



The Role of Digital Capabilities in Promoting Corporate Performance

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Abstract. Digital capability contributes positively to corporate performance, especially given the lack of empirical research on the influence of organizational learning on performance. From the perspective of organizational learning, employing questionnaire data for empirical analysis, this study investigates the impact of digital capability in small and medium-sized manufacturing enterprises on corporate performance, as well as the mediating role of organizational learning. The findings indicate that digital connectivity positively influences corporate performance, while the impact of digital intelligence and analytic capabilities on corporate performance is not significant. Moreover, organizational learning significantly enhances corporate performance and effectively mediates the relationship between digital capability and performance. The conclusions of this research enrich the findings in the realms of digital capability, organizational learning, and corporate performance.

Keywords: Digital capabilities; Organizational learning; Corporate performance; Small and medium-sized enterprises.

1 Introduction

Currently, the development of the digital economy has risen to become a national strategy. The "14th Five-Year Plan" explicitly proposes to promote the digitization and digitalization of industries, utilizing digital technology applications to drive organizational transformation and enhance performance.

In recent years, scholars have been exploring how to leverage digital capabilities to create business value. However, the direct impact of digital capabilities on corporate performance has not been conclusively established. Some researchers have found that the construction of digital capabilities is crucial for enhancing corporate performance¹. Other scholars suggest that there is no significant correlation between the two², or they exhibit a U-shaped relationship³. It is speculated that digital capabilities, as advanced dynamic capabilities of firms, may need to be mediated or moderated through certain mechanisms to translate into actual performance improvements. Therefore, this paper intends to introduce organizational learning as a mediating variable to uncover the

"black box" of the relationship between digital capabilities and the performance of small and medium-sized manufacturing enterprises.

The theoretical contributions of this paper are as follows: Firstly, it systematically explores the causal pathways of digital capabilities on corporate performance, bridging the gap in existing research regarding intermediary mechanisms. Secondly, a new approach of using digital capabilities as a driving factor to promote organizational learning was proposed, which promoted the development of organizational learning theory.

2 Theoretical Analysis and Research Hypothesis

2.1 Organizational Learning

Argyris⁴ formally proposed the concept of organizational learning, suggesting that it is a process where organizations, in a changing environment, "discover errors - reconstruct organizational theories - correct errors." Baker⁵, based on the process of market information flow, proposed measuring organizational learning through learning commitments, shared visions, and open-mindedness.

This article adopts the division of organizational learning dimensions proposed by Baker⁵. Commitment to learning entails providing training and learning opportunities within the company, encouraging employees to change their work through collaborative learning. Shared vision ensures that employees understand the company's future development goals and feel responsible for them. Open-mindedness involves communicating with the outside world, understanding the latest industry developments, accepting reasonable suggestions, and encouraging employee involvement in management.

2.2 Digital Capabilities

Scholars have proposed the concept of digital capability from the perspective of data management and competitive advantage in enterprises. Yoo⁶ defined digital capability as the ability to design multiple products or subsystems using digital tools. Lenka categorized organizational digital capabilities into connectivity capability, analytical capability, and intelligence capability from a capability perspective⁷. Drawing from scholars' discussions on digital capabilities from different perspectives and levels, this study regards enterprise digital capability as the ability of enterprises to deploy and integrate internal and external resources through digital platforms, utilizing digital technology and data assets to reduce the complexity and uncertainty of organizational information, thus achieving the capability to create differential value.

Based on existing research, digital capability is categorized into three dimensions: connectivity, intelligence, and analytics. Connectivity refers to the ability to interconnect digital products via ubiquitous information systems, enabling interactions among people, objects, and information. Intelligence capability involves perceiving and capturing information to enable real-time responsiveness to the environment. Analytics capability involves the development of plans, business logic, and algorithms to process information or data into predictive insights valuable for the organization⁷.

2.3 Digital Capability and Corporate Performance

Businesses can enhance their performance by establishing big data platforms that connect upstream and downstream supply chain partners externally, as well as various departments within the enterprise internally. Through these platforms, real-time data monitoring of product manufacturing processes, as well as control and allocation of inventory resources, can effectively reduce production costs and elevate performance levels⁸. Analyzing real-time data for decision-making can significantly reduce response times between internal production and customer demand, thereby promptly identifying new profit opportunities. Concurrently, through the application and tracking of information technology, companies can swiftly obtain user information, continuously update and improve products based on user feedback, enhance the enterprise's innovation capabilities⁹, and consequently facilitate performance enhancement. Therefore, the following hypothesis is proposed:

H1: There is a positive correlation between digital capability and corporate performance.

2.4 Digital Capability and Organizational Learning

Digitizing resources and processes can promote learning among different departments and individuals within an organization in a more flexible manner¹⁰. Enterprises can more easily acquire new knowledge and link their existing knowledge with new information by using digital capabilities in their business processes, thereby encouraging innovation and enhancing their competitiveness. From the perspective of employees, digital transformation has put forward new requirements for their knowledge and skills. Digital technology, equipment, and new workflows have created a gap between work requirements and actual abilities of employees. These differences have put forward new learning requirements and provided learning opportunities for employees. Based on this, the following hypothesis is proposed:

H2: There is a positive correlation between digital capability and organizational learning.

2.5 Organizational Learning and Corporate Performance

Based on resource-based and knowledge theories, organizational learning is a unique asset for businesses. It helps continuously gather, accumulate, and share knowledge to enhance organizational capabilities and competitiveness¹¹, ultimately boosting performance. Learning involves acquiring, synthesizing, and applying knowledge, fostering innovation and improving performance. Research suggests that while organizational learning may have some lag, aligning it with the environment can lead to long-term positive effects on performance¹². Based on this, the following hypothesis is proposed:

H3: There is a positive correlation between organizational learning and corporate performance.

2.6 The Mediating Role of Organizational Learning

This study argues that organizational learning activities are not only a crucial component in the context of digitization but also a process mechanism for integrating enterprise resources, identifying obstacles to enterprise development, and improving performance in the era of the digital economy. Specifically, digital capability, as a new competency for enterprises in the age of big data, can assist organizations in acquiring, identifying, and applying information in a big data environment. According to organizational learning theory, knowledge serves as the starting point for learning, and the process of transforming information into actionable knowledge, from acquisition and induction to application, is a continuous process of screening and refinement. By broadening perspectives, shifting paradigms, and updating knowledge, theoretical knowledge acquired from the learning process is applied to practical work to enhance the organization's innovation capability and performance¹³. Based on the above, the following hypothesis is proposed:

H4: Organizational learning plays an intermediary role between digital capability and corporate performance.

3 Research Design

3.1 Data Collection and Measurement of Variables

The sample companies were selected from 13 cities in Hebei Province. A total of 378 companies were invited to participate in the survey through the online platform. Ultimately, 308 questionnaires were collected. After removing invalid questionnaires, a total of 257 valid questionnaires were obtained, resulting in a response rate of 68%. The characteristics of the sample are shown in Table 1.

Table 1. Sample characteristics

characteristics	type	quantity	Proportion(%)
industry type	General equipment manufacturing industry	119	46.31
	Computer, communication, and electronics manufacturing industry	33	12.84
	Pharmaceutical manufacturing industry	21	8.17
	Electric appliances and instrument manufacturing	84	32.68
enterprise scale	Medium-size enterprise	44	17.12
	Small enterprise	162	63.04
	Microenterprise	51	19.84
holding type	Hong Kong, Macau, and Taiwan-owned holding	1	0.39
	State-owned holding	11	4.28
	Collective holding	3	1.17
	Private holding	205	79.76
	Foreign-owned holding	5	1.95
	Others	32	12.45

The questionnaire utilizes a five-point Likert scale, with "1" indicating strong disagreement and "5" indicating agreement, with intermediate numbers representing increasing levels of endorsement. Regarding the English literature scale items, translation and back-translation procedures were employed to ensure the accuracy of the questionnaire translation.

The digital capability, modified from existing scales such as Lenka's⁷, comprises three sub-dimensions: connectivity, intelligence, and analytics, with a total of nine items. Organizational learning, adapted from scales like Baker's⁵, includes three sub-dimensions: organizational learning, shared vision, and open-mindedness, totaling ten items. Based on Stam's¹⁴ research and integrating the content of this article, the measurement of corporate performance focuses on financial performance, including two items.

3.2 Validity, Reliability, and Correlation Analysis

To ensure the accurate and effective measurement of various indicators, reliability testing of the model data was conducted using SPSS 26.0. The Cronbach's α values for the variables used in the study all exceed 0.8, meeting the requirement for research reliability.

Factor analysis was performed to examine the influencing factors, yielding a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of 0.894 and a significant Bartlett's test of sphericity with a probability of 0.000, indicating suitability for further factor analysis. Most factor loading coefficients exceeded 0.7, confirming the research's satisfactory reliability and validity.

Additionally, a model fit test was conducted using AMOS 24 to assess the goodness of fit of the model. The observed data from the software confirmed that the model fit was relatively ideal, allowing for further testing of various hypotheses.

Using Pearson correlation analysis to determine the correlations between variables. Calculate the means, standard deviations, and correlation coefficients between variables. Most correlations are significant at the 0.01 level.

3.3 Hypothesis Testing and Analysis

3.3.1. Research on the Hypothesis of the Impact of Digital Capability on Corporate Performance.

After removing the mediating variables from the model, we examined and discussed the relationship between digital capability and corporate performance. Only the digital connectivity capability showed a positive association with corporate performance.

3.3.2. A Hypothesis Study on Organizational Learning as a Mediating Variable.

3.3.2.1. Hypothesis Testing of the Impact of Digital Capabilities on Organizational Learning.

There is an inherent relationship between digital capabilities and organizational learning. All three dimensions of digital capabilities significantly influence organizational learning.

3.3.2.2. Hypothesis Testing of the Impact of Organizational Learning on Corporate Performance.

Both learning commitment and open-mindedness significantly impact corporate performance, while shared vision does not significantly influence corporate performance.

3.3.3 Mediating Effect Test of Organizational Learning.

Based on the Bootstrap test conducted with 2000 repeated samples and calculating a 95% confidence interval, it is found that: learning commitment and open-mindedness mediate the relationship between connectivity capability, intelligence capability, and analytics capability on corporate performance (with confidence intervals excluding 0 for both upper and lower bounds). However, since the direct relationship between shared vision and corporate performance was not confirmed, it does not meet the conditions for conducting a mediation analysis.

4 Conclusions

The conclusions are as follows: Firstly, different dimensions of digital capabilities have varying impacts on corporate performance. Specifically, digital connectivity capability positively influences corporate performance, while the effects of digital intelligence capability and digital analytical capability on corporate performance are not significant. Secondly, the study also confirms that digital capabilities mediate corporate performance through two dimensions of organizational learning: learning commitment and open-mindedness.

Based on the above conclusions, the following policy suggestions are put forward:

Firstly, in the process of cultivating digital capabilities, businesses should pay attention to the significant role of digital connectivity in enhancing performance. Considering the source of competitive advantage, it's crucial to particularly focus on integrating digital connectivity with business processes to drive substantial breakthroughs in corporate performance. Secondly, emphasis should be placed on nurturing the organizational learning capabilities of the enterprise. Organizational learning is a form of strategic thinking ability, and business managers should create a conducive learning environment, applying organizational learning to the transformation and management of the enterprise. Lastly, leveraging digital capabilities through the mediation of organizational learning principles in corporate performance, harnessing the positive influence of digital capabilities on organizational learning to enhance the enterprise's adaptability and competitiveness in new situations and environments.

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