold a crucial role in the national economy. Given the growing significance of private SMEs in the development of China's modernization system construction and the achievement of high-quality economic development, promoting the high-quality development of SMEs has become a crucial step for China to expedite the creation of a new development pattern and achieve high-quality economic development, as well as a significant driving force for the transformation and upgrading of its economic structure [3]. SMEs are large in scale and cover a wide range of fields. In addition to accounting for over 90% of businesses, they also generate over 70% of technical innovation, over 80% of urban employment, over 50% of tax income, and over 60% of GDP [3]. They are an important force in promoting high-quality economic development.

Given the significance of the digital economy and SMEs for sustainable economic development, it is imperative for SMEs to undergo digital transformation, which has garnered considerable attention in the current era of digital advancement. In the digital economy era, the communication mode of interpersonal communication and the interaction mode of personal interaction are reshaping and have undergone profound changes. Maintaining the traditional operating model will inevitably make enterprises unable to keep up with the times in the process of future development, and thus slowly be eliminated by the market. Therefore, digital transformation is crucial for SMEs. It can help these enterprises establish new business models and organizational structures, optimize data information management, broaden the business development path for SMEs, reduce operating costs, and save human and material resources [4]. In addition, digital transformation also helps SMEs effectively prevent external risks in an uncertain economic environment, thereby enhancing their overall competitiveness and survivability [4].

The purpose of this research is to examine how SMEs' digital transformation is impacted by the digital economy. The first part of this article examines the connection between the digital economy and SMEs' digital transformation. This covers the ways in which the digital economy impacts various industries, the root reasons and driving forces behind SMEs' digital transformation, as well as the present situation and problems related to this change. The second part then examines how the digital economy has affected SMEs' digital transformation from three perspectives: production process, operation management, and goods and services. Finally, the third section examines the advantages and disadvantages of SMEs' digital transformation within the framework of the digital economy. The advantages of the digital age and government policy support are discussed, as are the difficulties brought on by the industry's and business model's initial operational regulations being broken as well as the lack of resources and skilled labor.

2. The Relationship Between the Digital Economy and the Digital Transformation of SMEs

2.1. Driving Force of Digital Transformation of SMEs

2.1.1. Changes in Consumer Habits

The current society has fully entered a new era of digital economy. Characteristics such as "rapidity" have enabled various types of information in society and the market to be quickly disseminated, analyzed, and applied, and the pace has been greatly increased. Davidow's law points out that if any enterprise wants to maintain its leading position in its industry, it must constantly update its products and be the first to develop a new generation of products and bring them to the market [5]. In order to establish new markets and product standards, this law highlights the value of innovation and the right to establish the rules of the game by continuously developing new products and promptly

discontinuing outdated ones. Therefore, the digital transformation of SMEs is the result of the pressure of the development of the times and the development needs of the enterprises themselves.

2.1.2. Pressure from the Epidemic

The pressure of uncertainty brought on by the epidemic was first transmitted to SMEs. SMEs frequently face issues like small scale, low risk tolerance, a lack of funding, and trouble obtaining social finance when compared to larger businesses. Yang Dongri, the director of the SME Research Institute of CCID Think Tank, said that the digital transformation of SMEs is a key step in promoting high-quality economic development. It can achieve flexible responses to uncertain environments and build a flexible, agile, and stable industrial chain and supply chain [6]. Moreover, many governments and experts pointed out the importance of digital transformation to SMEs during the epidemic at the 2022 APEC SME Digital Economy Development Conference as they have to reduce costs increase efficiency, and resist external risks [6].

2.2. The Role of the Digital Economy in the Digital Transformation of SMEs

There are three primary components to the logic of SMEs' digital transformation. First, SMEs need to change their transaction logic and understand the importance of customer-centricity. Enterprises need to reconstruct the transaction process through data management and analysis, make user experience the core of attention, and pursue higher efficiency and convenience brought by digitization [4]. Second, as market competition becomes more cross-border, enterprises need to change their traditional competition logic and transform it into "symbiotic logic" [4]. This means that enterprises should break internal and external boundaries, cooperate with other organizations through technological connections, realize resource sharing and coordinated development, and enhance market competitiveness. Finally, enterprises need to build data platforms to break the monopoly of information and improve digital capabilities. This includes standardizing and integrating data, optimizing business processes, and innovating products and services to form a data-driven ecosystem. In order to enhance the value chain's complete digital level, an enterprise's digital transformation entails not only a technical change but also an iterative development of the organizational structure and management strategies [4].

2.3. Current Status and Problems of Digital Transformation of Small and Medium-sized Enterprises

A number of small and medium-sized businesses have experienced difficulties with their digital transition in recent years. The reasons can be summed up in three ways: weak digital foundation, insufficient digital talent, and low digital adoption. First, the difficulty of digitization for small and medium-sized enterprises is directly influenced by the degree of digital acceptability among employers. Small and medium-sized business owners are reluctant to embrace the digital transformation of their companies due to the slow outcomes of the digitization process and the high complexity of digital technology [4]. Second, small and medium-sized businesses' ability to upgrade and adapt has been hampered by the severe lack of experts in digital technology [7]. Due to a lack of talent resources and inefficient systems for managing and training talent, small and medium-sized businesses are unable to develop their own innovative capabilities. This is because many highly skilled workers in today's fiercely competitive market prefer to work for large and medium-sized businesses. Finally, the majority of small and medium-sized businesses are still in the primary stage of applying digital information technology due to the insufficient digital foundation in several areas. Digital technology can only be used for internal management; it cannot be used for key business

functions [7]. Meanwhile, outdated infrastructure and a lack of supporting information technology facilities have further hindered the process of digital transformation.

3. The Impact of Digital Economy on Digital Transformation of SMEs

A comprehensive, integrated change in production, operation, management, business model, etc. is what is meant by the digital transformation of SMEs in the framework of the digital economy [3]. Based on this, this section states and analyzes the changes in SMEs caused by digital transformation from three aspects.

3.1. Production Process

The key to achieving the intelligence and modernization of enterprise information systems through the widespread adoption of contemporary information technology, network data processing, and intelligent technology for SMEs undergoing digital transformation is precisely understanding the fundamental value of digital technology and encouraging the upgrading of information systems. This process enables SMEs to achieve more comprehensive and refined development in all aspects of production and operation [8]. The application of big data analysis technology is particularly significant, which helps enterprises formulate more scientific and reasonable resource allocation strategies and production plans, thereby improving production efficiency and reducing costs.

3.2. Operation Management

3.2.1. Internal Structure

In the innovative development of SME management, optimizing the internal management structure occupies a core position, which is directly related to the economic benefits and operation process of the enterprise. Therefore, the trend of digital transformation has led to an increasing demand and emphasis on digital compound talents and high-quality management teams in SMEs. Meanwhile, by introducing more talents, it is possible to meet the internal needs of its development and the requirements of innovative management, establishing a more comprehensive information and digital system, thereby improving the internal operational efficiency and management level of the enterprise and realizing information management.

3.2.2. Operational Decision-making

In the digital economy-driven environment, the effectiveness of the digital transformation of SMEs is significantly reflected in the flexible application of data analysis tools and modern information technology. Data analysis tools and modern information technology can collect and organize market data, operational data, and consumer data, and conduct an in-depth and thorough analysis of them so that SMEs can understand key information more accurately such as market demand, competitor trends, and consumer preferences [8]. Following the market orientation, managers of SMEs should attach importance to market research. By deeply analyzing market data and accurately grasping market development trends, they can provide direction for the development of subsequent products and services of the enterprise.

3.2.3. Customer Relationship

First, digital transformation has deepened the application of data analysis technology, enabling SMEs to have a more accurate grasp of user behavior and needs, including customers' personal preferences, purchasing habits, and the values they uphold, thereby guiding product innovation and development

and continuous optimization of service quality, bringing better solutions and service experience to consumers, and promoting SMEs to achieve high-quality and sustainable development. Secondly, the more complete customer relationship management system and interactive platform brought about by digital transformation can achieve real-time interactive communication with consumers by making full use of modern digital tools including the Internet and social media. For example, listening to consumers' valuable feedback opinions, and suggestions, answering consumers' questions promptly, and properly handling various issues. Thus bringing the relationship between enterprises and consumers closer and gradually establishing a good relationship of two-way communication, mutual trust, and win-win [8].

3.3. Products and Services

The primary outcomes of digital transformation are digital goods and services. SME exploration of new product sales and service delivery models is a direct result of their digital transformation. In order to achieve digital transformation that adds value based on user needs, SMEs' innovation and digital transformation frequently go beyond the conventional definition of products, actively use digital information technology to develop the connotation of products, and evolve from simple products with physical objects as carriers to connotation-based products with services to improve product performance [7]. For example, in the process of digital transformation, enterprises adopt a product service system (PSS) for innovation. By combining overall strategic planning with specific digital capabilities, they use the platform to obtain market demand information and enhance user interaction, thereby promoting the upgrade and innovation of products and services, improving the matching degree of products and services with user needs, and realizing the transformation and upgrade of products and services [3].

4. Opportunities and Challenges of SMEs in the Context of Digital Economy

4.1. Opportunities

4.1.1. Characteristics of the Era Environment

The development of the digital economy has greatly promoted the progress of digital technology, which in turn has played a positive role in promoting value co-creation within industrial clusters. The openness and connectivity of digital technology blur the boundaries between enterprises and increase the degree of dependence between enterprises of all sizes [9]. In the same ecosystem, market participants including leading enterprises, SMEs, suppliers, and service providers come together due to common value propositions, profit goals, and development needs, and establish cooperative relationships through complementary and closely related resource capabilities. This initiative enhances the competitiveness of the entire industrial cluster, thereby achieving common development and value creation. In addition, industrial clusters have sufficient conditions to test the effectiveness and adaptability of digital solutions [9]. Under the leadership of leading enterprises, the entire ecological chain industry can more efficiently extract solutions to common problems in digital transformation, and introduce solution providers with industry characteristics to help SMEs in the industrial cluster achieve digital transformation smoothly.

4.1.2. Government Policy Support

Given the crucial role that SMEs play in the national economy and the unavoidable trend of digital transformation, the governments of several nations have expressed support for SMEs' digital transformation and implemented legislation to help them. For instance, China has released and

suggested a number of pertinent plans and policies during the last five years to help small and medium-sized businesses undergo a digital transformation, including the "Special Action Plan for Digital Empowerment of Small and Medium-sized Enterprises", the "14th Five-Year Plan for Promoting the Development of Small and Medium-sized Enterprises", the "Guidelines for Digital Transformation of Small and Medium-sized Enterprises", and the "Notice on Carrying out Pilot Work on Digital Transformation of Small and Medium-sized Enterprises". These initiatives aim to support the expansion of technology-dependent small and medium-sized enterprises, promote the tight integration of the digital and real economies, and provide strong guarantees and support for the digital transformation of small and medium-sized enterprises.

4.2. Challenges

4.2.1. The Original Business Model and Industry Rules Are Broken

First, the continuous advancement of information technology poses a severe threat to the traditional business model of small and medium-sized enterprises. The rapid changes in the market environment in the digital economy have a significant impact on the business models of small and medium-sized enterprises, making it difficult for traditional firm models to adjust. Numerous academics and industry professionals have studied the dynamic shifts in the e-commerce market in great detail. The results show that when consumers make decisions in a changing environment, they often consider risks from multiple aspects such as finance, performance, function and time [1]. Second, the new business model will potentially provide difficulties for established industry norms. Numerous disruptive technologies will unavoidably accompany digital transformation, radically altering the existing operating principles across a range of industries. In order to ensure that they can completely adjust to the new regulations, this necessitates that SMEs create new technologies and make costly investments in business models and procedures [1].

4.2.2. Shortage of Funds and Talents

In the age of the digital economy, businesses must constantly modify their plans in response to shifting consumer demands and develop new digital research, production, and marketing techniques, all of which demand significant financial and material resources [1]. Compared with large enterprises, SMEs are often small in scale and have a lack of economic strength. Therefore, most financial institutions are more willing to invest in large enterprises, making it difficult for SMEs to obtain financing and fall into financial difficulties due to the difficult external environment. One of the primary factors impeding SMEs' digital transformation is the lack of qualified digital workers. SMEs are inherently less competitive when it comes to talent because they are typically smaller than major organizations in terms of scale, operation, and power. Many SMEs face problems such as insufficient independent research and development and innovation capabilities, small business scale, and weak competitiveness, which leads to obvious deficiencies in the cultivation and management of talent resources [1]. In addition, the lack of perfection in the recruitment, management and incentive mechanisms of professional talents has made the phenomenon of talent loss more serious, making high-quality professional talents more inclined to join large enterprises, further exacerbating the shortage of talent resources in SMEs.

5. Conclusion

The digital transformation of SMEs has been accelerated by the digital economy's rapid growth, mostly due to shifts in consumer behavior and the strain caused by the pandemic. SMEs must, however, adjust to market shifts in order to innovate and survive because they struggle with a lack of

resources and risk aversion. The key to digital transformation lies in changing the logic of transactions and competition, building a customer-centric business model, resource sharing and cooperation, and a data-driven ecosystem. However, the status of digital transformation is facing difficulties, including low acceptance of digitization by business owners, lack of professional talents, and weak infrastructure, which have restricted the further development transformation, and upgrading of SMEs.

Comprehensive adjustments to production, operation management, product services, and other areas are all part of SMEs' digital transformation. The utilization of digital technology has facilitated cost reduction and increased manufacturing efficiency. Meanwhile, optimizing the internal management structure and introducing digital compound talents have become the keys to improving the operational efficiency of enterprises. Through the flexible application of data analysis tools, SMEs can more accurately grasp market demand and consumer preferences, improve customer relationships, promote innovation and upgrading of products and services, and ultimately achieve sustainable development. Digital transformation makes SMEs more dynamic and flexible in competition.

There are advantages and disadvantages to SMEs' digital transformation. In terms of prospects, the growth of digital technology has bolstered business collaboration and encouraged the value co-creation of entire industrial clusters. In the meantime, several nations' governments have aggressively implemented assistance measures to promote SMEs' digital transformation. SMEs are forced to restructure their business models as a result of the disruption of conventional business models and the violation of industry regulations. Further impeding SMEs' digital transformation and adding to the pressure they have to undergo change are a lack of funding and a paucity of digital specialists.

References

- [1] Ma, Y.X. (2023) *Transformation and Development of Small and Medium-sized Enterprises in the Digital Economy Environment*. *National Circulation Economy*, (06), 52-55.
- [2] Industry Report. *Research Report on the Development of China's Digital Economy released*. (2024) Shenzhen Nanshan Digital Economy Industry Association, Retrieved from http://www.nsszjj.com/page128?article_id=753
- [3] He, Y. (2023) *Theoretical Logic and Practical Path of Digital Transformation to Promote High-quality Development of Small and Medium-sized Enterprises*. *Seeker*, (06), 53-62.
- [4] Wan, B.N. (2022) *Research on the Transformation and Upgrading Path of Small and Medium-sized Enterprises under the Background of Digital Economy*. *China Market*, (31), 196-198.
- [5] Luo, Y.T. (2021) *Analysis on Digital Transformation of Small and Medium-sized Enterprises in the Digital Economy Era*. *China Management Informationization*, 24 (22): 70-71.
- [6] Jiao, Y.F., Wang, X.C. (2022) *The Epidemic has Accelerated the Digital Transformation of Small and Medium-sized Enterprises, and Guangdong Ranks First in the Overall Ranking*. *21st Century Business Herald*, 006.
- [7] Liu, J.J. (2022) *Research on the Digital Transformation of Small and Medium-sized Enterprises in the Era of the Digital Economy*. *China Business Review*, (18), 146-148.
- [8] Deng, J. (2024) *Management Innovation of Small and Medium-sized Enterprises Driven by Digital Economy*. *Public Investment Guide*, (17), 11-13.
- [9] He, Y.Z. (2023) *Research on Key Factors and Countermeasures for Digital Transformation of Small and Medium-sized Enterprises*. *Modern Industrial Economy and Informationization*, (11), 287-290.