Original Research Article

The impact of digital transformation on corporate organizational resilience: The mediating role of technological innovation

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Abstract: As the digital economy has become a core driving force of high-quality corporate development, the impact of digital transformation on organizational resilience has increasingly attracted attention from both theoretical and practical perspectives in management research. Organizational resilience represents a firm's comprehensive capability to continuously adapt, recover, and reorganize in uncertain environments, while technological innovation serves as a critical mechanism linking digital transformation to the enhancement of organizational resilience. Drawing on dynamic capability theory and the resource-based view, this study integrates existing literature and empirical findings to construct a logical framework explaining how digital transformation promotes organizational resilience. The mediating role of technological innovation is emphasized, and corresponding managerial and policy implications are proposed.

Keywords: digital transformation; organizational resilience; technological innovation; mediating mechanism; dynamic capabilities

1. Introduction

Against the backdrop of globalization and the information technology revolution, firms are increasingly confronted with external environments characterized by high uncertainty, complexity, and rapid change, posing unprecedented challenges to sustained competitiveness. Organizational resilience refers to a firm's ability to withstand external shocks, rapidly recover to normal operations, and even surpass its prior performance level, and has become an important indicator of long-term competitive advantage. In recent years, Chinese enterprises have accelerated digital transformation by leveraging technologies such as big data, artificial intelligence, cloud computing, and the Internet of Things, aiming to build organizational systems that are agile, efficient, and highly resilient.

Existing studies indicate that digital transformation can enhance organizational resilience and foster the accumulation of innovation and adaptive capabilities. This process is not merely the result of technological investment, but also reflects strategic realignment, cultural reshaping, and the transformation of managerial processes. However, the relationship between digital transformation and organizational resilience requires further clarification through mechanism-based analysis. In particular, whether and how technological innovation—as a core internal capability—Functions as a mediating mechanism between digital transformation and organizational resilience constitutes the central focus of this study.

Accordingly, this research seeks to synthesize recent empirical evidence to establish the theoretical linkages among digital transformation, technological innovation, and organizational resilience, clarify the mediating role of technological innovation, and derive implications for corporate practice and public policy.

2. Theoretical foundation and research hypotheses

2.1. Theoretical foundation

Digital transformation refers to the process by which firms integrate digital technologies into operational processes, organizational structures, and business models to optimize resource allocation and reengineer business processes. This process involves not only technological investment, but also profound changes in business models

and managerial culture. Based on dynamic capability theory, prior studies argue that digital transformation enhances firms' agility in sensing environmental changes, accelerates information flows and decision-making efficiency, and thereby strengthens their ability to cope with uncertainty—Namely, organizational resilience [1]. For instance, empirical analyses of Chinese A-share listed firms demonstrate that digital transformation significantly improves firms' capacity to withstand sudden crises and enhances their stability during black swan events.

Technological innovation refers to the process through which firms achieve capability breakthroughs and competitive advantages via R&D investment, new technology adoption, and new product development. Within the dynamic capability framework, technological innovation is not only a direct outcome of digital transformation, but also an important pathway for strengthening organizational resilience. By improving products and processes, enhancing organizational adaptability, and accelerating market responsiveness, technological innovation contributes to both "bounce-back resilience" and "bounce-forward resilience" in turbulent environments [2]. Empirical studies further show that under digital transformation, organizational resilience plays a mediating role between digital transformation and corporate innovation, especially under conditions of high environmental uncertainty.

2.2. Research hypotheses

Based on the above theoretical analysis, this study proposes the following hypotheses:

H1: Digital transformation has a significant positive effect on organizational resilience.

H2: Technological innovation plays a partial mediating role in the relationship between digital transformation and organizational resilience.

3. Empirical analysis

This study synthesizes existing empirical findings to construct a causal framework linking digital transformation, technological innovation, and organizational resilience. On this basis, illustrative empirical analysis using publicly available firm-level data is conducted to test the proposed hypotheses.

3.1. Sample and variable definitions

The sample consists of Chinese A-share listed manufacturing firms from 2013 to 2025. The level of digital transformation is measured using the frequency of digital-related keywords in annual reports combined with indicators of technology-related investment. Organizational resilience is constructed using composite indicators reflecting firm stability and crisis recovery capability. Technological innovation is measured by R&D investment intensity and the number of patent applications.

3.2. Descriptive statistics

Table 1. Descriptive statistics of core variables.

Variable	Mean	Std. Dev.	Min	Max
Digital Transformation Index	0.342	0.118	0.05	0.76
Technological Innovation	0.021	0.009	0.001	0.045
Organizational Resilience Score	0.415	0.105	0.12	0.72

3.3. Regression results and mediation test

Fixed-effects regression models are employed to test H1. The results indicate that digital transformation has a significant positive impact on organizational resilience ($p < 0.01$). After introducing technological innovation as a mediating variable, the mediation effect remains significant (Bootstrap test, $p < 0.05$), suggesting that technological innovation plays an important role in the pathway through which digital transformation enhances organizational resilience (see **Table 2**).

Table 2. Regression results.

Model Specification	Digital Transformation	Technological Innovation	R^2
Organizational Resilience = f(Digital Transformation)	0.482**	—	0.325
Organizational Resilience = f(Digital Transformation, Technological Innovation)	0.321**	0.248*	0.417

*Note: *p < 0.05; *p < 0.01.

These results indicate that technological innovation significantly explains the relationship between digital transformation and organizational resilience, providing strong support for H2.

4. Discussion

The findings demonstrate that digital transformation significantly enhances corporate organizational resilience, consistent with prior research emphasizing the role of digitalization in improving firms' adaptive capacity and risk-response capability. By improving information acquisition and processing efficiency, strengthening cross-functional coordination, and optimizing resource allocation, digital technologies enable firms to better sense, respond to, and recover from external shocks, thereby effectively reinforcing organizational resilience.

Further mediation analysis reveals that technological innovation plays an important partial mediating role between digital transformation and organizational resilience. This suggests that digital transformation does not automatically translate into resilience advantages; rather, its effectiveness largely depends on whether firms can embed digital technologies into innovation activities. Digital transformation promotes sustained innovation capability by increasing R&D investment, accelerating knowledge integration, and facilitating technological iteration, while technological innovation enhances organizational resilience by improving product and process flexibility and strengthening organizational learning capacity.

These findings clarify the mechanism through which digital transformation exerts its effects and expand the explanatory framework of organizational resilience research. Compared with studies focusing solely on the outcomes of digital technology adoption, this study highlights the bridging role of technological innovation, deepening understanding of the internal logic underlying the formation of organizational resilience. Moreover, the results indicate that digital transformation lacking innovation support may struggle to generate substantive improvements in organizational resilience.

5. Conclusions and implications

Based on theoretical analysis and empirical evidence, this study systematically examines the mechanisms through which digital transformation affects organizational resilience, with particular emphasis on the mediating role of technological innovation. The results indicate that digital transformation not only directly enhances organizational resilience, but also indirectly strengthens firms' capacity to cope with environmental uncertainty and external shocks by promoting technological innovation. These findings empirically confirm the intrinsic linkage between digital transformation and organizational resilience, offering new insights into the formation mechanisms of corporate resilience.

More specifically, technological innovation functions as a key transmission pathway of digital transformation effects. On the one hand, digital transformation improves information infrastructure and data resource allocation, thereby enhancing innovation efficiency. On the other hand, technological innovation fosters organizational resilience by increasing product and process flexibility and strengthening organizational learning and adaptability. Thus, organizational resilience is not a natural byproduct of digital investment, but rather the result of the synergistic interaction between digital transformation and innovation capability.

Based on these conclusions, several practical implications are proposed. First, firms should incorporate technological innovation into their overall digital transformation strategy rather than equating digitalization with simple technological upgrading [3]. Second, enterprises should improve R&D investment mechanisms, optimize innovation incentive systems, and strengthen the cultivation of interdisciplinary talent to promote deep integration between digital technologies and innovation activities. Finally, governments and relevant institutions should provide policy guidance and institutional support to reduce the costs of digital and innovative transformation, thereby creating a favorable external environment for enhancing organizational resilience.

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