

Research on the Impact of Network Capacity on College Students' Entrepreneurial Performance: The Mediation Model based on Knowledge Heterogeneity

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Abstract. Based on the analysis of the data obtained from the survey of entrepreneurship park and incubation base in Shanghai and Jiangsu provinces, this paper discusses the mechanism of college students' network competence on entrepreneurial performance. The results show that the network management ability has a significant direct impact on entrepreneurial performance. Knowledge heterogeneity plays a completely mediating role between network construction capacity and entrepreneurial performance, and plays a partial mediating effect between network management capacity and entrepreneurial performance. Network capacity can have positive influence on entrepreneurial performance by promoting knowledge heterogeneity in college students' entrepreneur teams.

Introduction

In the process of college students' entrepreneurial activities, the ability of college students has a decisive influence on the entrepreneurial performance, but in the current research on the entrepreneurial ability and entrepreneurial performance of college students, researchers tend to study the innate ability of entrepreneurs, little about the relationship between network capabilities and entrepreneurial performance. Network capabilities as a core competence of entrepreneurship is one of the effective ways for start-ups to adapt to the uncertainty of the external environment. Some scholars have demonstrated the relationship of network capacity, entrepreneurial learning and entrepreneurial performance.

However, there are still other factors that exist between the network capabilities and entrepreneurial performance, and the research on the path of influence between them is still not deep enough. Knowledge heterogeneity is the degree of knowledge and skill discrepancy caused by the differences of members' education, work and life experiences in the entrepreneurial team[1]. Knowledge heterogeneity directly affects the innovation ability of an enterprise, so it is also an important factor affecting enterprise performance. Therefore, this paper will use the knowledge heterogeneity as a mediator to verify the influence mechanism of college students' network competence on their entrepreneurial performance, eventually to enrich the theoretical research on network competence, knowledge heterogeneity and college entrepreneurship.

Literature Reviews and Assumptions Propose

Relationship of Network Capacity and Entrepreneurial Performance

Entrepreneurial network is the interactive relationship established by entrepreneur to improve the performance of start-ups in the internal and external links. The scholar Birely (1985) proposed that the entrepreneurial network is the collection of the connection when the main body of the entrepreneur and the external environment are conducting the entrepreneurial activities[2]. Bmyat (2000) argues that the entrepreneurial network is a link between various types of relationships related to entrepreneurial activities formed by entrepreneurs in the process of starting a business. Hakansson (1997) first proposed the notion of Network Competency (NC). He found organization network is a structure that connects the members of each node of the network through a specific

way[3]. In order to further study the performance and network behavior, Hakansson put forward the concept of network capabilities, he believed that network capacity is an enterprise to improve the network, optimize the network nodes on the members of a relationship arising from the ability[4]. Based on the previous research, this paper divides network capabilities into network construction capabilities and network management capabilities.

Network construction capacity (NCC) refers to the ability of enterprises to make use of inter-organizational relationship skills, reasonably choose potential partners, initiate network connection behaviors and dynamically adjust network relationships. Network management capacity (NMC) is the ability of members to use co-operation skills to organize, control and exchange networks. The realization of entrepreneurship performance (EP) relies on the effective allocation of resources under dynamic and complex environment, and the entrepreneurial network can precisely make the enterprise acquire more resources across boundaries of organizations. Therefore, the start-up companies need to continuously explore the integrated entrepreneurial network build and manage the resources, and ultimately create more value for customers.

As far as college students' entrepreneurial activities, the construction and management of college students' entrepreneurial networks are mainly reflected in the handling of college students' network. Granovetter divided network relationships into strong ties and weak ties[5], strong relationship refers to frequent contacts between individuals, there are more emotional exchanges and mutual trust, such as family, friends and other social relations; while weak ties do not involve emotional connection, such as business partners, social organizations, etc. Therefore, it can be considered that the ability of college students to build and manage networks will have an impact on their entrepreneurial performance. Accordingly, this article proposes the following assumptions:

H1a: College students' network construction ability is positively correlated with entrepreneurial performance;

H1b: College students' network management ability is positively correlated with entrepreneurial performance.

Relationship of Network Capacity and Knowledge Heterogeneity

Simon Rodan studied the relationship between knowledge heterogeneity and manager's work ability and innovation, and proposed that knowledge heterogeneity is the difference of team members due to the diversification of skills, knowledge and expertise in network structure[6]. Chinese scholar Cao Chaotao believes that knowledge heterogeneity (KH) refers to the difference in content, level, structure and type of knowledge owned by knowledge subject, which belongs to the deep trait heterogeneity[7].

For college entrepreneurs, the knowledge heterogeneity mainly lies in the difference of professional knowledge background, the difference of work experience, growth experience and behavior thinking ways. Among them, the most notable difference is the background of professional knowledge, and the college start-up team with more rich subject knowledge background can often deal with the entrepreneurship problems better. Therefore, how to get richer knowledge resources through network construction is particularly important. The higher the university students' ability to choose networks and network relationships, the more high-quality knowledge they get and the more efficient they are to acquire heterogeneous knowledge. In terms of network management ability, the higher the entrepreneurial entrepreneur's ability to handle all the relationships in the network, the more reliable relationships can be established, the better communication among network members, the more effective communication and the mutual penetration of different kinds of knowledge. Accordingly, this article proposes the following assumptions:

H2a: There is a positive correlation between college students' network construction ability and knowledge heterogeneity;

H2b: There is a positive correlation between college students' network management ability and knowledge heterogeneity.

Relationship of Knowledge Heterogeneity and Entrepreneurial Performance

It has been found that the level of entrepreneurial knowledge differences directly affect the performance of entrepreneurship[8]. Some scholars also find that enterprises with higher degree of knowledge heterogeneity will have more misunderstandings and mood swings and lower decision-making speed. This paper argues that college students often tend to adopt inherent ways to deal with problems. A company that can deal with problems effectively in entrepreneurial activity always tends to achieve better performance. Therefore, for college start-ups, the higher the heterogeneity of knowledge among their team members, the more knowledgeable members have access to more cutting-edge news and the more impact they can have on innovative ideas. Therefore, this paper proposes the following assumptions:

H3: Knowledge heterogeneity is positively correlated with college students' entrepreneurial performance

Intermediary Mechanism of Knowledge Heterogeneity

Network mechanism through which mechanism to affect entrepreneurial performance? So far, scholars mainly start from the perspectives or variables of network structure, network location, entrepreneurship learning, resource integration ability and dynamic capability, trying to open the "black box" of network competence and entrepreneurial performance. The realization of entrepreneurial performance relies on the effective allocation of resources under dynamic and complex environment, not only on the connection between the various elements of the entrepreneurial team, but also on the degree of cross-integration of knowledge in different fields in the team. Therefore, the heterogeneity of knowledge has become an important bridge to connect the network capabilities and entrepreneurial performance. Based on the analysis of relevant documents, this paper proposes that the ability of network construction and management can promote the heterogeneity of entrepreneurial team's knowledge, which in turn has a positive impact on entrepreneurial performance. Therefore, this article makes the following assumptions:

H4a: The network construction ability of undergraduates has a positive impact on entrepreneurial performance through knowledge heterogeneity;

H4b: The network management ability of undergraduates has a positive impact on entrepreneurial performance through knowledge heterogeneity.

Based on the above theoretical analysis, this paper presents an empirical research framework on the relationship between college students' network competence, knowledge heterogeneity and entrepreneurial performance (*Figure 1*).

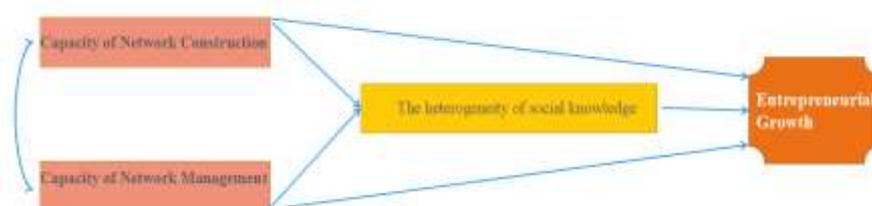


Figure 1. Theoretical model.

Research Results

Reliability Analysis

In this paper, we use SPSS17.0 software to carry out the reliability analysis. The results show that there is a strong consistency between the corresponding items of all the factors in this article, and the reliability of the construction of the scale also passes the test.

Application of AMOS17.0 software for CFA test, the results also show that the network capacity, knowledge heterogeneity and entrepreneurial performance factor model and sample data fitting index is ideal (as shown in *Table 1*). Therefore, this research tool has good validity.

Table 1. Simulation Index of Measurement Model.

Measurable Model	χ^2	df	χ^2/df	RMSEA	NFI	NNFI	CFI	IFI	SRMR
Network Capacity	27.704	19	1.458	0.057	0.94	0.97	0.98	0.98	0.043
Knowledge Heterogeneity	19.817	2	1.651	0.068	0.94	0.95	0.97	0.98	0.048
Entrepreneurial Performance	21.013	9	2.335	0.081	0.96	0.96	0.98	0.98	0.034

Structural Equation Model Test

This paper uses AMOS17.0 software as data processing tools to verify the assumptions. This paper will use the model shown in Figure 1 as the reference model (M1), and build part of the intermediary models M2, M3 and model M4 to compare the fitting index so that to select the best model for hypothesis testing.

- ① M1 represents that the network capacity may affect the entrepreneurial performance through knowledge heterogeneity and may have a direct impact on entrepreneurial performance;
- ② M2 is a nested model of the benchmark model, it removes the intermediary mechanism of knowledge heterogeneity between network construction ability and entrepreneurial performance based on M1;
- ③ M3 removes the mediator effect of knowledge heterogeneity on network construction ability and entrepreneurial performance based on M1;
- ④ M4 cancels the direct impact of network construction ability and network management ability on entrepreneurial performance.

The fitting results of the four models are shown in *Table 3*. Comparing the fitting index of the four models, we can find that the M1 model not only has a good theoretical basis, but also has better indexes than M2, M3 and M4. Therefore, the choice of benchmark model M1 for the final analysis of this paper.

Table 2. Assumptions Model Fitting Index.

Structural Equation Modeling	χ^2	df	χ^2/df	RMSEA	NFI	NNFI	CFI	IFI	SRMR
M1: NMC→KH, NCC→KH, NMC→EP, NCC→EP, KH→EP	330.12	183	1.75	0.066	0.92	0.92	0.93	0.93	0.059
M2: NMC→KH, NMC→EP, NCC→EP, KH→EP	321.94	184	1.76	0.074	0.79	0.88	0.90	0.90	0.069
M3: NCC→KH, NMC→EP, NCC→EP, KH→EP	325.81	184	1.77	0.074	0.79	0.88	0.90	0.89	0.069
M4: NMC→KH, NCC→KH, KH→EP	330.48	183	1.82	0.070	0.78	0.87	0.89	0.89	0.068

Structural Equation Model Test

Figure 2 shows the complete standardization of M1. *Table 4* shows the regression coefficients between the variables output by AMOS. We can see that the hypothesis verification in this paper is as follows:

- (1) There was no significant correlation between network construction ability and entrepreneurial performance. H1a was not passed, and network management ability was positively correlated with entrepreneurial performance ($\beta = 0.41$, $\Gamma < 0.05$). H1b hypothesis passed.
- (2) There is a significant positive correlation between network building ability, network management ability and knowledge heterogeneity ($\beta = 0.58$, $\Gamma < 0.05$; $\beta = 0.38$, $\Gamma < 0.05$), H2a, H2b passed.
- (3) Knowledge heterogeneity is positively correlated with entrepreneurial performance ($\beta = 0.39$, $\Gamma < 0.01$), and H3 passed.
- (4) Heterogeneity of knowledge plays an intermediary role in network construction ability, network management ability and entrepreneurial performance. Among them, it plays a complete intermediary role between network construction capability and entrepreneurial performance, and

there may be other intermediaries between network management ability and entrepreneurial performance. H4a, H4b passed.

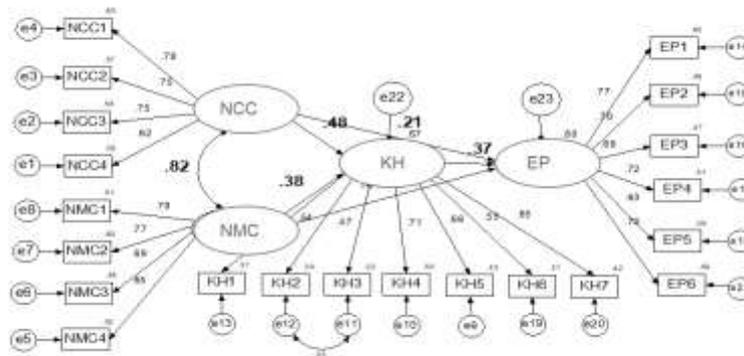


Figure 2. Correlation model of network capacity, knowledge heterogeneity and undergraduate performance.

Table 3. Regression Coefficients.

	Path	Estimate	S.E.	C.R.	P	Result
EP	<--- NCC	0.263	0.206	1.276	0.202	H1a Fail
EP	<--- NMC	0.409	0.167	2.441	0.015*	H1b Pass
KH	<--- NCC	0.576	0.226	2.551	0.011*	H2a Pass
KH	<--- NMC	0.379	0.182	2.085	0.037*	H2b Pass
EP	<--- KH	0.392	0.151	2.590	0.010**	H3 Pass

Discuss

The theoretical contributions of this dissertation are mainly reflected in two aspects. One is firstly conducting the research on the relationship between network competence and entrepreneurial performance in college students; the other is firstly testing the mediating effect of knowledge heterogeneity. It is found that the heterogeneity of knowledge is not the only way to affect entrepreneurial performance by network abilities.

This article also has practical value to enhance the entrepreneurial performance of college students. First of all, as a strategic capability in the development of an enterprise, network capabilities must be able to accurately predict the evolutionary characteristics of external networks and clarify the direction of development of external networks. In addition, enterprises are more willing to use their heterogeneous knowledge to gain a competitive advantage that is not easy to be imitated under the intense and cruel market competition environment, which is consistent with the theory of enterprise knowledge. Students who have strong knowledge attributes can have far-reaching impact on enterprise innovation and development.

While, there are still some unsolved problems in this paper, which can also be the research direction in the future. Firstly, there are many kinds of divisions for network capabilities, which can be divided into different ways to make comparative studies so as to discover the unique explanatory power of network capabilities; Secondly, entrepreneurial motivation, network structure, organizational culture, and entrepreneurial hospitals can be used as regulatory variables to examine the contingency relations between network capabilities and entrepreneurial performance under different conditions; Thirdly, the intermediary role of knowledge heterogeneity has not been confirmed exactly, and whether there is other relationship between network capabilities and entrepreneurial performance? These questions all require clarification from the follow-up study.

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