



Research on the Digital Transformation and Organizational Performance of Traditional SMEs in the Context of the Digital Economy

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Abstract

Introduction: The digital economy is thriving in China, driven by rapid advancements in technology, innovative business models, and the emergence of new industries. However, traditional small and medium-sized enterprises (SMEs) face significant challenges in adapting to this evolving landscape. Digital transformation is increasingly recognised as a crucial driver of growth for these enterprises. This study explores the impact of digital transformation on organisational performance in traditional Chinese SMEs, aiming to provide both theoretical and practical insights for business leaders. **Methods:** This research examines a sample of 3,410 Chinese traditional SMEs to assess the effects of digital transformation on their organisational performance. The study employs quantitative methods, analysing data collected through surveys and financial reports. A comparative approach is used to evaluate how digital transformation influences SMEs across different industries and business scales. **Results:** The findings indicate that digital transformation has a significant positive impact on organisational performance in traditional SMEs. However, the effects vary depending on the scale of the enterprise and the industry in which it operates. While some businesses experience substantial improvements in efficiency and profitability, others face challenges in fully leveraging digital technologies. **Discussion:** The results highlight the necessity for SME managers to develop tailored digital transformation strategies based on their industry-specific requirements and business scale. Factors such as investment in digital infrastructure, workforce digital literacy, and strategic alignment with emerging market trends play a critical role in determining success. Additionally, businesses that proactively integrate digital solutions tend to gain a competitive advantage in the evolving economy. **Conclusion:** Digital transformation serves as a powerful enabler of growth for traditional SMEs in China. While the transition presents challenges, businesses that embrace digital innovation strategically can achieve significant improvements in organisational performance. This study provides valuable guidance for SME managers, policymakers, and industry stakeholders, emphasising the need for customised digital transformation strategies to ensure sustainable growth in the digital economy.

Keywords: Digital Economy, Digital Transformation, Internal Capabilities, Network Relationships, Small and Medium-Sized Enterprises (Smes)

Introduction

In 2017, the digital economy was first included in the government work report, and from 2019 to 2024, it was mentioned six times. In recent years, China's digital economy has been growing rapidly, with its GDP share continuing to rise. According to the "China Digital Economy Development Report (2024)," the digital economy reached 53.9 trillion yuan in 2023, accounting for 42.8% of GDP, becoming an important force

for stable economic growth (Li, You & Qing, 2024). However, in contrast to this rapid development, traditional SMEs face unprecedented challenges such as resource shortages, lack of technology, and intensified market competition, making their development difficult (Skare, de Obesso & Ribeiro-Navarrete, 2023). How to revitalise these businesses through digital transformation has become a key issue for their sustainable development (Meier, Eller & Peters, 2024). Recently, local governments in China have paid considerable attention to the role of the digital economy in empowering traditional industries and introduced policies encouraging SMEs to undertake digital transformation. In this context, digital transformation has become an important means for traditional SMEs to improve organisational efficiency and market competitiveness, as well as a strategic choice for adapting to economic structural adjustments and external changes (He *et al.*, 2024). However, whether digital transformation can effectively enhance the organisational performance of traditional SMEs requires further empirical research.

1. To analyse the impact of digital transformation on the organisational performance of traditional SMEs: Through empirical research, evaluate whether digital transformation can effectively enhance the organisational performance of traditional SMEs.

2. To explore the application effects of digital transformation in different types of SMEs: Considering the differences in industry, scale, and resources, this study will analyse the specific application effects of digital transformation in traditional SMEs of different industries and scales, revealing the differential impact on organisational performance.

3. To provide practical guidance for the digital transformation of traditional SMEs: Based on the research findings, propose targeted strategies and suggestions to help traditional SMEs effectively improve organisational performance and promote their sustainable development during digital transformation.

Through these research goals, this study aims to provide theoretical support and practical references for the digital transformation of traditional SMEs, offer a basis for policymakers to optimise related support policies, and promote high-quality development for businesses in the digital economy era.

Literature Review and Research Hypotheses

The digital economy, as a new economic form where data is the key production factor and digital technology is the core driving force, is profoundly reshaping enterprises' production, operation, and management models, significantly impacting organisational performance (Jing, Zhang & Ma 2023; Zhang *et al.*, 2023). Existing research primarily focuses on the effects of digital technology applications, platform economies, digital transformation, and digital capabilities on business performance, suggesting that digital technologies improve resource integration and market responsiveness, while platform models drive business model innovation, and digital transformation boosts performance through process optimisation and organisational innovation (Costa, Oliveira & Rodrigues, 2024; Fang *et al.*, 2024). However, current studies mostly concentrate on large or tech companies, with insufficient research on the digital transformation paths of traditional SMEs and their impact on organisational performance (N'Dri & Su, 2024). To address this gap, this study innovatively focuses on traditional SMEs, exploring the impact of digital transformation on organisational performance and its variations across different industry and size types, providing theoretical support and strategic guidance for SMEs in their digital transformation.

Digital transformation refers to the actual application of digital information technologies in business processes, optimising and automating processes through the internet, social media, and other means, while also supporting decision-making. In recent years, traditional SMEs have faced difficulties due to slow revenue growth, increasing profitability pressures, and the digital economy's injection of new vitality into the real economy, promoting innovative value creation. Digital transformation is essentially a comprehensive change to an enterprise's organisational activities, processes, business models, and employee capabilities, improving operational efficiency and information processing speed (Martínez-Peláez *et al.*, 2024). During the transformation process, SMEs can collaborate with internet and big data platforms to optimise business processes, innovate products and services, and upgrade from a "single product" model to a "product + service" model to capture market share and enhance organisational

performance (Priyono, Moin & Putri, 2024). Additionally, the establishment of digital platforms enhances the timeliness of information acquisition and decision-making efficiency while reducing operational costs (Romero & Mammadov, 2024; Qinqin *et al.*, 2023). Research shows that digitalised enterprises, by more accurately obtaining consumer and production data, have a significant advantage in decision-making optimisation and efficiency improvement (Liang & Tian, 2024). Based on this, the study proposes the following hypothesis:

Hypothesis 1: Digital transformation in traditional SMEs can significantly enhance their organisational performance.

According to resource-based theory, a company's resource endowment directly affects the effectiveness of its digital transformation. Larger SMEs typically have more financial, technical, and managerial resources, enabling them to implement digital transformation more smoothly, optimise business processes, improve operational efficiency, and thus enhance organisational performance (Clemente-Almendros, Nicoara-Popescu & Pastor-Sanz, 2024). In contrast, smaller enterprises face more difficulties in implementing digital transformation due to limited resources, including funds, technology, and talent, which may result in less significant transformation effects (Santos, 2023; Verhoef *et al.*, 2021). Innovation diffusion theory emphasises the process of technology and innovation spread within businesses. There are differences in the acceptance and implementation of digital transformation across industries (Gouveia & São Mamede, 2022). For example, manufacturing firms may focus on production automation and intelligent manufacturing, while service industry companies may focus more on data analysis and customer experience optimisation. Therefore, SMEs in different industries face different demands and challenges in digital transformation, which affects the degree of performance improvement (Chen, Sun & Chen, 2024). Additionally, the technology acceptance model points out that employee acceptance of new technology is a key factor for the success of digital transformation. Large enterprises typically have more resources for technical training, making it easier for employees to adapt to digital changes, while smaller companies may lack such support, leading to lower employee acceptance of new technologies, which directly affects transformation results (Merín-Rodríguez, Dasí & Alegre, 2024). In summary, this study proposes the following hypothesis:

Hypothesis 2: Digital transformation has different effects on organisational performance improvement in traditional SMEs of different sizes and industries.

Based on the above literature review and theoretical analysis, this study constructs a theoretical framework, as shown in Figure 1, to systematically reveal the impact pathways and differentiated mechanisms of digital transformation on the organisational performance of traditional SMEs. The framework identifies digital transformation as the core variable, emphasizing its direct impact on organisational performance through optimising business processes, enhancing resource integration capabilities, and driving organisational innovation. Additionally, enterprise size and industry type are incorporated as moderating variables to explore how the effects of digital transformation on performance vary across different scales and industries. This framework aims to provide a clear theoretical foundation and analytical direction for subsequent empirical research.

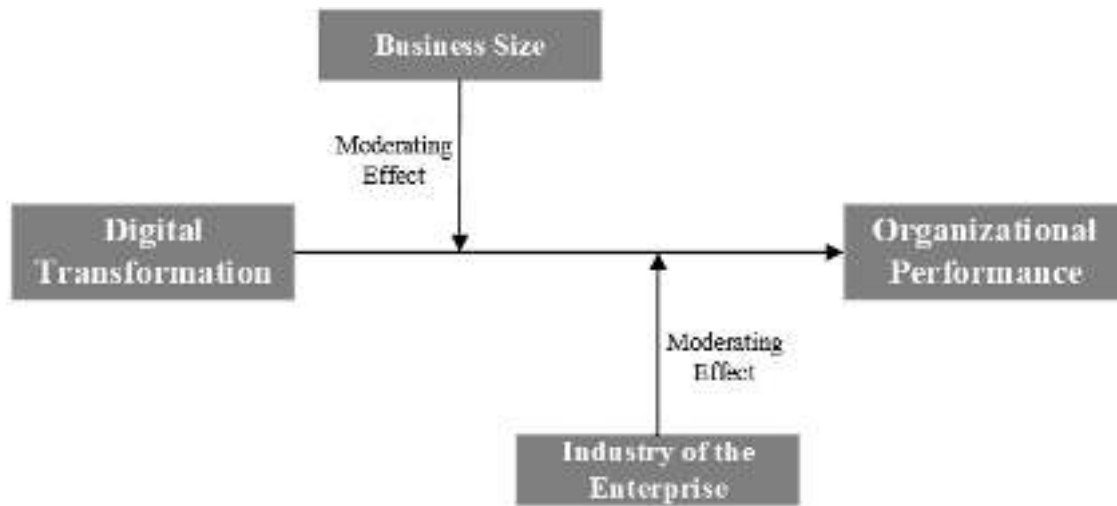


Figure 1: Theoretical Framework Diagram

Methodology

Data Collection

The study targets traditional small and medium-sized enterprises (SMEs) in China. The survey was mainly distributed to business leaders or heads of technology departments. The survey was distributed in two ways: electronically through platforms like Wenjuanxing and WeChat and through field research. A total of 5,250 surveys were distributed, with 3,890 responses collected, resulting in a response rate of 74.1%. After excluding invalid surveys, 3,410 valid responses were obtained, with an effective response rate of 87.66%. The sample includes SMEs from industries such as clothing and textiles, wholesale and retail, accommodation and catering, automobile parts, and software and IT services.

Variable Measurement

Dependent Variable

The dependent variable is the digital transformation (Dt) of traditional SMEs. Following the methodology of relevant scholars (Zhou *et al.*, 2019), a 5-point Likert scale was used to measure this variable. The items and scale description are shown in Table 1.

Table 1: Measurement Methods for Digital Transformation of Traditional SMEs

Item content	Scale Specification
Companies digitally upgrade and transform existing products, services and processes	1= completely disagree, 5= completely agree
Enterprises fully implement digital technology for business process reengineering, operation and management	1= completely disagree, 5= completely agree
Enterprises actively adopt and apply digital technology in practice	1= completely disagree, 5= completely agree
Companies are willing to invest resources to publicize and promote digital transformation and related technical and management knowledge	1= completely disagree, 5= completely agree
Employees recognize the positive impact of digital transformation on business development	1= completely disagree, 5= completely agree

Explanatory Variable

The explanatory variable is organisational performance (OP), which is also measured using a 5-point Likert scale. The items and scale description are shown in Table 2.

Table 2: Measurement Methods of Traditional SME Organizational Performance

Item content	Scale Specification
In the past five years, the company's market share and market share are higher than those of the same industry	1= completely disagree, 5= completely agree
In the past five years, the company's operating income has increased more than that of other companies in the same industry	1= completely disagree, 5= completely agree

In the past five years, the profitability and profit growth space of enterprises are higher than that of enterprises in the same industry	1= completely disagree, 5= completely agree
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Moderating Variables

Business Size (Es): Classified based on annual revenue, with revenue <5 million RMB as microenterprises (coded 0) and revenue between 5 million and 200 million RMB as medium-sized enterprises (coded 1).

Industry of the Enterprise (Ei): Classified by technological intensity into technology-intensive (e.g., software and IT services, coded 1) and non-technology-intensive industries (e.g., clothing and textiles, coded 0).

Control Variables

Based on relevant literature (Xu *et al.*, 2024; Zareie *et al.*, 2024), control variables include business age, management's digital literacy, market competition environment, geographic location, and ownership type.

Business Age (Ea): Based on the number of years since the business was established until 2021, divided into ≤3 years, 3-5 years, 6-10 years, and > 10 years (coded as 1, 2, 3, 4).

Management's Digital Literacy (Mld): Measures the level of understanding and application of digital technologies by top management, divided into low (coded 1), medium (coded 2), and high (coded 3).

Market Competition Environment (MCE): Measures the level of competition in the market, divided into low (coded 1), medium (coded 2), and high (coded 3).

Geographic Location (El): Classifies enterprises based on their location into Eastern provinces (coded 1) and Central/Western provinces (coded 0).

Ownership Type (Ep): Based on the ownership structure, classified as state-owned enterprises (coded 1) and non-state-owned enterprises (coded 0).

Model Construction

Model 1: Baseline Model

This model is used to examine the impact of digital transformation (Dt) on organisational performance (Op) in traditional SMEs.

$$Op_i = \alpha + \beta_1 Dt_i + \beta_2 Ea_i + \beta_3 Mld_i + \beta_4 Mce_i + \beta_5 El_i + \beta_6 Ep_i + \varepsilon_i \quad (1)$$

Model 2: Moderating Effect of Business Size

This model introduces business size (Es) as a moderating variable to investigate whether the impact of digital transformation on organisational performance is influenced by business size.

$$Op_i = \alpha_0 + \gamma_1 Dt_i + \gamma_2 Ea_i + \gamma_3 Mld_i \times Es_i + \gamma_4 Mce_i + \gamma_5 El_i + \gamma_6 Ep_i + \varepsilon_i \quad (2)$$

Model 3: Moderating Effect of Industry

This model introduces the industry type (Ei) as a moderating variable to examine whether the effect of digital transformation on organisational performance is influenced by the enterprise's industry.

$$Op_i = \alpha_1 + \varphi_1 Dt_i + \varphi_2 Ea_i + \varphi_3 Mld_i \times Ei_i + \varphi_4 Mce_i + \varphi_5 El_i + \varphi_6 Ep_i + \varepsilon_i \quad (3)$$

Results

The empirical analysis results are shown in Table 3. From the regression results, it can be observed that digital transformation (Dt) has a significant positive impact on the organisational performance (Op) of traditional small and medium-sized enterprises (SMEs). In all models, the coefficient of digital transformation is positive and significant at the 1% level, indicating that digital transformation, as part of the business strategy, effectively enhances organisational performance. Specifically, the deeper the digital transformation, the better the company's market response speed, operational efficiency, and innovation ability, leading to an improvement in overall performance.

Further analysis of the moderating effect of digital transformation reveals that company size and industry type significantly moderate the relationship between digital transformation and organisational performance. In Model 2, the interaction term between digital transformation and company size (Dt×Es)

is positive and significant, indicating that larger enterprises are more likely to achieve performance improvements during digital transformation. Medium and large enterprises often possess more resources, including capital, technology, and management personnel, which provide strong support for digital transformation. As a result, they can implement digital transformation more smoothly and achieve more significant performance improvement. In contrast, smaller enterprises may not experience the same level of impact due to limited resources.

Additionally, Model 3 shows that the interaction effect between digital transformation and industry type (Dt×Ei) is particularly significant in technology-intensive industries. Technology-intensive industries generally have a higher acceptance of new technologies and stronger innovation demands. Digital transformation in these industries can better enhance companies' technological capabilities and market competitiveness. Therefore, technology-intensive enterprises experience greater performance improvements during digital transformation than non-technology-intensive enterprises. This result suggests that industry type plays a crucial role in digital transformation, and companies should develop more targeted transformation strategies based on their industry characteristics.

Table 3: Regression Analysis Results

Variable	Model 1	Model 2	Model 3
Dt	0.356***	0.340***	0.330***
	(2.752)	(2.567)	(2.473)
Dt×Es		0.312***	
		(2.914)	
Dt×Ei			0.120**
			(2.138)
Es		0.312***	
		(2.914)	
Ei			0.455
			3.230
Ea	0.022**	0.021**	0.023**
	(2.030)	(2.014)	(2.051)
Mld	0.125**	0.130***	0.115**
	(2.496)	(2.572)	(2.358)
Mce	-0.042	-0.038	-0.045
	(-1.678)	(-1.589)	(-1.523)
Ei	0.015	0.018*	0.016
	(1.525)	(1.692)	(1.570)
Ep	0.030*	0.029*	0.032*
	(1.740)	(1.755)	(1.810)
Adjusted R ²	0.521	0.648	0.610
N	3.410	3.410	3.410

Note: *** indicates $P < 0.01$, ** indicates $P < 0.05$, * indicates $P < 0.1$.

Discussion

This study, based on data from 3,410 traditional SMEs in China, explores the impact of digital transformation (DT) on organisational performance (OP) and examines the moderating effects of firm size and industry type. The results reveal that DT significantly enhances OP, improving market responsiveness, operational efficiency, and innovation capability. Firms of different sizes and industries exhibit notable disparities during DT processes. Unlike previous research that mainly focused on large enterprises, this study targets resource-constrained SMEs, bridging gaps in existing literature by

applying Resource-Based Theory and Diffusion of Innovation Theory to this group (Wei & Li, 2024; Xu *et al.*, 2024).

The study also finds that larger SMEs, due to resource advantages, show more significant performance improvements during DT, while smaller firms face challenges, such as resource shortages, requiring external collaboration or policy support to address these limitations. Furthermore, technology-intensive industries benefit more from DT by driving innovation, whereas non-technology-intensive industries enhance market responsiveness and customer experiences through service optimisation. These findings expand the theoretical context of DT and provide empirical evidence for policymakers and enterprises.

In terms of practical implications, this study provides clear guidance for SMEs' DT. First, enterprise leaders should recognise the critical role of DT in improving OP and competitiveness and treat it as a core strategic priority. Large SMEs should leverage their resource advantages to invest in digital technology adoption, employee training, and business process redesign to ensure smooth transitions and significant performance gains. Resource-limited small firms should overcome challenges by partnering with third-party digital platforms, participating in government support programs, or fostering regional collaborative innovation. Second, the study emphasises industry-specific differences: technology-intensive industries should prioritise the application of big data analytics, intelligent technologies, and automation, while non-technology-intensive sectors should focus on optimising service processes and enhancing customer experiences to improve market responsiveness and customer retention. By implementing these targeted strategies, SMEs can achieve sustainable development in the digital economy. Additionally, the findings serve as a critical reference for policymakers, especially in resource allocation and policy formulation. Governments should provide tailored support policies for firms of different sizes and industries to help them navigate challenges in DT. By adopting digital innovations and promoting collaboration among stakeholders, SMEs can discover new growth opportunities, strengthen their competitiveness, and support inclusive and sustainable economic progress (Balboa, Ladesma & Manguerra, 2024).

Despite its contributions, this study has limitations that suggest future research directions. Although the sample covers SMEs nationwide, representation of Western China remains limited. Future studies should expand the sample scope to examine how regional differences, including policy environments, infrastructure, and economic development levels, affect DT outcomes. The reliance on survey data may introduce subjective and methodological biases, and subsequent research could incorporate operational data and external sources for greater objectivity. Furthermore, this study focuses on firm size and industry type as moderators, leaving the mechanisms through which DT influences OP (e.g., digital literacy, technological infrastructure and organisational culture) unexplored. Future studies can include more mediating variables and construct comprehensive causal models to reveal the internal mechanisms of DT. Lastly, given the dynamic nature of digital economy policies, future research should investigate how evolving policy tools (e.g., tax incentives, technical support) impact SMEs' DT to inform more effective policy designs.

Limitations

Limited regional representation. Although the sample includes SMEs across various regions of China, the representation of SMEs from western regions is insufficient. This limitation may reduce the generalisability of the findings to areas with significantly different policy environments, economic conditions, and infrastructure. Future research should expand the regional scope to enhance the comprehensiveness and applicability of the findings. Limitations of data types. This study primarily relies on survey data, which may be subject to subjective biases. Incorporating operational data, industry reports, and other objective data sources would improve the accuracy and robustness of the conclusions.

Conclusion

This research, based on a sample of 3,410 Chinese traditional SMEs, examines the impact of digital transformation (DT) on operational performance (OP), revealing variations across firm sizes and industry

backgrounds. The findings confirm that DT significantly enhances OP by improving market responsiveness, operational efficiency, and innovation capabilities. Larger firms benefit from abundant resources, enabling smoother DT implementation and greater performance improvements, whereas smaller firms, constrained by limited resources, require external support to achieve similar gains. Additionally, technology-intensive industries outperform non-technology-intensive industries in the DT process, emphasizing the need for tailored strategies.

Given these empirical insights, the study proposes several policy recommendations. First, SMEs should tailor their DT strategies based on size and available resources—large firms should fully utilise their advantages to promote comprehensive DT, while smaller firms should seek external support and government assistance. Second, industry characteristics should guide DT priorities, with technology intensive industries focusing on innovation and smart production, while non-technology-intensive sectors emphasise service improvement and operational optimisation. Third, training for management teams is essential, as enhancing digital literacy among executives can improve decision-making and ensure successful DT implementation.

DT has emerged as a crucial strategy for SMEs to enhance OP and strengthen market competitiveness. To fully harness its potential and achieve sustainable growth, enterprises must develop customised DT approaches based on their specific resources, industry characteristics, and developmental needs.

Future Scope

Future research should explore regional disparities by examining how local policies, stages of economic development, and infrastructure influence the outcomes of digital transformation (DT), providing region-specific strategic recommendations for SMEs. Additionally, investigating the long-term dynamic impacts of DT through a longitudinal research framework could offer insights into its evolving effects on firm performance, particularly in relation to policy instruments and technological advancements. Furthermore, uncovering the underlying mechanisms and external factors shaping DT is crucial. Future studies should focus on endogenous elements such as digital literacy and organisational culture, alongside external influences like international competition and cross-border collaboration. Developing multidimensional models will enhance the understanding of the key drivers and pathways of DT, offering a more comprehensive perspective on its implications for SMEs.

Conflict of Interest

The authors declare that they have no conflict of interests.

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