

# Research on the Mechanism of Social Capital and Entrepreneurship on Innovation Benefit of the Small and Medium-sized Enterprises

Chen Haowen<sup>1,2,\*</sup>, Kim Dong-Joo<sup>3</sup>

<sup>1</sup> Business College ,Xinyang Normal University , Xinyang, People's Republic of China

<sup>2</sup> Department of Social Economy and Management, Graduate School, Woosuk University, Wanju-gun, Republic of Korea

<sup>3</sup> Department of Social Economy and Management, Woosuk University, Wanju-gun, Republic of Korea

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**Abstract:** From the perspective of knowledge management, this paper studies social capital and entrepreneurship as the influencing factors of smes' innovation benefits. Social capital is divided into cognitive, relational and structural social capital. Knowledge management is divided into knowledge sharing and knowledge creation, based on which a theoretical model is constructed and empirically demonstrated. In the empirical study, the survey enterprises are divided into two types before and after the establishment of 10 years. Structural equation analysis shows that cognitive social capital has no significant positive effect on knowledge management, relational social capital has no significant positive effect on knowledge creation, and knowledge sharing has no significant positive effect on innovation benefit in enterprises with less than 10 years of establishment. In enterprises with more than 10 years, structural social capital has no significant positive effect on knowledge management, entrepreneurship has no obvious positive effect on knowledge creation, and others have obvious positive effect.

**Keywords** Social capital; Entrepreneurship; Innovation benefit; Mechanism of action

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## INTRODUCTION

Innovation is the key factor for enterprises and even countries to gain competitive advantage and sustainable development. The proportion of small and medium-sized enterprises (SMEs) in Chinese enterprises is increasing rapidly, contributing more than 50% to GDP [Liu, et al., 2018]. The innovation of small and medium-sized enterprises is directly related to the innovation benefits of Chinese enterprises and even the whole national economy [Li, et al., 2010]. The Competitiveness Transformation and Upgrading and Competitiveness Index of Chinese Small and medium-sized Enterprises released by the Small and Medium-sized Economic Research Center of the Chinese Academy of Social Sciences in 2020 shows that 36.38% of enterprises have not established their own R&D institutions in the past three years, and the independent innovation ability of small and medium-sized enterprises is weak as a whole, and the transformation and upgrading need to be strengthened urgently. Based on the perspective of knowledge management, this paper studies the impact of social capital and entrepreneurship on the innovation benefits of small and medium-sized enterprises, in order to improve the innovation benefits of small and medium-sized enterprises [Zhou and Xie, 2019].

## THEORETICAL BACKGROUND AND RESEARCH HYPOTHESIS

### Concept Definition

(1) Cognitive social capital. This study measures the cognitive social capital of enterprises through four items from the four dimensions of goals, values, consistency and culture: the cooperation goals of your company and social network enterprises are very close (A1); Your company and social networking enterprises have formed common values through interaction (A2); Your company and social networking enterprises share common views on many issues and therefore are compatible (A3); Your company's culture is similar to that of social networking companies (A4).

(2) Relational social capital. This study measures the relational social capital of enterprises through four items from four aspects: trust, reciprocity, friendship and respect: social network enterprises are candid and honest when dealing with your company (B1); Your company and the social networking enterprise cooperate with each other in many ways, but do not want to leave each other (B2); When making important decisions, social network companies try to avoid harming your interests (B3); Your company has

a fair economic relationship with social networking enterprises (B4).

(3) Structural social capital. This study measures the structural social capital of enterprises from three dimensions, namely, the amount of information acquired, the cost of information acquired, and the acquisition of collaborators, through three items: your company can obtain a large number and diversified useful information from social network enterprises (C1); Social networking enterprises often put your company in touch with new collaborators (C2); Your company can get a lot of useful information from social networking enterprises at low cost (C3).

(4) Entrepreneurship. This study measures entrepreneurship from four dimensions: risk taking, activeness, competitiveness and adaptability: the willingness of senior leaders of your company to take risks for innovation (D1); Your company pays attention to entering new markets and actively introduces new products, new technologies, new processes and new organizational forms, etc. (D2); Your company usually takes a more competitive aggressive attitude and strives to beat competitors (D3); Your company is highly adaptable to policies, industries and competitive environments (D4).

(5) Knowledge sharing. This study measures knowledge sharing from four dimensions: knowledge input, application, output and internal sharing through four items: Your company can acquire management skills through social network enterprises (E1); The knowledge gained by your company can be quickly applied to production products, processes, and market development (E2); There is frequent exchange of technology, management skills, market trends, success stories, etc. (E3) between your company and social networking companies. The knowledge and information acquired by different departments and employees within your company are different and can be shared among all departments and employees within the company (E4).

(6) Knowledge creation. This study measures knowledge creation from three dimensions: the number of new factors, the benefit of new factors, and the judgment ability of new factors through four

questions: the new knowledge elements in your company's creativity, technology, process, and scheme have increased (F1); Your company's new ideas, new technologies, new processes and new solutions have increased the company's benefits (F2); In a complex external environment, your company's ability to evaluate its own strengths and weaknesses and judge environmental changes has been improved (F3).

(7) Innovation benefits. This study measures the innovation benefit from four dimensions: sales, competitiveness, learning and growth, and finance. The proportion of sales of new products or improved new products in total product sales increases (G1); The market share and competitiveness of your products have been improved (G2); The enthusiasm for learning and communication among employees of your company is high, the ways for employees to learn the required skills are increased and convenient, and the skill level of employees is improved (G3); Your company's financial performance has improved (G4).

### **Research hypothesis and model establishment**

#### **(1) Cognitive social capital and knowledge management**

Cognitive social capital can be divided into two dimensions: cultural commonality and goal consistency [Qian and Zhang, 2009]. Similar behavior norms and consistent understanding of goals will enable members to see the potential value of integrating and improving their own knowledge resources, so as to have a higher willingness to share and create knowledge. With a higher level of cognitive capital, each party of the enterprise can better understand the knowledge structure of the other party systematically and form a similar cooperation vision, so as to better share and create knowledge. Therefore, this paper puts forward the following hypotheses:

Hypothesis 1: Cognitive social capital has a significant positive impact on knowledge sharing;

Hypothesis 2: Cognitive social capital has a significant positive impact on knowledge creation.

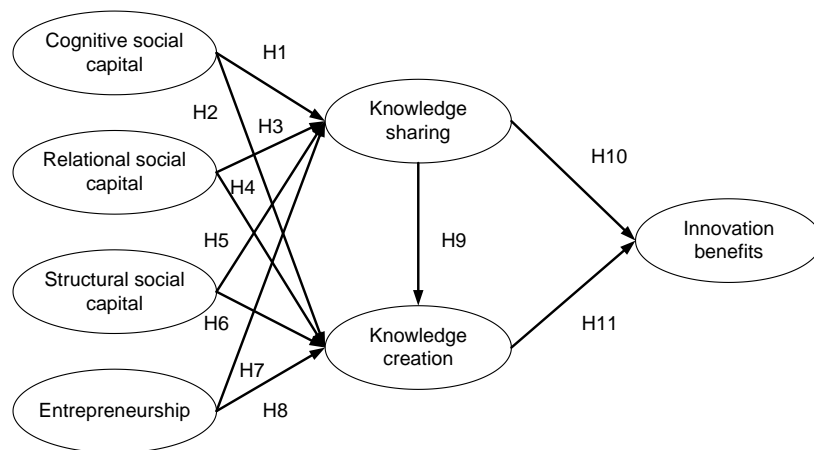


Figure 1 Hypothetical model

(2) Relational social capital and knowledge management

From the four dimensions of trust, reciprocity, friendship and respect, high relational capital contains mutual understanding and consensus among members, which can effectively reduce conflicts and misunderstandings in communication and promote the effective process of knowledge management. Higher relational capital will reduce the perceived risk of cooperation, which will encourage enterprises to share knowledge resources more freely and motivate them to participate in high value-added activities and knowledge creation. Therefore, this paper puts forward the following hypotheses:

Hypothesis 3: Relational social capital has a significant positive impact on knowledge sharing;

Hypothesis 4: Relational social capital has a significant positive impact on knowledge creation.

(3) Structural social capital and knowledge management

The high frequency of interactions and contacts between enterprises will lead to the establishment of knowledge sharing mechanisms, which will continuously and efficiently provide a large amount of reliable information to all parties. With close interaction and connectivity, knowledge among enterprises will be more transparent, useful information will be shared with each other, useful knowledge will be cheaper, and efficiency will be higher [Jin and Pan, 2016]. Therefore, this paper puts forward the following hypotheses:

Hypothesis 5: Structural social capital has a significant positive impact on knowledge sharing;

Hypothesis 6: Structural social capital has a significant positive impact on knowledge creation .

(4) Entrepreneurship and knowledge management

Under the high level of entrepreneurship, entrepreneurs are more innovative and transformative. In order to get maximum benefits as soon as possible, enterprises will attach importance to knowledge sharing with social network enterprises. Therefore, this paper puts forward the following hypotheses:

Hypothesis 7: Entrepreneurship has a significant positive impact on knowledge sharing;

Hypothesis 8: Entrepreneurship has a significant positive impact on knowledge creation.

(5) Knowledge sharing and creation

For technology innovation alliance, knowledge sharing alone is not enough to support the effective achievement of innovation goals. If a large amount of new, scarce and valuable knowledge cannot be generated through knowledge creation, it is difficult to achieve high innovation performance. Therefore, this paper puts forward the following hypotheses:

Hypothesis 9: Knowledge sharing has a significant positive impact on knowledge creation.

(6) Knowledge management and innovation benefits

Knowledge sharing enables enterprises to obtain useful information from each other in a timely, rapid and large amount, which undoubtedly leads to lower innovation cost, shorter innovation cycle and higher overall efficiency. Therefore, this paper puts forward the following hypotheses:

Hypothesis 10: Knowledge sharing has a significant positive impact on innovation efficiency;

Hypothesis 11: Knowledge creation has a significant positive impact on innovation efficiency.

Based on the above research, the theoretical model of this paper is proposed, as shown in Figure 1.

**EMPIRICAL STUDY**

**Questionnaire design and survey**

The empirical data were obtained through a questionnaire survey of middle and senior management and professionals in small and medium-sized enterprises. The questionnaire is divided into three parts: questionnaire filling instructions, basic information of the surveyed enterprise, and variable measurement scale. All indicators involved in the variables were compiled using a 5-level Likert scale, from 1 to 5 indicating strongly disagree, disagree, not

sure, agree and strongly agree, respectively. The overall survey time was from December 2020 to April 2021. A total of 454 questionnaires were distributed and 362 questionnaires were recovered by combining email and field survey. After removing 15 questionnaires with obvious errors or incomplete answers, a total of 347 valid questionnaires were recovered. The recovery rate was 79.7%, and the effective recovery rate was 76.4%. 55.0% of the surveyed companies are less than 10 years old and 45.0% are more than 10 years old. AMOS 17.0 software was used for structural equation modeling, and SPSS 22.0 was used for statistical analysis of other related data.

**Reliability and validity of samples**

In this paper, SPSS 22.0 statistical software was used for reliability analysis, and the reliability was tested by Cronbach's  $\alpha$  coefficient. Generally, if the Cronbach's  $\alpha$  coefficient was greater than 0.7, the sample was considered to have good reliability. If Cronbach's  $\alpha$  coefficient is less than 0.35, it will be rejected. As shown in Table 1, Cronbach's  $\alpha$  coefficients in this paper are all greater than 0.7, indicating that all variables have good reliability. Validity analysis includes content validity analysis and construct validity analysis.

Table1 Reliability analysis and factor analysis results

Variable	Item	Factor loading		Cronbach's $\alpha$		AVE	
		$\leq 10$ years	$\geq 10$ years	$\leq 10$ years	$\geq 10$ years	$\leq 10$ years	$\geq 10$ years
Cognitive social capital	A1	0.806	0.768	0.749	0.749	0.742	0.630
	A2	0.791	0.811				
	A3	0.851	0.783				
	A4	0.821	0.823				
Relational social capital	B1	0.810	0.812	0.792	0.792	0.662	0.669
	B2	0.829	0.823				
	B3	0.812	0.872				
	B4	0.826	0.800				
Structural social capital	C1	0.629	0.787	0.816	0.816	0.626	0.660
	C2	0.847	0.819				
	C3	0.850	0.838				
Entrepreneurship	D1	0.701	0.758	0.820	0.820	0.613	0.601
	D2	0.792	0.703				
	D3	0.789	0.819				
	D4	0.786	0.773				
Knowledge sharing	E1	0.833	0.832	0.828	0.828	0.606	0.637
	E2	0.781	0.780				
	E3	0.789	0.790				
	E4	0.816	0.813				
Knowledge creation	F1	0.779	0.800	0.822	0.822	0.551	0.643
	F2	0.811	0.779				
	F3	0.528	0.847				
Innovation benefits	G1	0.750	0.850	0.800	0.800	0.633	0.661
	G2	0.830	0.858				
	G3	0.770	0.810				
	G4	0.803	0.787				

Most of the evaluation indicators and questionnaire items used in this paper come from the previous research results of domestic and foreign scholars, and a large number of empirical studies have been conducted. The questionnaire has guaranteed considerable content validity. For construct validity, SPSS 22.0 was used for factor analysis to investigate the factor loading of each factor on the corresponding variables. If the absolute value of the general factor load is greater than 0.4, it is considered to be effective. As shown in Table 1, the loadings of all factors in this paper are greater than 0.7, indicating that all variables have good construct validity.

**Model fitness test**

The following three aspects should be considered simultaneously to determine whether the model is consistent with the actual data: basic fitness index, overall model fitness index, and model intrinsic structure fitness index. In this paper, the factor loadings between each latent variable and its evaluation index are between 0.5 and 0.95, and the error of each evaluation index is greater than 0, indicating that the hypothesis model has a high basic fitness. The overall fitness statistics of the hypothetical model are shown in Table 2. The model

intrinsic structure fitness evaluation indicators include: item reliability of individual observed variables (greater than 0.5), and AVE of average variance extraction value of latent variables (greater than 0.5).

In this paper, the reliability of individual items in the model is greater than 0.5, and the average extracted variance value (AVE) is greater than 0.5, indicating that the model has a high intrinsic fitness.

**Table 2 Fitness index of the overall model**

Fitness index	Index	Ideal recommended value	Actual value	
			≤10 years	≥10 years
$\chi^2$	The chi-square statistic	the smaller the better	243.147	198.287
$\chi^2/df$	Ratio of chi-square to degrees of freedom	[1,3]	1.373	1.739
RMR	Residual mean square and square root	<0.05	0.039	0.040
RMSEA	Progressive residual mean square and square root	<0.05	0.023	0.031
GFI	General fitness index	>0.90	0.918	0.900
IFI	Improved fitness index	>0.90	0.946	0.940
CFI	Comparative fitness index	>0.90	0.949	0.939

**Hypothesis Testing**

After analyzing the hypothesis proposed in this paper according to AMOS 17.0, the results are shown in Table 3.

Through the above empirical analysis, H1, H2, H4 and H10 in enterprises less than 10 years old have not been verified, and H5, H6 and H8 in enterprises more than 10 years old have not been verified, and the rest have significant positive effects.

**Table 3 Results of hypothesis test**

Hypothesis	≤10 years			≥10 years		
	Path	P value	Result	Path	P value	Result
H1	0.126	0.088	Does not support	0.532	0.000***	Support
H2	0.076	0.479	Does not support	0.343	0.009**	Support
H3	0.251	0.020*	Support	0.470	0.000***	Support
H4	0.148	0.072	Does not support	0.232	0.022*	Support
H5	0.589	0.000***	Support	0.176	0.066	Does not support
H6	0.340	0.011*	Support	0.068	0.567	Does not support
H7	0.363	0.009**	Support	0.281	0.018*	Support
H8	0.282	0.018*	Support	0.132	0.082	Does not support
H9	0.330	0.011*	Support	0.438	0.002**	Support
H10	0.169	0.069	Does not support	0.308	0.016*	Support
H11	0.230	0.023*	Support	0.441	0.002**	Support

Note: Significance level \*P<0.05, \*\*P<0.01, \*\*\*P<0.001.

**CONCLUSIONS**

(1) The relationship between social capital and knowledge management. For knowledge sharing, corporate structural social capital has the largest positive effect in less than 10 years, followed by relational social capital, while cognitive social capital has no significant positive effect. For enterprises with more than 10 years, cognitive social capital has the largest effect, followed by relational social capital, and structural social capital has no significant positive effect on knowledge sharing. For knowledge creation, corporate structural social capital also has the largest

positive effect in less than 10 years, while relational social capital and cognitive social capital have no significant positive effect on knowledge creation. The positive effect of cognitive social capital over 10 years is the largest, followed by relational social capital, while the effect of structural social capital on knowledge creation is insignificant.

(2) The relationship between entrepreneurship and knowledge management. For enterprises less than 10 years old, entrepreneurship has a significant positive impact on both knowledge sharing and knowledge creation. For enterprises with more than 10 years, entrepreneurship has a significant positive effect on

knowledge sharing, but has no significant effect on knowledge creation.

(3) The relationship between knowledge sharing and knowledge creation. For enterprises with less than 10 years and more than 10 years, knowledge sharing has a significant positive effect on knowledge creation.

(4) The relationship between knowledge management and innovation benefits. For enterprises less than 10 years old, knowledge sharing has no significant positive effect on innovation efficiency, while knowledge creation has a significant positive effect on innovation efficiency. For enterprises with more than 10 years, both knowledge sharing and knowledge creation have significant positive effects on innovation efficiency. This paper studies the impact of social capital and entrepreneurship on innovation efficiency of smes from the perspective of knowledge management. However, the relationship between the three dimensions of corporate social capital, their leading factors and the influence of entrepreneurship on social capital are not discussed in this paper, which needs further research in the future.

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