

# ***Network Capital and Internationalization: Evidence from Chinese High-Tech SMEs***

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**Abstract:** This study examines the mediating role of innovation strategy in the relationship between network capital and the internationalization of Chinese high-tech small and medium-sized enterprises (SMEs), as well as the moderating effect of government policy on this mediating pathway. Based on survey data collected from 289 high-tech SMEs located in Shenzhen, China, a moderated mediation model was tested using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that innovation strategy serves as a significant mechanism through which network capital enhances international performance. Furthermore, government support plays a critical moderating role by strengthening the indirect effect of network capital on internationalization via innovation strategy. Specifically, the mediating effect is more pronounced under high levels of government policy support. These findings contribute to the literature on internationalization by elucidating a conditional process model that explains how relational resources are transformed into global competitive advantage through strategic innovation, contingent on institutional support. The study offers practical implications for SME managers seeking to leverage external networks and innovation capabilities, as well as for policymakers aiming to design effective public interventions that facilitate international expansion.

**Keywords:** network capital; innovation strategy; internationalization; government policy; Chinese high-tech SMEs

## **1. Introduction**

The United Nations Sustainable Development Goals (SDGs) provide a global framework for progress, with Goal 8 emphasizing inclusive economic growth and Goal 9 focusing on fostering innovation <sup>[1]</sup>. These goals are closely related to the ongoing challenge for firms, particularly small and medium-sized enterprises (SMEs) from emerging economies, to compete on the global stage. Early internationalization theories focused on the incremental, stage-based expansion of large firms <sup>[2]</sup>. However, the rise of "born global" firms and the

hyper-competitive landscape of high-tech industries have shifted attention towards the resources and capabilities that enable rapid internationalization <sup>[3]</sup>. Scholars applying the Resource-Based View (RBV) argue that unique, intangible assets are the key drivers of sustainable competitive advantage <sup>[4]</sup>.

For high-tech SMEs, network capital—the web of relationships that provide access to knowledge, resources, and opportunities—has been identified as a critical intangible asset <sup>[5]</sup>. However, empirical studies examining the link between network capital and internationalization yield mixed results. This may be due to institutional differences <sup>[6]</sup>. more specifically, because the pathway from possessing network resources to achieving international performance is not direct. This suggests that internal firm capabilities, such as a proactive innovation strategy, are needed to convert network potential into tangible outcomes. Furthermore, the institutional environment, particularly government policy, can significantly influence a firm's ability to innovate and expand globally <sup>[7]</sup>.

China's high-tech sector provides a critical context for this research. Driven by national strategies like "Made in China 2025," the government has heavily promoted both indigenous innovation and the international expansion of its firms <sup>[8]</sup>. Shenzhen, as China's premier innovation hub and Special Economic Zone, is home to a dense ecosystem of export-oriented high-tech SMEs. These firms actively leverage networks and benefit from targeted government support, yet the interplay between these factors in driving internationalization remains ambiguous. While government support is designed to be beneficial, its precise role in shaping the effectiveness of firm-level strategies is still uncertain.

Existing studies indicate that firm capabilities can mediate the resource-performance link, yet the specific role of innovation strategy as a bridge between network capital and internationalization has received limited attention. Furthermore, while the institution-based view suggests government policy is important, its specific moderating effect on this resource conversion process has not been quantitatively assessed. This leads to two critical questions: (1) How does network capital affect the internationalization of Chinese high-tech SMEs? (2) How do innovation strategy and government policy influence the relationship between network capital and internationalization in these firms?

This study investigates the dynamics between network capital, innovation strategy, government policy, and internationalization in Chinese high-tech SMEs. The first objective is to analyse how network capital impacts internationalization, while the second explores the mediating role of innovation strategy and the moderating role of government policy in this relationship. The sample consists of survey data from 289 SMEs in Shenzhen. A moderated mediation model is employed, estimated using the PLS-SEM approach.

This study is novel in three ways. First, it focuses on high-tech SMEs in Shenzhen, providing a detailed perspective from a globally significant innovation ecosystem. Second, it examines the underexplored process by which network capital is converted into international performance, identifying innovation strategy as a key mediator. Lastly, the study's moderated mediation framework quantifies the contingent effect of government policy, thereby integrating firm-level and macro-level perspectives. In terms of significance, the study

provides a framework that illuminates the pathway to internationalization for emerging market SMEs. This research contributes to the SDG of promoting innovation and sustainable growth by offering evidence-based insights for both managers and policymakers.

## **2. Literature Review and Hypothesis Development**

### **2.1. Network capital theory and SME internationalization**

The Resource-Based View (RBV) posits that a firm's competitive advantage stems from its unique resources <sup>[4]</sup>. For SMEs, which often face constraints in tangible resources, intangible assets like network capital are paramount. Grounded in social capital theory <sup>[9]</sup>, network capital is defined as the resources embedded within a firm's network of relationships. These resources help SMEs overcome the liability of foreignness by providing crucial market knowledge, reducing uncertainty, and granting access to distribution channels and partners <sup>[10]</sup>. Empirical studies have often found a positive link between a firm's network ties and its export performance <sup>[11]</sup>. For Chinese firms, where relational ties (*guanxi*) are deeply embedded in the business culture, network capital is a particularly potent asset for navigating the complexities of international markets. Consequently, we hypothesize the following:

**H1.** Network capital is positively associated with the internationalization of Chinese high-tech SMEs.

### **2.2. The Mediating Role of Innovation Strategy**

While network capital provides access to external knowledge and opportunities, a firm must possess the internal capability to absorb and exploit these inputs. Dynamic capabilities theory suggests that firms must be able to purposefully integrate, build, and reconfigure competences to address rapidly changing environments <sup>[12]</sup>. Innovation strategy is such a dynamic capability. We argue that innovation strategy acts as a critical bridge, or mediator, between network capital and internationalization. Networks provide the raw material for innovation—new ideas, knowledge about foreign customer needs, and opportunities for technological collaboration <sup>[13]</sup>. A firm with a coherent innovation strategy can effectively process these inputs to develop superior products, adapt existing technologies, and create business models tailored for global markets. It is this enhanced innovative output that provides the firm with a sustainable competitive advantage abroad. Without this strategic conversion process, the benefits of network capital may remain unrealized. Thus, we hypothesize:

**H2.** Innovation strategy mediates the relationship between network capital and the internationalization of Chinese high-tech SMEs.

### **2.3. The Moderating Role of Government Policy**

The Institution-Based View (IBV) emphasizes that firm strategies are shaped by the formal and informal institutions of their home country <sup>[7]</sup>. In emerging economies like China, government policy is a powerful formal institution that can enable or constrain firm actions. Supportive government policies—such as R&D subsidies, tax incentives, and intellectual

property (IP) protection—can lower the significant costs and risks associated with innovation [14]. We propose that government policy moderates the pathway from network capital to internationalization. Specifically, a supportive policy environment acts as a catalyst, amplifying a firm's ability to convert network resources into innovation, and in turn, into international performance. When government support is strong, SMEs are better able to fund R&D projects sparked by network insights and are more confident in commercializing their innovations globally. This institutional support fortifies the "innovation bridge," making the entire process more effective. Accordingly, we propose the following:

**H3.** Government policy positively moderates the indirect effect of network capital on the internationalization of Chinese high-tech SMEs through innovation strategy.

### 3. Methodology

#### 3.1. Empirical Model

This study investigates the impact of network capital (NC) on internationalization (INT), the mediating role of innovation strategy (IS), and the moderating role of government policy (GP). Following the framework for moderated mediation [15], we can represent the model with the following conceptual equations:

$$IS_i = \beta_0 + \beta_1(NC_i) + \epsilon_i \quad (1)$$

$$INT_i = \beta_0 + \beta_2(NC_i) + \beta_3(IS_i) + \beta_4(GP_i) + \beta_5(IS_i \times GP_i) + \epsilon_i \quad (2)$$

Equation (1) represents the effect of network capital on the mediator, innovation strategy (Path a). Equation (2) models the outcome, internationalization, as a function of network capital (the direct effect, Path c'), innovation strategy (Path b), government policy, and the crucial interaction term ( $IS_i \times GP_i$ ) that captures the moderating effect of government policy on Path b. These relationships were tested simultaneously using PLS-SEM.

#### 3.2. Variable and Data Source

This study uses a panel dataset compiled from a survey of high-tech SMEs in Shenzhen. The definitions of the variables and their respective data sources are listed in Table 1.

**Table 1.** Variables and Data Sources

Type	Variable	Measurement	Source
Dependent Variable	Internationalization (INT)	The ratio of foreign sales to total sales (FSTS) for the fiscal year%.	Survey
Independent Variable	Network Capital (NC)	A multi-item construct measuring access to resources, opportunities, and collaboration through networks, on a 7-point Likert scale.	Survey (Adapted from prior research)
Mediating Variable	Innovation Strategy (IS)	A multi-item construct measuring the firm's strategic emphasis on exploratory and exploitative innovation, on a 7-point Likert scale.	Survey (Adapted from prior research)
Moderating Variable	Government Policy (GP)	A multi-item construct measuring senior managers' perception of the level of government support, on a 7-point Likert scale.	Survey (Adapted from prior research)
Control Variables	Firm Size	Natural logarithm of the total number of employees.	Survey

Control Variables	Firm Age	Number of years since establishment.	Survey
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### 3.3. Estimation and Model Selection

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using the SmartPLS 4 software. PLS-SEM is well-suited for this research as it is effective at testing complex predictive models and is robust with non-normal data, which is common in survey-based research [16]. We followed a two-step approach. First, we assessed the measurement model to ensure the reliability and validity of our constructs. We examined indicator loadings, Cronbach's alpha, composite reliability (CR), and the average variance extracted (AVE). We also assessed discriminant validity using the Heterotrait-Monotrait (HTMT) ratio criterion. Second, we evaluated the structural model to test the hypothesized relationships. We used a bootstrapping procedure with 5,000 resamples to determine the significance of the path coefficients and the moderated mediation effects.

## 4. Results and Discussion

**Measurement Model Assessment:** The results confirmed the reliability and validity of our measurement model. All indicator loadings were above the 0.70 threshold. Cronbach's alpha and CR values for all constructs were above 0.80, and AVE values were above 0.50. The HTMT ratios were all below the 0.85 threshold, establishing discriminant validity. Descriptive statistics are presented in Table 2.

**Table 2.** Descriptive Statistics

Variable	Mean	Std. Dev	Min	Max
Internationalization (INT)	0.25	0.19	0.00	0.95
Network Capital (NC)	5.15	1.02	1.50	7.00
Innovation Strategy (IS)	5.21	0.99	2.00	7.00
Government Policy (GP)	4.95	1.20	1.00	7.00
Firm Size (ln)	5.92	1.15	3.22	8.51
Firm Age	10.31	4.60	3.00	25.00

Note: N = 289.

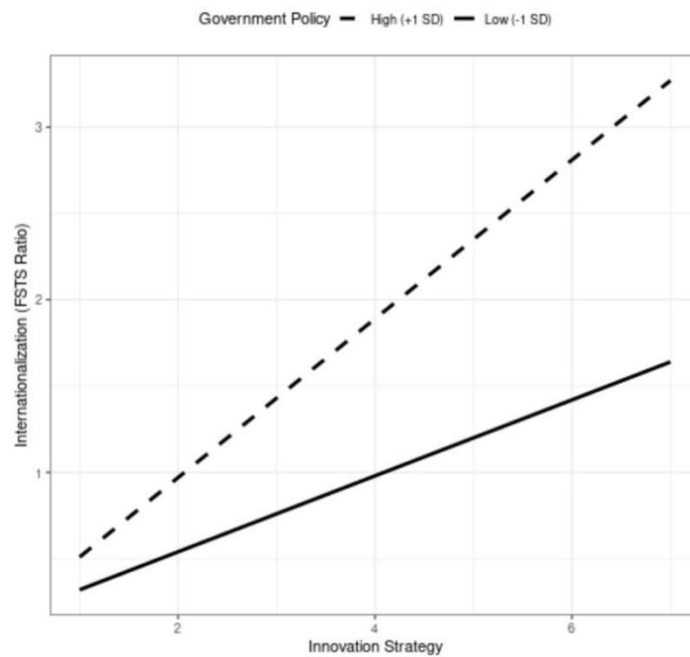
**Structural Model and Hypothesis Testing:** The results of the PLS-SEM path analysis are presented in Table 3. The model explained a substantial portion of the variance in internationalization ( $R^2 = 0.44$ ).

**Table 3.** PLS-SEM Path Analysis Results

Hypothesis	Path	Path Coefficient ( $\beta$ )	t-value	p-value	Supported
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H1	NC -> INT (Total Effect)	0.42	8.15	<0.001	Yes
H2 (Mediation)	NC -> IS -> INT	0.18	4.52	<0.001	Yes
H2 (Mediation)	NC -> IS (Path a)	0.53	11.21	<0.001	
H2 (Mediation)	IS -> INT (Path b)	0.34	6.89	<0.001	
H2 (Mediation)	NC -> INT (Direct Effect)	0.24	4.11	<0.001	
H3 (Moderation)	IS $\times$ GP -> INT	0.12	3.15	<0.01	Yes

The results show a significant total effect of network capital on internationalization ( $\beta=0.42$ ,  $p<0.001$ ), supporting H1. For H2, the indirect effect of network capital on internationalization via innovation strategy was found to be significant ( $\beta=0.18$ ,  $p<0.001$ ). Since the direct effect ( $\beta=0.24$ ,  $p<0.001$ ) also remained significant, this indicates partial mediation. Thus, H2 is supported. For H3, the interaction term (IS  $\times$  GP) was positive and significant ( $\beta=0.12$ ,  $p<0.01$ ). A simple slope analysis, illustrated in Figure 1, was conducted to interpret this interaction.



**Figure 1.** Simple Slope Analysis for the Moderating Effect of Government Policy

The plot reveals that the positive relationship between innovation strategy and internationalization is significantly stronger for firms perceiving high levels of government support compared to those perceiving low support. This confirms that government policy positively moderates the second stage of the mediation path. The formal test for moderated mediation confirmed that the indirect effect was stronger and significant at high levels of government policy, while it was weaker at low levels. Thus, H3 is supported.

The findings confirm that network capital is a crucial driver of internationalization for Chinese high-tech SMEs. More importantly, this study illuminates the process: firms leverage their networks to fuel their innovation strategies, and it is this innovation that provides the

competitive edge needed for global markets. This process is significantly amplified by a supportive government. These results challenge simplistic resource-to-performance models and highlight the critical interplay between external networks, internal capabilities, and the institutional environment.

## 5. Robustness Checks

We conducted sensitivity tests to ensure the robustness of our findings. First, we re-estimated the model using an alternative measure for internationalization: a binary variable indicating whether a firm has any foreign sales (1) or not (0). Second, we re-ran the analysis using a different estimation method, specifically OLS regression with the PROCESS macro for SPSS [15]. The results are presented in Table 4.

**Table 4.** Robustness Checks

Analysis	Key Finding	Result
Alternative DV (Binary)	Indirect Effect (NC -> IS -> INT)	Significant ( $p < 0.01$ )
Alternative DV (Binary)	Index of Moderated Mediation	Significant ( $p < 0.05$ )
Alternative Method (PROCESS)	Indirect Effect (NC -> IS -> INT)	Significant (95% CI does not contain zero)
Alternative Method (PROCESS)	Index of Moderated Mediation	Significant (95% CI does not contain zero)

Across all tests, the direction and significance of the core relationships remained consistent. The mediation effect of innovation strategy and the moderating effect of government policy held firm, which increases confidence in our primary conclusions.

## 6. Conclusion

Most studies examining SME internationalization have focused on direct effects of resources, with less attention given to the mechanisms of conversion and the contingent role of the institutional context. This study aimed to fill this gap by exploring the impact of network capital on internationalization through the mediating lens of innovation strategy, and under the moderating influence of government policy.

Using data from 289 high-tech SMEs in Shenzhen, China, our findings reveal several key insights: First, network capital has a significantly positive effect on internationalization. Second, this relationship is significantly mediated by innovation strategy; networks provide the fuel, but innovation is the engine. Third, this entire process is positively moderated by government policy; supportive policies act as a catalyst, amplifying the effectiveness of a firm's innovation-driven internationalization strategy. These results remain robust across various checks.

This study contributes to the literature by confirming the critical role of innovation strategy as a bridge between relational assets and performance. Furthermore, our findings underscore the importance of integrating firm-level (RBV) and macro-level (IBV) perspectives to gain a more complete understanding of SME internationalization in emerging

economies. We argue that the value of firm resources is context-dependent and shaped by institutional support.

We propose several policy recommendations. First, SME managers should focus not just on accumulating network ties, but on building the internal dynamic capability (innovation strategy) to exploit them. Second, policymakers in China and other emerging markets should design support mechanisms that do more than just subsidize exports; they should foster the underlying innovation capabilities that create sustainable global competitiveness.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## Abbreviations

The following abbreviations are used in this manuscript:

AVE	Average Variance Extracted
CI	Confidence Interval
CR	Composite Reliability
CSAs	Country-Specific Advantages
DV	Dependent Variable
FSAs	Firm-Specific Advantages
FSTS	Foreign Sales to Total Sales
GP	Government Policy
HTMT	Heterotrait-Monotrait Ratio
IBV	Institution-Based View
INT	Internationalization
IP	Intellectual Property
IS	Innovation Strategy
NC	Network Capital
OLS	Ordinary Least Squares
RBV	Resource-Based View
SDGs	Sustainable Development Goals

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