

# *The Analysis of the Digital Transformation of Small and Medium-sized Enterprises in China*

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**Abstract:** With the development and broad adoption of digital technology, digital transformation (DT) is becoming an increasingly crucial factor in the long-term growth of small and medium-sized businesses (SMEs). SMEs account for the majority of employment and tax revenue in China. Yet, as a result of COVID-19 and the economic depression, Chinese entrepreneurs are confronted with several hurdles and obstacles. Thus, the purpose of this study is to identify suitable methods for SMEs' adoption and application of DT by analyzing existing literature and statistics and the successful case of DT adoption by existing firms. According to the study, digital assessment, corporate operations and management with DT, digital ecosystem integration, and optimization of DT practices would increase efficiency, expand market reach, enhance competitiveness, and facilitate collaboration. So, the results give the Chinese government policy suggestions for the long-term, sustainable growth of small and medium-sized enterprises (SMEs) and practical advice for dealing with economic changes after an epidemic.

**Keywords:** SMEs, digital transformation, innovation, China, challenges

## 1. Introduction

In the wake of COVID-19, central banks around the world have raised interest rates to fight inflation. The world could be on the brink of a global recession in 2023, as well as a series of financial crises in emerging markets and developing countries. The current crisis poses a major challenge for all sectors. Numerous companies are seeing a decline in demand; some industries are experiencing labour shortages, sales have stopped and different operational constraints are putting many businesses at risk of bankruptcy and some are even being forced to close. Small and medium-sized enterprises, in particular, are under more pressure to survive than larger firms [1]. Nevertheless, there were more than 40 million SMEs in China until 2021, which generated 80% of the country's employment. 80% of manufacturing, 70% of creative products, and 50% of total corporate income tax [2]. They are an invaluable pillar of China's national economy. Digital transformation (DT) has become an effective means of enhancing competitiveness and helping organizations survive in the harsh external climate, with a beneficial impact on the business performance of a growing number of companies [3]. Even though Calipinar and Ulas say that SMEs are flexible, dynamic, less rigid, and more relaxed, only 25% of Chinese SMEs have gone through digital transformation [4]. Currently, there is very little research on the current state of digital transformation in Chinese SMEs, especially in terms of difficulties, policy needs, digital technology adoption, and drivers for SMEs when it comes to digital

transformation. This paper aims to analyze the DT of SMEs in Chinese. At the same time, the literature review and case studies are used to provide recommendations for SMEs to support the government in taking measures to assist Chinese SMEs to promote growth and identify a clear route to a rapid recovery from the epidemic, bankruptcy, and stoppage of labor.

## **2. Significance of Digital Transformation of Small Medium-sized Enterprises in China**

A digital transformation (DT) involves integrating advanced digital technologies (such as the Internet of Things, big data computing, artificial intelligence, etc.) into production management, organizational operations, and R&D development. Some studies demonstrate that digital transformation can optimize the allocation of internal and external resources, enhance sustainability, and ultimately facilitate business growth [5][6]. DT has given a boost to many different industries and opened up new chances for innovation and growth [7]. As an example, the rapid rise of online retailers such as Alibaba and Amazon has led to the bankruptcy of some traditional retailers, while brick-and-mortar retailers such as INTIME and Better Life Commercial Chain have sustained themselves through the use of DT [8]. However, the “SME Digital Transformation Analysis Report (2021)” indicates that 79% of Chinese SMEs are in the initial exploration stage, and only 9% are in the deep application stage [9]. Under the influence of economic recession and intense competition, SMEs should immediately take action to apply DT in order to help them overcome those challenges and gain a foothold in the market.

## **3. Digital Strategy for Digital Transformation Adapted and Applied by Small and Medium-size Enterprises in China**

From the “Alignment view” of early digital strategy research to the “Fusion view” of digital strategy and corporate mission, digital strategy is increasingly integrated into the strategic missions of businesses, allowing them to collect digital resources, enhance their agility, network capabilities, and deploy large-scale data analytic to assure the continuing achievement of their missions [10][11]. It can be seen that the enterprise’s mission is the value aim of digital strategic change, and that digital change facilitates the enterprise’s mission’s successful accomplishment. In this connection, digital transformation is extremely helpful for SMEs, and there are four main steps of utilizing DT.

### **3.1. Digital Assessment**

Firstly, SMEs are required to carry out a digital assessment, taking into account the level of the digital foundation, the current state of business management, internal and external transformation resources, and assessing the potential value and feasibility of the transformation of research, production, supply, marketing and services, to clarify transformation priorities and ensure optimal input-output ratios. For example, Lan Shi Group Corporate has put in many efforts on building digital assessment, which can also be applied by SMEs. It has increased its investments in information technology construction, focusing on the problems and pain points of key manufacturing processes of discrete enterprises. It has also created an innovative model of “manufacturing + service + data + management” with Lan Shi Cloud as the platform. The unified integration of various information systems into the Lan Shi cloud platform has enabled the sharing of information resources within the group, greatly improving efficiency and quality of work. Through 3D digital design, the product development cycle has been shortened by 40% and the product modularity rate has increased from 20% to 40%. By conducting digital assessments for SMEs, companies can gain a deeper understanding of the current state of digitalization, solve deficiencies, improve customer analysis and service, and increase customer satisfaction and loyalty.

### 3.2. Corporate Operation and Management Digital Transformation

Secondly, digitizing corporate operations and management to improve operational adjustment agility. Operational adjustment agility helps businesses to have adaptable internal operations and to rapidly adapt business processes and management models to shifts in market demand [12]. Digital transformation of business processes is a higher-order evolution of digital organizational learning [13]. Digital subscription-based services and lightweight products that drive R&D, design, manufacturing, warehousing and logistics, and marketing services can cut transformation costs for SMEs. This results in full product lifecycle management and the creation of services with added value based on digital products. State Grid is a good model on corporate operation DT for SMEs. It implemented 125 business functions such as online power supply, bill payment, and enquiry by building the “Online State Grid” platform, which merges online and offline services. The accumulated number of registered users on the platform exceeded 126 million, with 980 million online bill payments amounting to 140 billion yuan, which is greater than the number before digitizing State Grid’s operation.

Furthermore, SMEs should promote digital management, implement the “one-hand” responsibility system for digital transformation, build an organisational structure and management system suitable for transformation, strengthen the training of digital talents, deepen cross-departmental communication and collaboration, and refine financial, office, human resources, and other management aspects. Kingsoft Digital Office Platform allows enterprise management backend users to create organisational structures and virtualize department and personnel administration by adding or bulk-importing members. Additionally, it offers digital talent training for employees so they can master WPS document processing, data analysis, presentation, and other skills. Kingsoft Collaboration (IM), part of the Kingsoft Digital Office platform, supports private deployment and connects instant messaging and online document collaboration from the bottom to provide a secure and compliant collaborative office environment for enterprises to improve cross-departmental communication and collaboration. Kingsoft Digital Office Platform can secure company documents through storage, flow, and collaboration to improve enterprise digital management. Therefore, DT can help small and medium-sized enterprises (SMEs) improve their management and operations by simplifying many tedious and repetitive tasks, which leads to faster and more efficient processes, better teamwork, faster project schedules, and better projects.

### 3.3. Digital Ecology

Thirdly, by integrating into the digital ecology, SMEs actively connect to the core enterprises of the industry supply chain, leading industry enterprises, industry clusters, and other ecological resources, deepen collaboration and support based on the industrial internet platform, and do collaborative innovation using standard technology platforms. China Railway Materials Company Limited (CRM) created a platform which utilized the internet, big data, cloud computing and other multifaceted information technology. CRM used this platform to conduct data analysis and application work, providing powerful data support for industry decision-making, complete industry chain collaboration, and railway operation safety. Thus, they can effectively integrate the primary process data resources of the whole life cycle of steel rails, establish a data interoperability mechanism, and realize quality tracing of the whole life cycle of steel rails. In addition, China Electric Power Construction Association (CEPCA) has built an entire lifecycle platform for digital planning and design, intelligent construction, innovative operation, and maintenance services for global renewable energy. This platform addresses the extensive use of global renewable energy, ecological and environmental protection, and sustainable social and economic development and provides essential data support and technical services for relevant domestic energy management departments. In short, integrating SMEs

into the digital ecology can help them gain a better foothold in the fierce market competition with data analysis and decision support and achieve sustainable development.

### **3.4. Optimization of Digital Transformation Practices**

Finally, SMEs need to optimize their DT practices, carry out assessments of their digitalization levels and business management levels, adjust their transformation strategies according to their resource endowments and transformation status, and improve the suitability of their transformation strategies to their development status. Commercial Aircraft Corporation of China (COMAC) promotes the integration of industrialization and industrialization which greatly enhances DT practices and the competitiveness of COMAC in all aspects. Integration of industrialization and industrialization is not only an optimization of processes, organizational innovation, and business transformation, but also a change in development philosophy from technology-oriented management change, organizational optimization, and strategic control, a change in development objectives from technology application to capability enhancements, and a change in operation mode from the traditional crude mode to a refined mode focused largely on data-driven options. As a result of applying it, a solid foundation has been laid for the development of large passenger aircraft in the future, as well as for the development of Chinese civil aircraft in the next 20 years, which will rank among the top three civil aircraft in the world in that period. Therefore, in the process of continuous optimization of digitalization practices, the level of intelligent design, manufacturing and service of SMEs is comprehensively enhanced, shortening the product development cycle, boosting production efficiency, reducing operating costs and product defect rate, improving energy utilization and contributing to the realization of the SMEs' development strategy.

## **4. Discussion**

SMEs may also face challenges in implementing digitalization, such as the need for significant investment in technology and infrastructure, difficulties in acquiring digital skills and talent, and concerns around data privacy and security. Therefore, it is essential for SMEs to evaluate the potential benefits and challenges of digitalisation carefully. They should also develop a comprehensive digital transformation strategy tailored to their needs and resources. The government should strengthen the guidance of transformation. Promoting the digital transformation of SMEs needs to follow the laws of economic, technological, and managerial development. It is also necessary to increase financial support. One of the main problems with DT for SMEs is that they don't have enough money to change. At the same time, local governments at all levels should step up pilot projects to promote and support typical models for the integrated development of large and SMEs. Finally, support services should be improved. A comprehensive public service system for digital transformation should be built. The level of services such as policy consultation, technical guidance, talent training, and project supervision should be continuously enhanced.

## **5. Conclusion**

SMEs can be beneficial in the process of applying DT in four main steps which are digital assessment, corporate operations and management digitalization, digital ecology and optimization of Digital transformation practices, especially under the impact of COVID-19. DT can make business processes run more smoothly, reduce mistakes, and let operations be monitored in real time, which can increase productivity and save money. By embracing DT, SMEs can remain competitive in a rapidly changing market by better meeting customer needs and expectations. This is done by improving product quality and speed to market and offering new services. DT can provide SMEs with greater access to new markets, customers, and suppliers, leading to increased revenue streams and opportunities for growth.

Furthermore, DT can give SMEs access to real-time data and analytics, enabling them to make more informed business decisions and respond quickly to market changes. Moreover, DT can facilitate collaboration between departments and partners, improving communication and increasing teamwork. But because SMEs are spread across different fields and geographic places, they may have different government policies and economic environments, which all impact the application and adoption of DT. Even though the application process for DT may present many challenges to SMEs, they can still implement an integrated DT strategy to overcome the challenges and maximize the benefits of DT. With the support of the government, SMEs can efficiently and effectively apply the DT. This study can only provide general guidelines for most SMEs. Thus, the future study will focus more on the DT applied by SMEs in a specific area.

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