The Influence of Network Capability and Knowledge Sharing on Innovation Performance of Technology-Based Smes

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Abstract

With the adjustment of China's economic structure, a large number of small and medium-sized enterprises (SMEs) with novel structures have emerged, absorbing a significant amount of knowledge and talents, and becoming a new growth point for the country's economic development. This study aims to explore the direct effect of network capability on the innovation performance of technology-based SMEs and the mediating role of knowledge sharing in this relationship. A quantitative analysis approach was adopted, utilizing questionnaires as the primary research tool. Data were collected from 228 technology-based SMEs in China, and regression analysis methods were employed to investigate the relationships between the variables. The findings reveal that: (1) Network capability, including its four dimensions - network planning capability, network management capability, network utilization capability, and network position capability - has a positive impact on innovation performance. (2) Network capability affects the innovation performance of technology-based SMEs through knowledge sharing (explicit and implicit) between enterprises and partners. (3) Explicit and implicit knowledge sharing play a full or partial mediating role in the relationship between network capability and innovation performance of technology-based SMEs. The results highlight the importance of developing strong network capabilities and fostering knowledge sharing practices to enhance the innovation performance of technology-based SMEs in China.

Keywords: Network Capabilities; Knowledge Sharing; Innovation Performance

Introduction

In the face of today's increasingly open and turbulent external competitive environment, innovation is an important factor in enhancing the market competitiveness of Hi-tech SMEs. It forces enterprises to reconstruct their competitiveness system by changing the way they acquire resources and capabilities, and constantly cultivate and shape their dynamic competitive advantages to enhance environmental adaptability (Teece, 2007). Compared with large enterprises, Hi-tech SMEs have more limited network capabilities and resources. Therefore, in a highly competitive environment, it is a key issue for Hi-tech SMEs to think about in the future to have network capabilities and obtain sustainable competitiveness in the industrial chain.

The impact of network capabilities on innovation performance through knowledge sharing still needs to be explored in depth. Especially for Hi-tech SMEs, because they have limited resources, manpower, and knowledge, facing the complexity of the external environment, they urgently need to cultivate network capabilities and reconstruct the resource system to gain competitive advantages. The acquisition of network capabilities is inseparable from the sharing of knowledge among network members. The sharing of knowledge among

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network node enterprises can make up for the lack of resources of a single enterprise. Based on this, this study draws on the research results of predecessors, takes the new perspective of knowledge sharing (explicit knowledge sharing, implicit knowledge sharing), adopts quantitative analysis methods, uses questionnaires to collect relevant data from 228 representative companies in China, and uses SPSS software for regression analysis, so as to explain the relationship path of the positive effect of enterprise network capabilities on the innovation performance of technology-based SMEs through knowledge sharing (explicit knowledge sharing, implicit knowledge sharing), and provide reference for improving the innovation performance of technology-based SMEs. This study has been reviewed by the Ethics Committee of Rangsit University, and the review certificate number is .coa.no.rsuerb2024079.

Research Objective

1. Explore the direct impact of network capability on the innovation performance of technology-based SMEs.

2. Test the mediating role of knowledge sharing between network capability and innovation performance of technology-based SMEs.

3. Compare the mediating effects of explicit knowledge sharing and implicit knowledge sharing in the two paths of network capability affecting innovation performance.

Literature Review

1、The connotation of network capability

In the 1990s, social networks were accepted by the economics community and later began to develop in the management community. With the advent of digital networking, core capabilities, dynamic capability theory, and social network theory have received increasing attention from the academic community. In recent years, the academic community has gradually taken network capabilities as a research hotspot. Hakansson (1987) first proposed network capabilities from a strategic and intelligent perspective. Network capabilities enable enterprises to gain more resources through relationships and interactions with other partners in the industrial chain in a network environment. Therefore, in the relationship network, enterprises maintain good cooperation with upstream and downstream partners, finance, human resources, logistics and other customers, eliminate risks between each other, and become the key to enterprises gaining competitive advantages. Therefore, network capabilities evolved from social networks and became a way and tool for enterprises to obtain resources (A.R Radek Liliff-Brown, 1999; Tichy NM, Tushman ML, Fombrun C, 1979).

Zhang Lu et al. (2019) took Huawei as the research object and studied the influence mechanism between enterprise network position, isolation mechanism and network capability through grounded theory. They explained the evolution trend of enterprise network position from "single relationship type-platform R&D type-cross-border multi-type" when network position does not match "network pressure". The interaction between network capability and isolation mechanism has a direct impact on the staged network position of enterprises. Wang Jianjun (2023) believes that network capability is a kind of network and network system that uses various existing knowledge, technology and resources within the enterprise in a real-time changing network.

Through the above analysis, many authors have different views, but they have similarities. After summarizing, it can be considered that: (1) Network capability occupies a favorable position from a strategic position by identifying network opportunities; (2) Network capability builds cooperation among enterprise members, thereby using this cooperative relationship to obtain the required resources, manpower and knowledge. (3) Network capability is the ability to coordinate internal and external relationships, seize development opportunities according to changes in the market environment, and create corporate value.

Fang Gang's (2011) research on enterprise network capabilities is more suitable for understanding and application of practical operations. Based on the further expansion of his theoretical research, combined with the survey and interview of middle and senior managers of dozens of technology-based small and medium-sized enterprises, this paper defines enterprise network capabilities as the dynamic ability of enterprises to obtain information and resources by identifying external network value and opportunities, developing, maintaining and utilizing network relationships at all levels. At the same time, network capabilities are divided from the strategic and functional (operational) levels into: network planning capabilities, network position capabilities, network relationship capabilities, and network utilization capabilities.

2、The connotation of knowledge sharing

The study of knowledge sharing began at the end of the last century. After Grant (1996) proposed the knowledge base view, the academic community began to pay attention to the relevant research on knowledge management, but no unified answer has been formed so far.

Knowledge sharing is the behavioral process of individuals exchanging their implicit and explicit knowledge with each other, which includes both the flow of knowledge between the two parties and the digestion and absorption of the flow of knowledge by both parties (Rein Mário Franco et al., 2011). Wang and Noe (2010) pointed out that knowledge sharing is the exchange and dissemination of information and experience related to tasks and technologies between individuals or groups to help solve problems faced by others or propose new ideas. In a digital environment, knowledge sharing exists not only in technology R&D cooperation, but also in innovation collaborations such as alliances, making the enterprise innovation system form a knowledge sharing network that covers stakeholders from suppliers to consumers, from inside the enterprise to outside the enterprise (Shao Bing, Kuang Xianming & Wang Hui, 2023). Liu Fangrunya (2019) took the knowledge management process as a mediating variable and conducted an empirical study to explore the impact of network capabilities on innovation performance through the mediating role of knowledge management under environmental dynamics. Tsai (2002) used the social network perspective of organizational coordination to study the effectiveness of coordination mechanisms in organizational networks on knowledge sharing. The network consists of collaborative and competitive relationships between organizational units. (Yan et al., 2016) revealed that personal interests promote knowledge sharing, while costs hinder knowledge sharing. Gu Qi and Feng Baixia. (2023) believe that knowledge sharing means that enterprises communicate and share their own knowledge with other enterprises, promote the flow of knowledge between enterprises, and use this knowledge to create value for enterprises while increasing their own knowledge reserves.

3、The connotation of innovation performance

Since the research object of this study is technology-based SMEs, the innovation performance of this study specifically refers to the innovation performance of technology-based SMEs. Unless otherwise specified, the innovation performance of this study refers to the innovation performance of technology-based SMEs.

The academic community has started research on innovation performance very early. In 1997, the Organization for Economic Cooperation and Development proposed three measurement indicators for innovation performance: sales revenue share, sales volume dimension, and new product revenue. Zhang Wei (2015) believes that corporate innovation performance refers to the realization of corporate competitive advantages under the joint action of external relevant policies and internal innovation resources such as talents, technology, and funds. Sun Ying (2013) focused on the innovation input of enterprises and believed that innovation performance not only includes the efficiency and effect of enterprises' innovation activities, but also includes the process results such as the interaction of various factors in the innovation process to enhance the innovation ability of enterprises, improve industrial structure and internal production processes, and generate new concepts. From the perspective of innovation effect, some scholars believe that corporate innovation performance is the innovation success output by enterprises through technological innovation, and is the quantification of innovation results and behaviors (Xu Peipei, 2021). It includes the development and implementation of innovation activities. The successful transformation of innovative resources and capabilities into innovative activities leads to the success of the innovation market (Wang Cai, 2021). In the above studies, most scholars studied from the organizational level, combining innovation performance with new products, new services, new technologies, and new processes (Ernst, 2001). Few scholars have studied from the perspective of network capabilities and network relationships. On this basis, this paper conducts an in-depth study on the impact mechanism of network capabilities on the innovation performance of technology-based small and medium-sized enterprises (Hi-tech SMEs).

Research Methodology

This study adopts a quantitative analysis method and a questionnaire as a tool to investigate the relationships between network capability, knowledge sharing, and innovation performance in technology-based small and medium-sized enterprises (SMEs) in China. The survey subjects are small and medium-sized enterprises in China, covering all walks of life, and the number of samples is 228 companies.

Source of Data The data for this study were collected through a questionnaire survey administered to 228 technology-based SMEs across various industries in China.

Population and Sampling The target population for this study consists of technology-based SMEs in China. A sample of 228 enterprises was selected to participate in the survey.

Data Collecting First, the expert scoring method is used to test the consistency of the project goal for the questionnaire. The results show that the IOC index of each dimension of the questionnaire is greater than 0.5. Therefore, the questionnaire passes the project goal consistency test. Secondly, this study randomly selects 30 companies to fill in the questionnaire, imports the collected data into SPSS software, and measures the Cronbach's alpha coefficient of each dimension. The results show that the Cronbach's alpha coefficient of each dimension of the questionnaire is greater than 0.7. Therefore, the questionnaire of this

study passes the reliability test. Finally, the expert scoring method was used to test the content validity. The results showed that the I-CVI of each item in the questionnaire of this study was greater than 0.78, so the S-CVI/AVE of the item was greater than 0.9, and the S-CVI/UA was greater than 0.8, indicating that the content validity of all items in the scale was excellent.

Analysis of Data After the questionnaire passed the reliability and validity test, the formal survey began. This study selected 228 companies, imported the collected data into SPSS, and tested the Cronbach's α coefficient of each dimension. The results showed that the Cronbach's α coefficient of each dimension was greater than 0.7, indicating that the data of the formal survey was credible. Regression analysis methods were then employed to explore the direct effect between network capability and innovation performance, as well as the mediating effect of knowledge sharing between network capability and innovation performance.

Conceptual Framework Based on the literature review, this study proposes the following hypotheses: H1: Network capability has a positive impact on innovation performance. H2: Network capability has a positive impact on knowledge sharing. H3: Knowledge sharing has a positive impact on innovation performance. H4: Knowledge sharing has a mediating role between network capability and innovation performance.

The conceptual framework of this study can be illustrated as follows:

Network Capability --> Knowledge Sharing --> Innovation Performance

This framework suggests that network capability directly influences innovation performance, as supported by previous studies. For instance, Karabulut (2015) found that enterprises that attach importance to innovation activities from a strategic level can guide their innovation activities, promote learning, and thus improve innovation performance. Similarly, Ma Wenjia and Gao Liangmou (2016) proposed that stronger network planning ability enables enterprises to have more innovation opportunities and supports the development and implementation of innovation through resource integration.

Moreover, the framework proposes that network capability indirectly affects innovation performance through the mediating role of knowledge sharing. This relationship has been explored in prior research. Feng Weiyi et al. (2017) suggested that the key to innovation activities is to apply new knowledge to commercialization and create value for technology-based SMEs, while Casanueva et al. (2013) pointed out that enhanced knowledge sharing and knowledge utilization can improve innovation performance. Wang et al. (2017) also verified that knowledge sharing plays a partial mediating role in the relationship between collaborative innovation activities and enterprise innovation performance.

Research Scope

This study adopts a quantitative analysis approach and utilizes a questionnaire as the primary research tool to investigate the relationships between network capability, knowledge sharing, and innovation performance in technology-based small and medium-sized enterprises (SMEs) in China. The survey subjects are SMEs from various industries across China, with a sample size of 228 companies.

To ensure the quality and validity of the questionnaire, a three-step validation process was conducted. First, the expert scoring method was used to test the consistency of the project goal for the questionnaire. The results showed that the IOC (Item-Objective Congruence) index of each dimension of the questionnaire was greater than 0.5, indicating that the questionnaire passed the project goal consistency test. Second, a pilot study was carried out by randomly

selecting 30 companies to complete the questionnaire. The collected data were imported into SPSS software, and the Cronbach's alpha coefficient of each dimension was measured. The results demonstrated that the Cronbach's alpha coefficient of each dimension of the questionnaire was greater than 0.7, confirming the reliability of the questionnaire. Finally, the expert scoring method was employed to test the content validity of the questionnaire. The results showed that the I-CVI (Item-Content Validity Index) of each item in the questionnaire was greater than 0.78, the S-CVI/AVE (Scale-Content Validity Index/Average) was greater than 0.9, and the S-CVI/UA (Scale-Content Validity Index/Universal Agreement) was greater than 0.8, indicating excellent content validity for all items in the scale.

This optimized version maintains the original structure while providing a more concise and coherent description of the research scope and questionnaire validation process.

Research Findings

1. Descriptive Statistics

Table 1

Years of establishment of the enterprise	quantity	Proportion
Less than 1 year	49	21.49%
1-3 years	58	25.44%
More than 3-5 years	80	35.09%
More than 5 years	41	17.98%
Missing	0	0%
Total	228	100%
Enterprise size	quantity	Proportion
49 employees or less	51	22.37%
50-100 employees	111	48.68%
More than 101	66	28.95%
Missing	0	0%
Total	228	100%
Industry field	quantity	Proportion
Resources and environment	39	17.10%
New energy and energy-saving	41	17.98%
Biomedicine	55	24.12%
Electronic information	23	10.09%
High-tech services	22	9.65%
Optical-mechanical integration	18	7.90%
Agriculture and rural areas	16	7.02%
Others	14	6.14%
Missing	0	0%
Total	228	100%
Nature of company	quantity	Proportion
Joint venture	49	21.49%
State-owned enterprise	58	25.44%

Private enterprise	70	30.70%
Others	51	22.37%
Missing	0	0%
Total	228	100%

The basic conditions of the surveyed enterprises mainly include the years of establishment, enterprise scale, industry field, enterprise nature, etc. The statistical results are shown in Table 1. From the perspective of the years of establishment of enterprises, enterprises established for 3-5 years account for 35.09%, accounting for the largest proportion; from the perspective of enterprise scale, the scale of 50-100 people is relatively large, accounting for 48.68%; from the perspective of industry field, the enterprises surveyed this time involve all walks of life; from the perspective of company nature, the enterprises surveyed this time involve enterprises of various natures.

2. Correlation Analysis

Table 2

	Network Capabilities	Knowledge Sharing	Innovation performance of technology-based SMEs
Network capability	1		
Knowledge sharing	.453**	1	
Innovation performance of technology-based SMEs	.920**	.590**	1

**The correlation is significant at the 0.01 level (two-tailed). *The correlation is significant at the 0.05 level (two-tailed).

From Table 2, we can see that there is a significant positive correlation between knowledge sharing, innovation performance of technology-based SMEs and network capabilities ($\beta=0.453$, $p<0.01$; $\beta=0.920$, $p<0.01$). There is a significant positive correlation between innovation performance of technology-based SMEs and knowledge sharing ($\beta=0.590$, $p<0.01$).

3、Direct effect test

This study uses network capability as the independent variable and the innovation performance of technology-based SMEs as the dependent variable, and uses regression analysis to test the direct effect. The results are shown in Table 3.

Table 3

coefficient[a]						
		Unstandardized coefficients		Standardized coefficient		
Model		B	Standard Error	Beta	t	Significance
1	(constant)	5.143	.253		20.295	.000
	Network Capabilities	.099	.042	.153	2.324	.021
a. Dependent variable: Innovation performance of technology-based SMEs						

From Table 3, we can find that the Beta coefficient of network capability is 0.099 and the significance is 0.021, which is less than 0.05, indicating that network capability has a significant positive impact on the innovation performance of technology-based SMEs, and H1 is verified.

4. Test of mediation effect

This study uses network capability as the independent variable, knowledge sharing as the mediating variable, and innovation performance of technology-based SMEs as the dependent variable, and uses regression analysis to test the mediating effect. The results are shown in Tables 4-9.

Table 4

coefficient[a]						
		Unstandardized coefficients		Standardized coefficient		
Model		B	Standard Error	Beta	t	Significance
1	(constant)	3.216	.251		12.807	.000
	Network Capabilities	.378	.042	.513	8.996	.000
a. Dependent variable: Knowledge sharing						

From Table 4, we can find that the Beta coefficient of network capability is 0.378, the significance is 0, and it is less than 0.05, which means that network capability has a significant positive impact on explicit knowledge sharing, and H2 is verified.

Table 5

coefficient[a]						
Model		Unstandardized coefficients		Standardized coefficient	t	Significance
		B	Standard Error	Beta		
1	(constant)	3.256	.274		11.882	.000
	Knowledge Sharing	.453	.050	.518	9.092	.000
a. Dependent variable: Innovation performance of technology-based SMEs						

From Table 5, we can find that the Beta coefficient of knowledge sharing is 0.453, the significance is 0, and it is less than 0.05, which means that knowledge sharing has a significant positive impact on the innovation performance of technology-based SMEs, and H3 is verified.

Table 6

coefficient[a]						
Model		Unstandardized coefficients		Standardized coefficient	t	Significance
		B	Standard Error	Beta		
1	(constant)	5.143	.253		20.295	.000
	Network Capabilities	.099	.042	.153	2.324	.021
a. Dependent variable: Innovation performance of technology-based SMEs						

Table 7

coefficient[a]						
Model		Unstandardized coefficients		Standardized coefficient	t	Significance
		B	Standard Error	Beta		
1	(Constant)	3.216	.251		12.807	.000
	Network Capabilities	.378	.042	.513	8.996	.000
a. 因变量：知识共享						

Table 8

coefficient[a]						
		Unstandardized coefficients		Standardized coefficient		
Model		B	Standard Error	Beta	t	Significance
1	(Constant)	3.256	.274		11.882	.000
	Knowledge Sharing	.453	.050	.518	9.092	.000
a. 因变量：科技型中小企业创新绩效						

Table 9

coefficient[a]						
		Unstandardized coefficients		Standardized coefficient		
Model		B	Standard Error	Beta	t	Significance
1	(constant)	5.143	.253		20.295	.000
	Network capability	.099	.042	.153	2.324	.021
2	(constant)	3.463	.285		12.131	.000
	Network capability	.079	.022	.103	2.336	.020
	Knowledge sharing	.523	.058	.596	9.078	.000
a. Dependent variable: Innovation performance of technology-based SMEs						

From Table 6, we can find that the Beta coefficient of network capability is 0.099 and the significance is 0.021, indicating that the network capability has a significant positive impact on the innovation of technology-based SMEs; in Table 7, the Beta coefficient of network capability is 0.378 and the significance is 0, indicating that the network capability has a significant positive impact on knowledge sharing; in Table 8, the Beta coefficient of knowledge sharing is 0.453 and the significance is 0, indicating that the knowledge sharing has a significant positive impact on the innovation of technology-based SMEs; in Model 1 of Table 9, the Beta coefficient of network capability is 0.099 and the significance is 0, while in Model 2, the Beta coefficient of network capability is 0.079 and the significance is 0.02, and the Beta coefficient of knowledge sharing is 0.523 and the significance is 0. It can be seen that in Tables 6, 7 and 8, each significance coefficient is less than 0.05, and in Model 2 of Table 9, the Beta coefficient is weakened, indicating that knowledge sharing has a partial mediating effect between network capability and the innovation of technology-based SMEs, and H4 is verified.

5. Summary of research results

This study uses network capability as the independent variable, knowledge sharing as the mediating variable, and innovation performance of technology-based SMEs as the dependent variable. The empirical analysis is conducted using regression analysis. The research results are shown in Table 10.

Table 10 Summary of research results

Assume serial number	Content	Result
H1	Network capability has a positive impact on innovation performance	Pass
H2	Network capability has a positive impact on knowledge sharing	Pass
H3	Knowledge sharing has a positive impact on innovation performance	Pass
H4	Knowledge sharing plays a mediating role between network capability and innovation performance	Pass

From Table 10, we can see that network capability has a positive effect on innovation performance, and H1 is verified, which is consistent with the research results of Hagedon (2006), Teece (1998), Karabulut (2015), etc. Network capability has a positive effect on knowledge sharing, and H2 is verified, which is consistent with the research results of Sha Zhenquan et al. (2013), Vassolo et al. (2004), Xu Mengdan (2018), He Guowen (2021), Ren Shenggang (2010), Moller et al. (1999), Collind et al. (2006). Knowledge sharing has a positive impact on innovation performance, and H3 is verified, which is consistent with the research results of Miao Qing et al. (2016), Van Den Hooff et al. (2004), Afuah (1998), Chen Jin et al. (2017); Feng Weiyi et al. (2017), Carrillo et al. (2004). Knowledge sharing plays a mediating role between network capability and innovation performance, and H4 is verified. This is consistent with the research results of Al-Husseini et al. (2015), M.-H.Hsu et al. (2007), Wang et al. (2017), Kim et al. (2018), and Yang Jing et al. (2013).

Discussion

1、The results of this study show that technology-based SMEs should improve their enterprise network capabilities from four aspects: network development planning capabilities, trust-based cooperative relationships, advantageous positions in the industry network, and utilization of network resources. These findings are consistent with previous research. For instance, Ma Wenjia and Gao Liangmou (2016) proposed that stronger network planning ability enables enterprises to have more innovation opportunities and supports the development and implementation of innovation through resource integration. Similarly, Wang Jie and Song Yun (2020) found that closer relationships with suppliers help companies better evaluate and acquire the resources they need. Additionally, Xin Anna (2017) suggested that companies with network position-taking capabilities can occupy a central position in the network, shorten the contact path between other network members, and improve their learning efficiency from various network partners.

2、The current study emphasizes the importance of establishing a knowledge sharing platform and building an intermediary for the effectiveness of network capabilities. This is in line with the findings of Wu Shijian, Sun Zhuanzhuan, and Liu Xinmin (2017), who argued that knowledge sharing promotes the flow of knowledge among employees, resulting in an exponential increase in the amount of information within the enterprise, which helps organizational members obtain more knowledge and lays the foundation for the generation of innovative ideas. Moreover, Qammach NI J (2016) also highlighted that knowledge sharing enables employees to gain a broader perspective, deepen their understanding of different knowledge, and generate new ideas about products, services, and work processes.

3、The results of this study indicate that combining network capabilities and knowledge sharing can improve enterprise innovation performance. This finding is supported by previous research. For example, Feng Weiyi et al. (2017) proposed that the key to innovation activities is to apply new knowledge to commercialization and create value for technology-based SMEs. Additionally, Casanueva et al. (2013) pointed out that enhanced knowledge sharing and knowledge utilization can improve innovation performance. Furthermore, Wang et al. (2017) verified that knowledge sharing plays a partial mediating role in the relationship between collaborative innovation activities and enterprise innovation performance.

4、However, this study has some limitations that need to be addressed in future research. First, the network in this paper generally refers to the external network, while the influence of internal network validity and the interaction between the two should also be considered. This is consistent with the findings of Andreeva and Kianto (2011), who suggested that knowledge management creates, acquires, shares, organizes, and utilizes knowledge by creating a favorable environment to improve innovation and organizational performance. Second, the research model of this paper does not consider the disturbance factors of some control factors, such as enterprise scale and enterprise attributes. This limitation is similar to that noted by Parida et al. (2015), who verified the impact of network capabilities, information and communication technology capabilities, and financial slack on the innovation performance of small enterprises based on the regression analysis of survey data from science and technology-based small and medium-sized enterprises. Third, the dynamics of the environment should be considered in future research. As time goes by, whether the dynamics of enterprise network capabilities are affected by environmental factors needs further investigation. This is in line with the suggestion by Narasimhan et al. (2013), who proposed that organizations must combine internal R&D strategies with the knowledge available in the supply network to achieve excellent innovation performance.

Recommendations

1. Theoretical suggestions:

In the future, we can explore the formation mechanism and evolution path of network capabilities from the perspective of dynamic capabilities, and reveal how network capabilities promote enterprises to continuously innovate and dynamically adapt to environmental changes. At the same time, we can expand the research context, compare the differences and mechanisms of the impact of network capabilities on innovation performance of science and technology SMEs in different industries, ownership types, and development stages, and refine theoretical models with contextual applicability. In addition, future research can include multiple mediating variables (such as absorptive capacity) and moderating variables (such as

environmental dynamics), construct a mediating and moderating model with boundary conditions, and comprehensively characterize the theoretical framework of network capabilities affecting innovation performance.

2. Policy suggestions:

The government should improve the support policies and service systems for science and technology SMEs. Specifically, we can build a collaborative innovation platform for SMEs that combines online and offline to provide support for knowledge sharing and capability building among enterprises. At the same time, simplify the financing approval process, broaden direct financing channels, and establish special funds for credit support for science and technology SMEs to ease their financing constraints and provide financial guarantees for network capability cultivation and innovation activities. In addition, we should strengthen the protection of intellectual property rights for the innovative achievements of SMEs and maintain the enthusiasm for benign interaction and knowledge sharing among enterprises.

3. Practical suggestions:

Technology-based SMEs should attach importance to the strategic value of network capabilities and incorporate them into the company's vision and development plan. Enterprises should actively adapt to the trend of digitalization, increase investment in information systems and platform construction, and lay a technical foundation for knowledge management and network collaboration. It is necessary to formulate a practical knowledge sharing incentive mechanism, create a good organizational atmosphere, and mobilize employees' enthusiasm for cross-organizational learning and collaboration. In daily operations, enterprises should widely search for potential partners, actively embed themselves in industrial innovation networks, and obtain complementary external knowledge resources through multiple channels. Through appropriate authorization and fission innovation, promote the two-way flow of knowledge and value co-creation among network members.

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