The Relationship between Network and New Firm Performance: A New Viewpoint

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Abstract: Much attention has been paid to researches on the effect of entrepreneurial network on enterprises, most of which are based on the premise that network can bring about positive effect. However, this paper argues that paying too much attention to network will bring about some negative impact instead of a linear relation between focusing on network and positive impact, as network requires plenty of time and cost. At the same time, in this paper, we conduct fieldwork in enterprises in Jilin to test the model we have proposed and analyze the results deeply.

Keywords: Entrepreneurial Network; New Enterprise; Performance

I. Introduction

It is confirmed that entrepreneurial network can bring about new resources and information, have a positive impact on entrepreneurship and promote the growth of new enterprises. For new enterprises, they have limited capital, information and experience (Buckley, 1989). [1] So entrepreneur must take advantage of their extensive social connections to obtain the necessary resources and information to make up for weaknesses. Thus, in recent years, much attention has been paid to researches on entrepreneurial network, among which, the effect of entrepreneurial network on enterprise performance is the focus of researches.

Weak tie theory and structural holes theory are two core theories of social network theory, as well as the basis of entrepreneurial network research. According to the weak tie theory put forward by Granovetter(1972), weak ties are more efficient than strong ties, so that network members can obtain plenty of resources and information.[2] Structural holes theory proposed by Burt(1992) argues that structural holes exist widely in network which is indirect connection between individuals (or organizations).[3] Network members can obtain information and identify opportunities through structural holes. Enterprise as an organization embedded in certain social relationships can usually obtain new information in the entire network according to weak tie and structural holes which exist in organizations.

In recent years, study shows that network requires plenty of time and cost. However, time is scare sources for new enterprises, so there is not a linear relationship between network and enterprise performance（Watson, 2007）.[4] Thus, although the research on entrepreneurial network and enterprise performance always attracts much attention, still there exist disagreement and shortness. This study attempts to analyze the relationship between entrepreneurial network and enterprise performance deeply, research into the effect of entrepreneurial network on new enterprise performance in China, conduct empirical analysis to enterprises in Changchun and discuss the results.

II. Theory and Hypothesis

Entrepreneurial network is all the social relationships owned by entrepreneurs (venture enterprises) (Hansen,1995), [5]including individual network of entrepreneurs and organizational relation network of venture enterprises (Bruyat & Julien, 2000).[6] Numerous studies confirm that entrepreneurial network has positive impact on enterprise performance. Network size and intensity are two key features of entrepreneurial network (Hoang & Antoncic, 2003 etc) which affect enterprise performance together (Figure 1). [7]

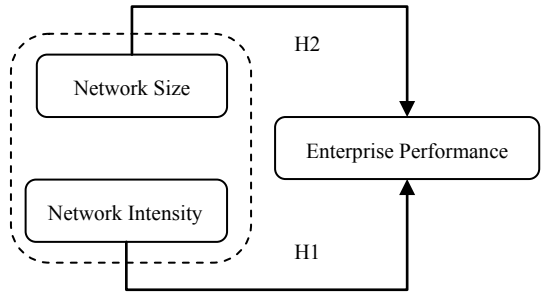

Figure 1 Relation Model of Entrepreneurial network and Performance

A. Network Size and Enterprise performance

Network size which refers to the number of network member is the description of characteristic quantity of network. Hansen(1995) pointed out that the size of network size can reflect the amount of external resource and knowledge the entrepreneurs and venture enterprises can acquire. [5]Most of researches show that network size has positive impact on enterprises. For instance, Donckels and Lambrecht(1995) found out that there existed positive correlation between expanding network actively and enterprise growth and network took an active role in promoting the growth of enterprises.[8] The larger the network size means the more weak ties. According to weak tie theory, individuals (or organizations) can acquire all sorts of resources, knowledge and information through weak ties to affect enterprise performance. A great number of studies confirm that the suggestions provided by external professional counseling and management service organization have a positive impact on enterprise performance (Kent, 1994; Donckels & Lambrecht, 1995 etc).[8][9]

For SMEs, entrepreneurial network can promote the growth of market share, sales and staff size to improve enterprise performance (Havnes & Senneseth, 2001). [10]Through case study of Hi-Tech venture enterprises, Elfring and Hulsink (2003) [11]found out that enterprises which had larger network had more opportunities to identify and acquire external resources to affect new enterprise performance positively. Watson(2007) pointed out that network required plenty of time and cost. However, time is scare sources for new enterprises.[4] After the enterprise network reaches a certain scale, if new enterprises put the limited resources into developing network, its efficiency will inevitably be influenced. Based on the above analysis, this paper argues that the relationship between network size and enterprise performance is not linear but inverted U-shaped relationship, and then propose the following hypothesis,

H1: There is an inverted U-shaped relationship between network size and enterprise performance.

B. Network Intensity and enterprise performance

Network intensity is the description of characteristic quantity of network which reflects the adequacy of external resources and information the entrepreneurs and venture enterprises can acquire (Hoang & Antoncic, 2003). [7]As enterprises making business communication frequently with every subject in the network, their performance is often higher. Julie and Andriambeloson (2004) argued that strong ties network can provide support and critical supplement for enterprise decision and connect with a large number of information resources and other business networks.[12] Strong ties promote communication and exchanges among network members, realize knowledge sharing and circulation effectively and ultimately convert it into the capability of enterprise to improve performance. Thus, enterprises, especially SMEs should attach importance to choose proper network relationship. In the situation of economic transformation in China, social network has its own characteristic. For example, enterprises should establish a well trusting relationship in business intercourse (strong ties), and having a good relationship with government and financial institutes is very important for enterprise performance and future development (Park & Luo, 2001).[13] Strong ties give entrepreneurs reliable information and emotional support through in-depth exchange to form common language and criterion (Liao & Welsch，2005). [14]However, depending too much on strong ties tends to make entrepreneurs reject external information and make enterprises produce lock-in effect. At the same time, the cost is high to maintain strong ties. ，Elfring and Hulsink（2003） pointed out that rational allocation of strong and weak ties can maximize benefits brought by network relationships. [11]Thus, Based on the above analysis, this paper argues that the relationship between network intensity and enterprise performance is an inverted U-shaped relationship, and then propose the following hypothesis,

H2: There is an inverted U-shaped relationship between network intensity and enterprise performance.

III. Research Design

A. Data Collection and Sample Feature

From August to October in 2009, we sent out 400 questionnaires in Jilin and ultimately got back 235 valid questionnaires at the end of October. In accordance with the request that information loss should be less than 25%, eliminating 50 invalidate questionnaires, ultimately got 185 valid questionnaires. The ratio of callback of valid questionnaire is 78.7%. Table 1 shows the characteristics of samples we acquired.

Table 1 Sample Feature

Interviewee	Ratio	Enterprise Age	Ratio
Entrepreneur	30.48%	≤3	36.2%
Top Manager	18.25%	＜3≤6	21.6%
Middle-level Manager	45.65%	＜6≤8	15.1%
Others（Absence）	5.64%	Others（Absence＞8）	27.1%
Number of Employees	**Ratio**	**Age of Entrepreneurs**	**Ratio**
≤20	46.18%	≤25	15.06%
＜20≤50	27.70%	＜25≤30	40.35%
＜50≤200	10.46%	＜30≤40	34.21%
＞200	6.23%	＞40	11.01%
Others（Absence）	9.42%	Others（Absence）	5.37%

B. Measurement of Variables

In order to ensure the reliability and validity of scales, the variables in this research was measured by the mature scale at home and abroad. Simultaneously, taking cultural backgrounds in China and objective of research into account, we make a little improvement of the scale. We use 7-point Likert Scale as measurement methods.

1) Dependent Variable

For the measurement of enterprise performance as dependent variables, using the viewpoint of Covin and Slevin(1991), we use profitability and growth as two indexes to measure new enterprise performance.[15] This includes profitability index: net income ratio (Net Income/Gross Sales); investment rate of return (Investment Income/Investment Cost); market share(Proportion of Product Sales in Total Market Sales), growth index: growth rate of net income; growth rate of product sales; growth rate of new staff size; growth rate of new product and service; growth rate of market share; velocity of money.

2) Independent Variable

For the measurement of network size and intensity, we follow the research of Watson(2007) and combine with the viewpoint of Park ,Luo(2001) and Tan(2008) etc to measure them with the following questions.[4][13][16] Network size: Entrepreneurs communicate with many trade associations; Entrepreneurs communicate with government of all levels; Entrepreneurs communicate with many tax administrations, industrial and commercial administrative departments and so on; Entrepreneurs communicate with many intermediaries(firm of accountants, for example). Network Intensity: Entrepreneurs often communicate with trade associations; Entrepreneurs often communicate with government of all levels; Entrepreneurs often communicate with tax administrations, industrial and commercial administrative departments and so on; Entrepreneurs often communicate with intermediaries(firm of accountants, for example).

3) Control Variable and Dummy Variable

To eliminate the influence of enterprise age, enterprise scale and different regions on new enterprise performance, this research design enterprise age and enterprise scale as control variable. In accordance with of criteria of setting dummy variables, we set Changchun area and Beijing area as dummy variables.

C. Measurement of Reliability and Validity

The paper examined the reliability and validity of entrepreneurship network size and intensity and enterprise performance with SPSS16.0 statistic software and found out that the Cronbach's alpha values of every variable are above 0.7. Then we examined questions of every variable with compulsory factor analysis. Except one of the question is 0.542, the factor loading of all the other questions are above 0.6. Thus, it is concluded that the scale in this study has good validity and reliability.

IV. Results Analysis

In this paper, we used SPSS 16.0 to test multi linear regression model. According to the step of the test, we first analyze the coefficient of correlation between each other to examine the relationship between every variable preliminarily and make sure that there is no multi co linearity. Through analysis, there is no significant correlation between control variable, dummy variable and every dependent variable and independent variable. However, there is significant correlation between every dependent and independent variable, which shows that there exists relationship between network size and intensity and enterprise performance. In order to further research the inner relationship between network size and intensity and enterprise performance, we constructed regression model 1-3, and the result are shown in the following table.

Table 2 Multiple Regression Result

Variable	Dependent Variable: Performance		
	Model 1	Model 2	Model 3
Independent Variable			
Network Size		-0.242	
Network Size^2		0.687*	
Network Intensity			-0.311
Network Intensity^2			0.675**
Control Variable			
Enterprise Age	0.008	0.095	0.100
Enterprise Scale	0.216**	0.053	0.032
Dummy Variable			
industry	0.019	0.020	0.014
R^2	0.045	0.325	0.346
Adjusted R^2	0.028	0.304	0.325
F Change	2.577†	33.328***	36.940***

† p < .10; * p < .05; ** p < .01; *** p < .001

In order to test whether there exists a inverted U-shaped relationship between network size and network intensity and enterprise performance, we added two new variables of network size and network intensity into model 2 and model 3. According to the result of model 2, the regression coefficient between network size and enterprise performance is 0.687＞40 and significance level p < .05. According to the result of model 3, the regression coefficient between network intensity and enterprise performance is 0.675＞0 and significance level p < .01. This result shows that there is a U-shaped rather than inverted U-shaped relationship between network size and intensity and enterprise performance. Therefore, the hypothesis H1 and H2 have not been verified.

What worth us really thoughtful is that we didn't prove that there existed a inverted U-shaped relationship between network size and network intensity through regression analysis (see figure 2). Through the further research on the relationship between network size and intensity and enterprise performance, we found that the U-shaped relationship between them is not symmetrical. Ascending stage take much larger proportion than descent stage and the sample of network size and intensity which are in low-level (below A) is not that much. The author concluded that the

reason for this relationship is because of the unique culture and the situation of economic transition in China. Most of Chinese enterprises are SMEs whose performance is lower. The enterprises in poor operating condition tend o have lower ability of network. They focus only on short-term benefits and develop instrumental and disposable relationship, so that the network relationship can't take effect. While enterprises in good operating condition attach great importance to construct good cooperation relationships with governments and intermediary institutions from the angle of enterprise strategy. Therefore, the efficiency of network relationships in these enterprises is extremely high.

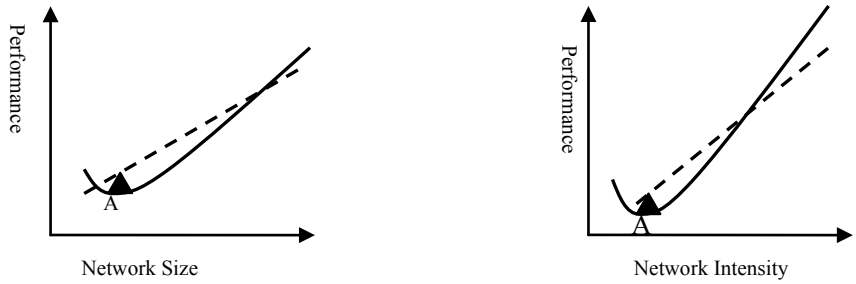

Figure 2 Relationships between Enterprise Performance and Network

V. Conclusion

This paper deeply analyzed the inner relationship between entrepreneurial network from the aspect of network size and network intensity and performance. This empirical research arrived at a conclusion that network size and intensity had a U-shaped relationship with enterprise performance in China, which worth thinking deeply about. This conclusion which is the exact opposite of the hypothesis above helps us further understand how venture enterprises construct and take advantage of social relationships in China. However, deficiency still exists in this paper, because the samples are only from Jilin and mainly science and technology enterprises. So this conclusion needs to be validated and perfected.

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