

Exploring the Digital Transformation Path of Small and Medium-Sized Enterprises Under the Background of Digital Economy

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ABSTRACT

In recent years, the digital economy has emerged as a new engine for world economic growth. In that context, SMEs, as key drivers of the Chinese economy, are proactively promoting digitalization, which conforms to the trend of this epoch and is an inevitable way for realizing high-quality growth. Article analyzes the importance of digitization to the growth of SMEs and presents an in-depth discussion on major internal factors and external environment issues faced by small and medium-sized enterprises confront at the present stage of digital transformation. Covering internal bottlenecks such as weak awareness, insufficient investment, and lack of personnel and skills, and other outside issues like poor markets, heavy platform dependency, or major security threats. In this paper, we propose the four support systems and guarantee mechanisms for government enterprise collaboration, platform empowerment, talent support, and security protection, and provides actionable transformation suggestions. Studies indicate that the digital transition of small and smaller business is not possible to be achieved without active cooperation between state, businesses as well as other sectors of society. With wide range of assistance from various parties, the digitization upgrade of these firms can be promoted more effectively, raising their level of digital development.

KEYWORDS

Digital economy small and medium-sized enterprises; Digital transformation; Transformation path; Support system

1. INTRODUCTION

Currently, emerging information technologies (big data, cloud computing, artificial intelligence, Internet of Things) are driving changes to the mode of world economic growth and generating a completely new industry ecology, while the rise of the digital economy also created new economic forms and ways of development. This trend digital transformation is becoming an essential stage in enterprise's development and growth process.

SMEs play an important role in our nation's economy by providing growth, jobs, and innovation to this country. Nevertheless, than larger firms, SMEs generally possess less powerful assets such as financial capital, technical knowledge, and talents, and faces more challenges and difficulties in the process of digitalization [1], how to grasp the opportunities for developing digital economy, overcome barriers to transition, and pursue their own route of distinctive digitisation are also realistic issues for SMEs.

In conclusion, it is crucial to analyze how small and medium-sized firms evolve through digitization within the digital economy. This study aims to explore the digital strategies, difficulties, and

countermeasures of small and medium-sized enterprises, and provide some assistance for them to better carry out digital transformation work.

2. THE STRATEGIC VALUE OF DIGITAL TRANSFORMATION FOR HIGH-QUALITY DEVELOPMENT OF SMALL AND MEDIUM-SIZED ENTERPRISES

For small and medium-sized enterprises, digital transformation is not just a matter of using technology or tools, it involves strategic, business, organizational, and cultural transformation and reshaping. Its strategic value is reflected in the following points [2].

To begin with, it can significantly enhance the efficiency of operations and the quality of management in small and medium-sized enterprises by adopting digital management approaches that render production and operational processes, procurement and supply-chain activities, and financial administration automated and smart, thereby minimizing human-related errors and fostering the orderly, well-reasoned development of the enterprise's various business functions. Implementing scientific decision-making based on big data is beneficial for analyzing and predicting the overall situation of the enterprise on the basis of obtaining corresponding data. Improve market response speed and sensitivity.

Secondly, fostering digitalization enables small and medium-sized enterprises to tap into markets and establish novel business models. SMEs can overcome conventional geographic limitations and secure wider market reach at comparatively low cost through e-commerce, social platforms, digital marketing, and related channels; advances in digital technology have likewise introduced new models—such as platform-oriented, sharing-oriented, and membership-driven approaches—that help SMEs establish a presence in the market.

Third, digitalization is an important avenue by which SMEs can innovate. Digitalization lowers the cost of innovation, digitalization enables SMEs to carry out product R&D based on rapid experimentation, user co-creation, and others methods [3]. Data resource mining and utilization can also enable SMEs to know the demands from users, and conduct purposeful innovation R&D.

Fourth, digitisation allows SMEs to create sustainable competitive advantage. The digital economy is such that data has become a main productive element, and digital competence is gradually becoming enterprise's core capability. Digitalization could assist enterprises to build up their data assets, cultivate the digital culture, and lay a good foundation for its long-term development; The digital transformation can also help enterprises realize the green and low-carbon development,

In short words, the digitalization becomes inevitable for SMEs if they want to overcome the difficulties, but also the choice of grasping opportunities, realizing high quality development.

3. PRIMARY HURDLES AND CRITICAL CONCERNS IN THE DIGITAL TRANSITION OF SMALL AND MEDIUM-SIZED ENTERPRISES

Notwithstanding the importance of digitization, SMEs still face many real challenges, internal limitations, as well as difficulties arising out of its external environment.

3.1. Internal Obstacles: Awareness, Funding, Talent, And Technological Capabilities

Obsolete mindsets hamper the digital progress of small and medium-sized enterprises. Most operators of these firms perceive digital transformation solely from a technological standpoint, failing to recognize its significance and complexity. Some companies are afraid of trouble, too much investment, or too much risk of failure, and therefore dare not engage in digital transformation; Some

companies feel that their current business is still viable and there is no need to tinker with it [4]. Owing to erroneous ideas, small and medium-sized enterprises pursue digital transformation without well-defined objectives or a long-term strategy.

The first is the absence of financial stability. Digital transformation in SMEs is a longterm process which needs large capital investments,such as purchasing gear; writing programs; installing and fixing computer hardware; and maintenance and repair of technologyand to train personnel, amongst others expenses , all requiring some cost. Since SMEs do not have wide sources for financing,have little ability to borrow money, and lack their own capital, are unable to cover the high cost of going digital. Furthermore,digital transformation has high investment risk , and this aggravates the concern of enterprises.”

The second challenge is the shortage of talent.Digital transformation calls for professionals with combined business and technology expertise, and small and medium-sized enterprises often struggle to hire and keep these specialists. The existing personnel of the enterprise have limited mastery of digital knowledge and lack systematic training mechanisms, making it difficult to apply new technologies [5]. The lack of talent will directly affect the effectiveness of digital project implementation and also limit the sustained cultivation of digital abilities.

In the third place, small and medium-sized businesses do not have the technical capacity necessary for digital transformation. Many small and medium-sized enterprises lack the ability to evaluate, select, and implement digital solutions for their digital transformation, and are not clear about the characteristics and application scenarios of various types of new technologies, which can easily lead to blindly following trends or making wrong choices. In terms of system integration, data governance, security protection, etc., small and medium-sized enterprises generally lack relevant capabilities, resulting in unsatisfactory application effects of digital technology and even bringing new risks.

3.2. External Obstacles: Market Environment, Platform Dependence, And Security Risks

First, an incomplete market ecosystem has heightened the challenges of digital transformation for small and medium-sized enterprises. The current availability of digital products and services for these businesses is inadequate, with few standardized, modular, and affordable options. The digital service market is uneven, and enterprises are unable to distinguish between good and bad, increasing their selection costs; At the same time, the lack of digital standards in the industry has led to difficulties in interconnection and interoperability between various systems. Easy to generate data silos [6].

Second, dependence on platforms poses new challenges to SMEs: many of them see in the digital instruments and traffic channels offered by big platform companies their first access route to consumers. It reduces the entry barrier, but it is easy to depend on the platform and cannot be developed independently. The change of platform rules, fees,and competition can all exert pressure on small- and medium-sized businesses and owners of data assets may not always be companies themselves.

The third challenge that small and medium-sized enterprises inevitably face in their digital transformation is the high security risk. The higher the digitalization level of an enterprise, the greater the security risks it faces, such as data breaches, network attacks, and system crashes. However, small and medium-sized enterprises generally lack corresponding security awareness and capabilities, and invest insufficiently in security, making them vulnerable to network security attacks.If a safety incident occurs, it could cause substantial losses or even threaten the enterprise’s survival.

Outdated legal and regulatory frameworks, obstacles to cross-regional and cross-industry collaboration, and the persistent digital divide also constitute external barriers to the digital transformation of small and medium-sized enterprises [7].

4. SUPPORT SYSTEM AND SAFEGUARD MEASURES FOR DIGITAL TRANSFORMATION OF SMALL AND MEDIUM-SIZED ENTERPRISES

To advance the digital transformation of SMEs, exclusive reliance on their own initiatives is inadequate. It is necessary to build a multi-party collaborative support system and provide systematic security measures.

4.1. Policy Guidance and Special Fund Support

As key participants and facilitators of the digital transformation of small and medium-sized enterprises, government departments should fully perform their functions, reinforce top-level policy planning and design, establish national and industrial development strategies for digital transformation that are clear, specific, stable, effective, and forward-looking, and drive progress in the digital transformation of small and medium-sized enterprises to a level related to economic resilience and innovation to promote implementation [8]. Thirdly, policy formulation should reflect pertinence and operability, and cannot be empty handed. For example, researching and developing digital empowerment action plans and digital capability evaluation systems for various fields and industries, providing a clear roadmap and benchmark map for small and medium-sized enterprises to help them find direction and identify gaps.

Tax policy and financial policy are two pivots for reform. First, we need to provide some preferential policies on taxation and fees, allowing the purchase and use of digital technology, software, and associated technical services meeting standards to be counted toward R&D when making investments in digital transformation; tax credit investment, and urging federal agencies to procure digital technology and associated services as goods produced by small and medium-sized companies which had implemented their digital transformation and upgrading in procurement activities. The above measures can effectively reduce the burden of current transformation for enterprises and enhance their confidence in transformation. At the same time, we also need to address the issue of financial difficulties [9]. Create dedicated funds at both national and provincial tiers to support the digital upgrading of small and medium-sized enterprises; these funds can function through various mechanisms, such as offering interest-rate subsidies on digital transformation loans for SMEs to alleviate financing challenges; one aim is to strengthen the willingness of financial institutions to lend to digital transformation projects by jointly building credit risk compensation pools with commercial banks; The second is to adopt phased equity participation, follow-up investment and other methods to directly support potential digital innovation projects. More importantly, we should leverage the demonstrative and credit enhancing role of fiscal funds, widely attract social capital and venture capital institutions to enter this field, and establish a diversified investment and financing mechanism led by government investment and dominated by social forces.

Implementation is an important link in the effectiveness of policies. The nature of the industry, scale, development level, and digital foundation of small and medium-sized enterprises vary greatly, making it difficult to achieve comprehensive policy-making. Therefore, it is necessary to implement policies in place, treat them differently, and prescribe targeted solutions. By diagnosing the digitalization of enterprises, we can identify the different stages of explorers, followers, innovators, and leaders in digital transformation, and provide a differentiated policy toolbox. At the same time, it is necessary to create a group of benchmark enterprises and demonstration projects for digital transformation, summarize and extract their experience, practices, and typical cases, and then promote and popularize them through case libraries, training courses, or visiting and learning, forming a demonstration and action oriented approach. In addition, the promotion and guidance of policies, as well as the implementation of services, are also very important. Thirdly, various methods should be used to accurately and quickly transmit policy information to small and medium-sized enterprises, providing convenience for policy application and payment, and improving the sense of achievement and policy implementation rate of enterprises.

4.2. Construction of Inclusive Digital Service Platform

Establish a comprehensive digital transformation support platform for small and medium-sized enterprises. Urge local authorities to develop public platforms tailored to regional and sectoral needs. support service systems for digital transformation through government led or government purchased services, providing consulting and guidance, planning and deployment, software tool selection, and delivery services for small and medium-sized enterprises to carry out digital transformation, and selecting third-party service agencies on the platform to form a healthy competitive environment and service ecosystem.

Support digital service providers to provide lightweight, micro module, and low-cost solutions for small and medium-sized enterprises, promote cloud service models such as software as a service, and reduce initial investment and operation costs for enterprises. Facilitate large enterprises in opening access to digital assets and expertise, enabling upstream and downstream SMEs across the industrial chain to cooperate and upgrade. Develop digital solutions for leasing and sharing models.

4.3. Introduction and Training Mechanism for Digital Talents

Talent support is a long-term strategy for the digital transformation of small and medium-sized enterprises. Small and medium-sized enterprises can leverage flexible talent acquisition and project-based collaboration to secure external support for bringing in talent. Establish a digital expert consultant system and invite experts to diagnose and consult enterprises. Encourage professionals from universities and research institutes to work part-time and start businesses in small and medium-sized enterprises.

Build up the hierarchical talent training mechanism; Conduct specialized computer training courses for small business owners, in order to enhance their sense of planning and management ability; provide tailored workforce technology training to the employees of companies, especially in the fields of big data analysis and implementing new technologies; support the cooperation between schools and enterprises for joint cultivation of talents, ordering-based talent training and establishment of practice training base; support SMEs to conduct intra-knowledge sharing and training activities so as to enhance its digital capacity.

4.4. Construction of Data Security and Standardization System

Formulate data security standards and regulatory frameworks to safeguard the digital development of small and medium-sized enterprises. The government should swiftly enact and implement a set of data and network security laws, applying them in practice to delineate the rights, obligations, and interests of all stakeholders; and develop data security protection guidelines for small and medium-sized enterprises. focus on enterprises and deliver standardized security safeguards for small and medium-sized enterprises; establish a public service platform for the data security management of small and medium-sized enterprises, offering services such as security inspections, assessments and certifications, emergency response, etc. for small and medium-sized enterprises.

Fast-track the formulation of technical, managerial, and service specifications to support the digital transformation of SMEs; Promote the development of group standards by industry associations and related organizations. and guide enterprises to benchmark and improve; Strengthen the development of cross platform and cross system interconnection standards, promote data flow and business collaboration; Establish a credit evaluation system for digital service providers and standardize the order of the service market [10].

Create a favorable environment and increase the promotion of typical experiences in digital transformation. Establish a sound evaluation system for the effectiveness of digital transformation, timely track the progress and existing problems of digital transformation, and dynamically adjust

support policies. Promote the creation of a cross-sector coordination framework to advance the digital transformation of small and medium-sized enterprises, bringing together government, businesses, market actors, and the wider society.

5. CONCLUSION

Under the development of the digital economy, digital transformation is an era proposition that small and medium-sized enterprises have to face. From the research in this article, it can be found that digital transformation is of great significance for improving the efficiency, market development, innovation driven, and establishing sustainable competitive advantages of small and medium-sized enterprises. However, at the same time, the path of digital transformation is full of challenges due to internal factors such as outdated concepts, insufficient funding, lack of talent, and inadequate capabilities. In addition to issues such as immature market environment, excessive dependence on platforms, and low security, the digitalization process of small and medium-sized enterprises is slow under the influence of external factors.

To address these issues, it is necessary to establish and improve supporting measures. Through policy support and funding subsidies, the difficulty of transformation can be reduced and the willingness to transform can be increased; By building a public digital platform, convenient services can be provided for transformation; By introducing and cultivating digital talents, we can provide transformation technology support for enterprises; By ensuring the security of big data and establishing technical standards, we can provide a foundation for transformation. These measures are organically connected and form a joint force to jointly assist small and medium-sized enterprises in their digital transformation.

Digital transformation for small and medium-sized enterprises is not a quick undertaking. Throughout this journey, companies should align their approach with their actual conditions, set their own digitalization targets, and craft practical, achievable implementation plans—advancing from targeted pilot wins to organization-wide rollout, shifting from technology initiatives to business operations—to ultimately realize comprehensive transformation. In this process, patience, firm belief, cultivation of digital culture, continuous learning and adjustment are important.

In the years ahead, as digital technologies grow more sophisticated and widely adopted and the enabling environment is enhanced, the digitalization and modernization of small and medium-sized enterprises will hold significant promise. Small and medium-sized enterprises should proactively embrace the trajectory of digitalization, treat advancing digital transformation as a crucial lever to strengthen core competitive strength and realize high-quality growth, and seize the initiative and secure future advantages in the next wave of digital economy expansion. We further expect government agencies and all sectors of society to keep strengthening their support, work together to cultivate a robust environment for small and medium-sized enterprises to adopt cloud technologies and harness data-driven intelligence, and elevate China's economic development to a higher level.

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