

**HOW CHINA'S SMALL AND  
MICROTECHNOLOGY ENTERPRISES'  
NETWORK EMBEDDEDNESS IMPACTS PERFORMANCE: THE  
MEDIATED EFFECT OF ENTREPRENEURIAL OPPORTUNITY**

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**1 Introduction**

Entrepreneurship is regarded as a process of opportunity, discovery, and alertness. In dynamic contexts, the enterprise or enterprising individuals need to make a proactive action on promising entrepreneurial opportunities. Shane and Venkataraman (2000) state that entrepreneurship “involves the processes of discovery evaluation, and exploitation of profitable opportunities,” thus, entrepreneurship can be considered a series of activities that include identifying opportunity; assessing and exploring; and delivering new products, services, governance structure, marketing methods, procedures, and materials to clients or markets that have not existed before.

High-technology entrepreneurship is a prominent process of new technology commercializing in uncertain high-technology industries, thus the experts' market competence, employees' perception of new technology, and technological capabilities are critical to new or high-technology venturing firms, especially the nascent technology enterprises. In the funding phase, lack of key resources and ability make it hard to survive in the market. However, embedding in an industrial network can be critical to the success of small and microtechnology enterprises. Access to the network can help with obtaining complementary resources. Second, technology venturing tends to be more expensive and complicated. However, there are many similar enterprises that

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are attempting to embed in the same network and are exploring the new market, which involves sharing new technology knowledge, capabilities, and market information.

Working with others can help the small and micro technology enterprise cut down on transaction costs. Third, the industrial network can attract plenty of technological expertise and high-technological venturing entrepreneurs who can make recognition quick assessment

of market opportunities and bear the risk in the meantime (Doz & Hamel, 1998). Kenney and Richard (2004) reported that the technological small spin-offs' starting-up process at UC Berkeley and Stanford were impacted saliently by the embedding network environment.

In a "surplus economy," innovation and entrepreneurial capability are vital for the enterprise's survival (Kornai, 1986). Entrepreneurship in small and micro technology enterprises strives to make more and more obvious contributions to emerging industry formation and development and regional industry upgrading. Contrary to large enterprises that rely on scarce resources and the government's "soft budget constraint" to win competitive advantage, the small and micro technology enterprises embedded in industrial network can fully explore their own core resources, absorbing different kinds from the network to exploit opportunity and carry out technological entrepreneurship. According to the Third Plenum of 18th CPC Central Committee the allocation of resources plays a decisive role in the market. It will provide good policy guidance for the small and micro technology enterprises to gain competitive advantage by developing new models and exploring entrepreneurial opportunities.

In the United States, many of the well-known large enterprises in the information technology industry, such as Microsoft, Intel, Apple, and Facebook, are expanding from the science and technology small and micro-enterprise the number of small and micro technology enterprises account for more than 50 percent of the total, and the quantity of small and micro technology enterprise increases 2 percent per year, contributing about 20 percent of US gross domestic production. The GEM 2011 survey data unveiled that in "product innovation" for the entrepreneurial activity index China (15%) is only listed twenty-first out of twenty-four

economies driving the “efficiency” force. Obviously for China, the ability to identify and develop entrepreneurial opportunities in small and micro-enterprises is not fully tapped and released, therefore, the new model of identifying and exploiting entrepreneurial opportunities for China’s small and micro-technology enterprise can make a quick technology transferring, technological innovation and implementation of “innovation driven” the national strategy. In this study, we will draw insightful, practical implication from these research questions of technological small and micro-enterprises.

## **2 Theoretical Background and Hypotheses**

In developed countries, the research on entrepreneurial opportunity starts earlier. It is an important watershed in the research on entrepreneurship that the concept of opportunity be introduced into entrepreneurship; it helps the academics who consider business venturing as an “opportunity identification, development, and exploration” process (Stevenson & Gumpert, 1985). Similar with other core concept of entrepreneurial management theory such as routine and ability, entrepreneurial opportunities can be regarded as a black box, although previous literature makes “opportunity” a preliminary classification for “discovered, created, and imagined opportunity” (Kirzner, 1997; Foss, Klein, Kor, & Joseph, 2008; Klein, 2008), which triggers the dispute regarding whether the concept of entrepreneurial opportunities is subjective or objective, latent or cognitive. Thus, the unit of choice in the analysis of entrepreneurial opportunities is controversial: some scholars believe that “the process of identifying opportunities” should be treated as the unit of analysis, but obviously the opportunity is not equally appealing to all entrepreneurs (Dimov, 2010), and opportunity judgments are made by relating personal entrepreneurial experience and previous knowledge, which indicates the subjective nature of opportunity pursuit. Other scholars insist that the entrepreneur who identifies opportunity should be the unit of analysis; a few scholars underline the latent trait of opportunity concepts, thus entrepreneurial action can be treated as a proxy unit of analysis. Because of the inconsistency of entrepreneurial opportunity cognition, more and more entrepreneurs will be inevitably confused by the market and unable to effectively forecast the risks in the field of high-tech venturing and also will not make relatively precise strategic decisions and reasoning.

Therefore, to understand the characteristics of entrepreneurial opportunities, the focus of research should be based on the perspective selection of entrepreneurial opportunity.

Since the 2000s, China's domestic scholars, such as Zhang Shujun and Li Xinchun (2011), also focused on "entrepreneurial opportunities" research, initiating that small and micro nascent enterprises that lacked resources pushed enterprises to make growth strategy using two dimensions: technology factor and product market. Yang Jing and Wang Chongming (2012) elaborated that most entrepreneurial opportunity research to date has addressed "objective and subjective integration perspective, constructive perspective," although throughout China and abroad, literature on entrepreneurial opportunity argued that few scholars developed a network embeddedness perspective to explore entrepreneurial opportunities. The present domestic and foreign inquiry into entrepreneurial opportunity made assertion that in this area of research mainly concentrated on three different perspectives: objective discovery and cognitive perspective; creation subjective perspective; and entrepreneurial action integration perspective. Although the prior studies provide a system of perspective for entrepreneurial opportunity, these research perspective for the study of the system of entrepreneurial opportunity lay a solid foundation for the scholars who have not formed a consensus regarding the different perspectives.

In respect to research methods, a good deal of theoretical work adopted the qualitative analysis method; the findings based on this method, however, theorized about inductive logic and took some conclusions from special case study, obviously lacking the universality of real applications, thus the theory was unable to help different types of enterprises effectively identify and seize entrepreneurial opportunities. In other words, most studies in entrepreneurial opportunities explained what "opportunity" is but rarely focused on how and why diverse types of entrepreneurial opportunities impacted entrepreneurial outcomes. Therefore, in response, based on the network embeddedness perspective, this study will divide entrepreneurial opportunities into three types "discovery, creation, and imagine opportunities" to explore and develop the relationship linking the entrepreneurial opportunities to entrepreneurial performance.

## **.2.1 Network Embeddedness, Entrepreneurial Opportunities, and Entrepreneurial Performance**

For market transaction, any individual or enterprise prefers to make a deal with another person or corporation who has a good reputation.

Uzzi (1999) contends that the likelihood of a resource exchange between two market actors depends on the quality of their mutual trust and their relationship; the ties existing in the entrepreneurial network shows that entrepreneurs do not have confidence in the claims of new institutional economics, through which the actors have adopted its system design and the implicit contract of “universal ethics” to regulate business behaviors and strengthen the antifraud function of ties. Network embeddedness emphasizes that the strength of the network relationship (or structural relationship) can form trust and prevent fraud. Bringing the network embeddedness perspective into the entrepreneurship research field, scholars have advocated that entrepreneurs are embedding in a social network, which plays a critical role in the entrepreneurial process; however, the relationship among network embeddedness, identification of entrepreneurial opportunities, and entrepreneurial performance is remaining underexplored. Therefore, the major task of this study is to examine how these three main constructs are associated with each other.

### *Network Embeddedness, Identification of Entrepreneurial Opportunities, and Entrepreneurial Performance*

Faced with increasingly fierce global competition, the science and technological small and micro-enterprise can't survive individual combat and grow behind closed doors without external resource exchange. The requirements of diverse cooperation within the entrepreneurial networks increases from the firm's inception, and it strengthens interpersonal and interorganizational relationships between entrepreneurs. The mutual trust and cooperation are necessary for the small and micro-enterprises to enhance their competitive and cooperative ability. Embedded in the entrepreneurial network, these enterprises can share social capital, financial resource, innovative technology, and fine-grained information, even though they are legally independent enterprises, in order to promote technology innovation and product development. Evidently, scholars cannot ensure that being embedded in an entrepreneurial network will

promote performance improvement or technology innovation in small and micro-enterprises., although the existing literature contends that strategic networking can enhance the enterprise's competition's ability and the entrepreneurial performance of small- and medium-sized enterprises from different perspectives. Unfortunately, the entrepreneurs are reluctant to face the practical question: how does the strength of entrepreneurial network embeddedness promote entrepreneurial performance and why will the strength change during different enterprise locations? Having no answer to these problems in previous entrepreneurial research, this study puts forward the following hypothesis:

H1: the network embeddedness of the science and technological small micro-enterprise will positively impact technological entrepreneurial performance (financial performance and innovative performance).

H1a: the embedded network size of the science and technological small micro-enterprise will affect technological entrepreneurial performance.

H1b: the network embeddedness strength of the science and technological small micro-enterprise will impact technological entrepreneurial performance.

H1c: the heterogeneity of the science and technological small micro-enterprise will impact technological entrepreneurial performance.

#### *How Network Embeddedness Impacts on the Types of Entrepreneurial Opportunities*

The entrepreneurial network in which the individuals of technology entrepreneurship or technological ventures embedded is regarded as an important resource of many new creative ideas and profitable opportunities. Hills et al. (1997) found that over 50 percent of entrepreneurs identified opportunities, developed business opportunities, and tended to start businesses through entrepreneurial networks.

The prior knowledge and previous experience are vital for the entrepreneurs who transform a novel idea into a technological venturing organizations (Aldrich & Martinez, 2001). Evidently, knowledge and information are two critical variables associated with the entrepreneurial network. Coleman (1988) advocated that a strong tie with a network can help the actors access a broad network of resources and encourage mutual cooperation and trust; thus, the strong tie with an external or entrepreneurial network is a long-term relationship, in which the entrepreneurs' embeddedness will obtain more market information of products and services, and this will assist the entrepreneurs in improving the capability of exploiting entrepreneurial opportunity.

Contrary to Coleman (1988), other scholars contend that weak ties with external network resources could relieve the negative effect of intimacy network resources inertia and allow the actor or entrepreneur access to diverse resources through different channels. Obviously, relative to the networks in which the entrepreneurs are embedded, both the weak and strong ties, are helpful in the process of technology venturing and starting-up. Hence, for science and technological small and micro-enterprises, the degree of network embeddedness, the size of network, and the heterogeneity

of network will affect their entrepreneurial opportunity exploring and technological entrepreneurship performance? Therefore, this study puts forward the following hypothesis:

H2: the network embeddedness of the science and technological small micro-enterprise have a positive effect on the entrepreneurial opportunity identification.

H2a: the size of network embeddedness has a positive impact on the entrepreneurial opportunity type.

H2b: the strength of network embeddedness has a positive impact on the entrepreneurial opportunity type.

H2c: the heterogeneity of network embeddedness has a positive impact on the entrepreneurial opportunity type.

### *The Mediating Role of Entrepreneurial Opportunities*

Economic resource exchange between two actors will take the previous social interactions and transaction history records for reference; hence, the economic transaction behavior will never take place in a vacuum without network embedding (Granovetter, 1985). Then, the tie of arm-length in economic exchange will eventually convert into interfirm networks embeddedness relationship (Uzzi, 1997).

According to Shane and Venkataraman's advocacy of entrepreneurship, it is a process of entrepreneurial opportunity discovery and development. These help us to make a further supposition that the opportunity discovery relies on prior knowledge and information.

The firms should ensure the rationality and institutional legitimacy of technological innovation during the process of entrepreneurship.

Then, after successfully identifying available technical entrepreneurial opportunities, useful resources, and a rational justification of opportunities, how does networks embeddedness impact the enterprise's technological entrepreneurship performance? In this study, we need to figure out how the science and technological small and micro-enterprise's network embeddedness affect opportunity discovery? How does an entrepreneur effectively obtain resources to improve the technological and entrepreneurial performance, especially the scale of network embeddedness, the strength of embedding (strong tie or weak tie), and how the network characteristics affect the entrepreneurial opportunity identification and how the above factors ultimately affect the enterprise's technological entrepreneurship performance? Thus, this study puts forward the following hypothesis:

H3: entrepreneurial opportunities play a mediating role in the science and technological small micro-enterprise's network embeddedness and technological entrepreneurship performance.

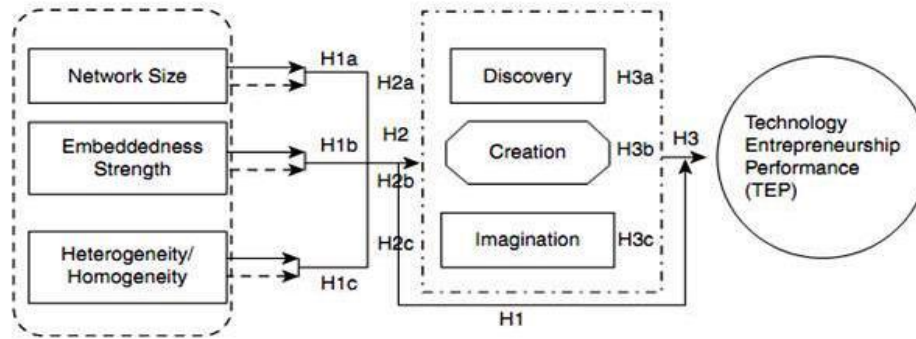
H3a: discovery opportunities play a mediating effect in the science and technological small micro-enterprise's network embeddedness and technological entrepreneurship performance;

H3b: Creation opportunity have a mediating effect in the science and technological small micro-enterprise's network embeddedness and technological entrepreneurship performance;

H3c: Imagination opportunity plays a mediating role in the science and technological small micro-enterprise's network embeddedness and technological entrepreneurship performance.

Based on the above mentioned theoretical analysis and hypothesis of the network embeddedness, this study tries to construct the conceptual framework of the types of entrepreneurial opportunities and technological entrepreneurial performance in [figure .1](#).





**Figure .1** The conceptual framework.

### 3 Research Design

#### .3.1 The Research Sample

In this study, according to the “conditions and methods of national high tech Industrial Development Zone of high-tech enterprise” listed by the Ministry of Science and Technology in China and “small and medium-sized enterprises division type standard” published

by four national ministries in June 2011, the technology small and micro-enterprise is defined as “a technology company, it is exploring height ratio of high-tech human resource and technology resources (depending on its patents or unique inventions; employing more than 30% of the total staff; annual technical product development funds not be less than 3%) which engages in new technology product research, development, production and service with a certain size (its number of workers is no more than 100).” However, this study mainly draws samples from the Center of China Ministry of Science and Technology’s Technical Innovation Project Fund website, which publishes annual assisting 2012 technological innovation research object for the enterprise of science and technology small and medium-sized enterprises.

Our investigation started from March 2013, and ended September 2012. We sent a total of 1,000 questionnaires to 800 high-tech small and micro-enterprises, which were released by the Ministry of Science and Technology and 350 university spin-off companies. This study finally collected 412 valid questionnaires (including 201 recovery from the Ministry of Science and Technology and 211 samples from university spin-off companies).

Due to the high communication costs, using typical business

**Table .1** Descriptive statistics of the sample (N = 412)

<i>Industry</i>	<i>Number</i>	<i>Percentage (%)</i>	<i>Year</i>	<i>Num(%)</i>	<i>Region</i>	<i>Num(%)</i>
Machinery	27	6.6	1–5	134 (32.5)	North	77 (18.7)
Electro & Info	180	43.7	6–10	123 (29.9)	North-e	40 (9.7)
Bio & Medic	114	27.7	11–20	128 (31.1)	South-e	21 (5.1)
Agri.	18	4.4	above20	27 (6.6)	South	74 (18.0)
Man & Cons	23	5.6	Total	412 (100)	East	81 (19.6)
Others	50	12.1			South-w	25 (6.1)
Total	412	100			Central	94 (22.8)
Size (staff)	<=5	6–10	11–20	21–50	>50<100	Total
Number of firm	92	120	80	48	72	412
Percentage (%)	22.3	29.1	19.4	11.7	17.5	100

*Note:* Electro & Info: Electronic and Information Industry; Bio & Medic: Biology and Medical Industry; Agri.: Agriculture; Man & Couns: Management and Consulting; North-e: Northeast; South-e: Southeast; South-w: Southwest.

telephone interview and friends' introduction, the total drawn backsamples are 490 (total recovery rate was 49%), with a total efficiencyrate of 84.1 percent (due to the design of the questionnaire and theprofessional website's unique function, if the questionnaire was not complete or had incomplete data, the applicant couldn't submit thequestionnaire, which helped us obtain high-quality questionnairesby excluding duplicate IP address samples). The research sample distributionis shown in Table .1

### **.3.2 Measurement and Methods**

#### *Network Embeddedness*

Prior academic research always divided network embeddedness intothree usual dimensions: structural embeddedness, relational embeddedness, and cognitive embeddedness. Based on measurement methodsof Tsai (2001) and Muthusamy and White (2005), we mainlyadopted the following alternative variables to measure networkembeddedness and its main three dimensions: network embeddednessscale (tightness); network embeddedness strength (strength); nature of network (heterogeneity/homogeneity). The number ofembedded networks is used to compute the main number of scienceand technological enterprises cooperating with embedding in thenetwork of enterprises and enterprises generate a tight network; the strength of the

**Table .2** EFA results for key variables : dimensions naming, factors loading, and items measuring (N = 201)

<i>Variables</i>	<i>Dimensions</i>	<i>Items</i>
Network embeddedness (KMO = 0.672 Chi-Square = 606.451)	Tightness	Number of partners in start-up step (Emb1-factor load value = 0.899)
	Strength	How many times contact with partner per month? (Emb2-factor load value=0.866) How long the relationship lasting for between firm and main partner? (Emb3-factor load value = 0.835) How to evaluate the tightness of partnership (Emb4-factor load value = 0.823)
	Heterogeneity	What's the type of the partnership during the entrepreneurship? (Emb5-factor load value = 0.770) How many partners its distance to the firm over 30 minutes driving (Emb6-factor load value = 0.861)
Entrepreneur opportunity (KMO = 0.770 Chi-Square = 642.33)	Discovery	We can find the unsatisfied requirement in the market quickly (Opp1-factor load value = 0.873) We can find the unexploited resources in the market (Opp2-factor load value = 0.730)
	Creation	In the procedure of entrepreneurship? we can discover and explore good opportunity (Opp3-factor load value = 0.597) Only when the entrepreneurs experienced and struggled for many years, can the entrepreneurial opportunity be identified (Opp4-factor load value = 0.874)
	Imagination	Although entrepreneurs lacking some experience in the Industry, we also can exploit many good entrepreneurial opportunities. (Opp5-factor load value = 0.805) Although there are no ties among the opportunities, we also can exploit it. (Opp6-factor load value = 0.893)
Performance of technical entrepreneurship (KMO = 0.730 Chi-Square = 338.733)	Finacial Performance	The growth rate of employees in the firm from 2009 to (Tep1-factor load value = 0.880) The net revenue of firm (net revenue /sales*%) (Tep2-factor load value = 0.704)
	Innovation Performance	The percentage of revenue that contributed by the firm's own intellectual rights in the total sales (Tep3-factor load value = 0.542) The percentage of new products or services in the total sales (Tep4-factor load value = 0.935)

strength network embeddness, which should have affected acomprehensive survey that how many times the enterprises makea face-to-face communication, the duration of tight relationship,how the technology enterprise makes an evaluation of the degreeof cooperation with the other partners; the nature of embeddingnetwork is mainly measured by two indicators: one is based on thenetwork embeddedness of enterprises and technological entrepreneurship in selecting

different type of partners, and another variable is “how many the tight partner whose distance is over 30 minutes driving from the nascent entrepreneurial company in the beginning phase?”

$$\left[ \frac{\sum_{i=1}^n f_i + \sum_{i=1}^n d_i + \sum_{i=1}^n a_i}{3n} \right] / 3 \quad (\text{Soetanto \& Geenhuizen, 2010})$$

(The details are shown in Table .2).

### *Entrepreneurial Opportunity*

At present, there is no consensus for the measurement scale for entrepreneurial opportunities, however, some academics such as Timmons tried to organize a scale that included eight parts, industry and market, feedback ability, economic factors, competitive advantage, management team, fatal flaws yes or no, entrepreneurship traits, and strategic distinction, and other fifty-three indicators to evaluate the opportunities. Based on Timmons' study, Haitao Chen and Li Cai (2008) adopted the clustering analysis method to exploit two dimensions (profitability and feasibility) and six sub-dimensions of entrepreneurial opportunity model; Li and Chen adopted two dimensions of opportunities consisting of “the opportunity of entering the market” and “the opportunity to declare new products and services.” Learning from the Klein's measurement and the aforementioned scholars' scale, this study takes three dimensions and six items to measure the different types of entrepreneurial opportunity: discovery opportunity, creation opportunity, and imagination opportunity.

All items use the 5-Likert score to make evaluations; the specific measurement items are shown in **Table .2**.

### *Technological Entrepreneurial Performance*

As a technology venturing enterprise, it's established and growth is a high risk and resource-consuming process, especially for some nascent technology startups own very limited management and financial resources in most cases; therefore, they are especially vulnerable in the technology venturing process and so easily failed in the early phase as a minimization problem. Li

and Atuahene-Gima (2001) contend that the technological entrepreneurial performance refers to financial performance and market performance, which are made up of five financial indicators and four market indicators. However, due to a high correlation between the nine indexes, nine indicators are integrated into only one indicator. Based on the above view, in this study, we reduce the measurement indicators and take the nature of the science and technology small and micro-enterprises for consideration.

We only focus on investigating two dimensions composed of innovation and growth performance; all items also use the 5-Likert score evaluation, the concrete measure items shown in **Table .2**.

### **3.3 Reliability and Validity of Scale**

#### *Reliability Test*

The test of the questionnaire's reliability and validity, we will take the following steps: first, we will use the pre-investigation data of each measure test items, and drop out the measure item which own Crossing Loading, according to the Churchill and Peter (1984) recommendations, we make a judgment on the main variables reliability if it verified by Cronbach's  $\alpha$  coefficient.

Judging by the test results in Table 6.3, the network embeddedness scale reliability coefficient Cronbach  $\alpha = 0.594$ , and its various dimensions, which are numeric types temporarily unable to obtain reliability coefficient; the entrepreneurial opportunity reliability coefficient Cronbach  $\alpha = 0.784$ , and the reliability coefficient of three dimensions are between 0.600–0.753; the technological entrepreneurship performance reliability coefficient Cronbach  $\alpha = 0.726$ , reliability coefficient of the two dimensions were 0.582 and 0.599. The reliability coefficient value is higher when the measurement items are above

ten; generally speaking, the value should achieve 0.80, however, in this study, the number of each two-dimensional item is under 10, thus, the reliability coefficient over 0.50 is acceptable.

#### *Validity Test*

In this study, we make validity test for network embeddedness, entrepreneurial opportunities, and technological entrepreneurship performance by the validity of convergent validity and discrimination validity, respectively. First step, determine the convergent validity, mainly according to the criteria of Fornell and Larcker (1981) that measurement items loading factor

value to latent variable are greater than 0.5 (Sig. < 0.05) and the average value of extraction (AVE) of each latent variable makes a judgment if it is greater than the 0.50.

Table 6.3 shows that factor loading of each measurement items is between 0.543–0.899 (above the 0.5 level requirement); the AVE of “network embeddedness” is 0.722, AVE of “entrepreneurship opportunity” is 0.643 (three dimensions of AVE values were: 0.647, 0.559, 0.7225, respectively); technology entrepreneurship performance AVE value: 0.609 (the two dimensions of AVE were 0.634, 0.583, respectively). If AVE values were more than 0.55, the measurement scale had good convergent validity. Second step, to determine the construct discrimination validity, we mainly processed the following two steps: first, each of the two constructs’ correlation coefficients should be less than 0.85; second, the AVE value of construct itself must be greater than the correlation coefficient square value

**Table .3** The result of reliability of scale (N = 412)

<i>Variables</i>	<i>Cronbach’s <math>\alpha</math> value</i>	<i>Dimensions</i>	<i>Cronbach’s <math>\alpha</math> of sub-items</i>	<i>Items</i>
Network embeddedness	Cronbach’s $\alpha = 0.594$	Tightness	Numeric type (null)	Emb1
		Strength	Numeric type (null)	Emb2-Emb4
		Nature of network	Numeric type (null)	Emb5-Emb6
Opportunity (KMO = 0.770 Chi-Square = 642.33)	Cronbach’s $\alpha = 0.784$	Discovery	Cronbach’s $\alpha = 0.633$	Opp1-Opp2
		Creation	Cronbach’s $\alpha = 0.600$	Opp3-Opp4
		Imagination	Cronbach’s $\alpha = 0.753$	Opp5-Opp6
Technological entrepreneurship performance	Cronbach’s $\alpha = 0.726$	Finacial Prf	Cronbach’s $\alpha = 0.582$	Tep1-Tep2
		Innovation Prf	Cronbach’s $\alpha = 0.599$	Tep3-Tep4

of the construct. In the main structure of the calculation of mean, standard deviation, and the concept of correlation coefficients, and construct AVE value shown in Table 6.3, above, value indicates that this scale has good discrimination validity.



#### .4 Empirical Results

For small and micro technology enterprises of the embedded network scale, the embedment depth, and the characteristic of the network, we used regression analysis to determine the effects of the main dimensions of network embeddedness on technological and entrepreneurial performance. Network embeddedness and its main dimensions for direct regression technology entrepreneurial performance results show that network embeddedness has a positive effect on entrepreneurial performance ( $\beta=0.348, p < 0.01$ ) (Table 6.4). One of the sub-dimensions of embedded network scale and the embedded network characteristics ( $\beta=0.202, p < 0.05$ ;  $\beta=0.069, p < 0.05$ ) also showed a positive effect on technological entrepreneurship performance, and network embeddedness for the effect of technology entrepreneurship performance are not significant ( $\beta = -0.032, p = 0.451$ ) (see Figure 6.2). Therefore, science and technology small and micro-enterprises for the network embeddedness has significant positive effect to enhance its technical entrepreneurial performance, therefore, hypothesis H1 and H1a/H1c gains support, and the hypothesis of H1b was not supported.

The mediating role of entrepreneurial opportunity between network embeddedness and technology entrepreneurial performance of technology-based small micro enterprise, the testing method is in line with Baron and Kenny (1986). In **Table .4**, network embeddedness

of discovery opportunities and creation opportunities have had a positive effect ( $\beta=0.06, p < 0.05$ ;  $\beta=0.08, p < 0.05$ ;  $\beta=0.084, p < 0.01$ ); the H2 is supported, and the “embeddedness scale” has the effect of positive relation with entrepreneurial opportunities (regression coefficient for  $\beta=0.14, p < 0.01$ ), thus, the H2a is supported; the other two dimensions of entrepreneurial opportunity effects were not significant, thus, the H2b is not supported; and for the hypothesis of H2c, network embeddedness has a significant positive effect on the imagination opportunities ( $\beta=0.09, p < 0.05$ ), the creation opportunity is not significant, thus, the H2c gets partially support.

**Table .4** Multiple regression results

<i>Item</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
<i>Dependant variables</i>	<i>Opportunity</i>	<i>Discovery</i>	<i>Creation</i>	<i>Imagination</i>	<i>Perf</i>
<b>Constant</b>	3.09***	3.55***	2.86***	2.61***	2.36***
<b>Control variables</b>					
Size	0.03	0.05	0.01	0.05	0.06*
Industry 1	-0.01	0.13	-0.17	0.02	-0.03
Industry 2	-0.11	0.01	-0.09	-0.18	0.38*
Industry 3	-0.42	-0.27	-0.37*	-0.37	0.19
Industry 4	-0.18	-0.49**	0.11	0.41	-0.23
Industry 5	0.01	-0.17	-0.05	-0.26	-0.02
<b>Independent variables</b>					
Embed	0.06**	0.08**	0.084***	0.03	0.23***
Tightness	0.14***	0.12***	0.11***	0.18***	-0.08**
Strength	-0.03	-0.05	-0.69	0.05	0.04
Nature	-0.04	-0.07**	-0.04	0.09**	0.16***
<b>Opportunity</b>					-0.37**
Discovery					0.14*
Creation					-0.01
Imagination					0.12**
<i>F-Value</i>	8.97***	6.797***	4.91***	7.32***	9.38***
$\Delta R^2$	0.16	0.12	0.09	0.13	0.22

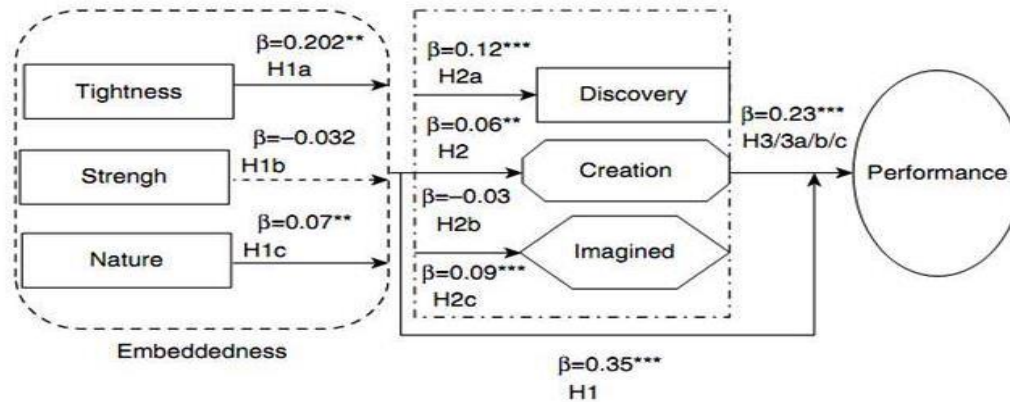
Note: \*\*\* $p < 0.001$ , \*\* $p < 0.05$ , \* $p < 0.1$ ; Industry 1–5 refers to Tabel 6.1's five industries.

Bringing the relative parameters of Table .4 into formulas .1and .2, according to the formulas, after putting the entrepreneurial opportunity and main dimensions of variables into the regression formula, the effect of network embeddedness influence technology entrepreneurship performance significantly change; first of all, the overall coefficient of network embeddedness decreased from 0.348 to 0.23, for the positive role of network embeddedness scale, which is transferred into -0.08 negative effect, and significantly ( $p < 0.05$ );

When the mediating role of entrepreneurial opportunity was added, the positive effect of network embeddedness rised slightly, and the coefficient was 0.16 ( $p < 0.01$ ). From the above results we can judge that entrepreneurial opportunities play a significant mediating role

Between network embeddedness and technology entrepreneurship performance, therefore, assuming H3 and H3a/b/c are supported.





**Figure .2** The testing result.

$$Y_{TEP} = 2.329 + 0.348X_{EMB} + 0.202X_{EMB_t} - 0.032X_{EMB_s} + 0.069X_{EMB_h} + \varepsilon_1 \quad (6.1)$$

$$Y_{TEP} = 2.36 + 0.23X_{EMB} - 0.08X_{EMB_t} + 0.04X_{EMB_s} + 0.16X_{EMB_h} - 0.37M_{OPP} + 0.14M_{opp_d} - 0.01M_{opp_c} + 0.12M_{opp_i} + \varepsilon_{31} \quad (6.2)$$

## 5 Findings and Implications

This study discusses the network embedding behavior of small and microtechnology enterprises, the mechanism between of entrepreneurial opportunities, and technological entrepreneurial performance.

Entrepreneurial opportunities and network embeddedness have been divided into multi-dimensions, according to the multiple regressive analysis, it is revealing that small and microtechnology enterprises' network embeddedness, network size, and network heterogeneity are conducive to enhancing the performance of technology entrepreneurship;

the major dimensions network embeddedness help small and microtechnology enterprises identify and develop imagination type entrepreneurial opportunity. The main types of entrepreneurial opportunities are playing a significant mediating role between network embeddedness and technical entrepreneurial performance.

High-tech small and micro-enterprises in the technology business process need to focus not just on the government's policy and financial support but also embedding in the industry and pay attention to the network size, embedding degree, and network characteristics.

Especially, in the mobile Internet era. No business can survive without considering other companies' shared interests, it shows that small and micro technology enterprises cannot simply protect their own technological and commercial secrets by keeping distance with the dynamic industry network, which can incubate more and more fantastic small and micro technology enterprises, and these enterprises are definitely not to keep up with the market's increasing customer demand. High-tech small and micro-enterprises continuously upgrade technology entrepreneurial performance to get more business opportunities through a network embedding and by identifying and developing opportunities. Enterprise networks are often embedded resources, bringing together a variety of unique and diverse information and professionals, which will inspire more new ideas and opportunities and create an industry. From earlier empirical results, we can see that high-tech small and micro-enterprises prefer to be embedded into large-scale enterprise networks and heterogeneous networks and are not concerned about the size of embedding degree, indicating that these companies realize the reality of the issue, namely the development of entrepreneurial opportunity to get together with low barriers to easily form an innovative project launched by many other small and micro-enterprises. These businesses can immediately enter the market and quickly saturate it, so companies cannot maintain a lasting competitive advantage. Technology entrepreneurship is characterized by high investment and high risk; the product may be new, but the market outlook may not be clear. This requires technology entrepreneurs and start-ups to have the ability to recognize opportunity and have many different characteristics of different businesses and qualitative resources to help the enterprises to create, imagine, or seize new business opportunities.

This paper analyzes the high-tech small and micro-enterprise network embedding performance impact on technology entrepreneurship and entrepreneurial opportunities to discuss the effect of mediation. Of course, in this chapter, there are some deficiencies, such as in the measurement of key concepts, the need to further improve and expand. Embedded in the network, for example, we mainly investigated the structure of such enterprises and the relationships embedding dimension.

Subsequent studies also need to add a dimension to a comprehensive study of cognitive corporate emphasis on embedded industrial network culture and atmosphere.

Although the focus on science and technology sample of small and micro-enterprises, but location factors such enterprises, which do not have to be considered. Future research also will need to consider that policy and industrial factors within different locations will have an impact on the company's technology entrepreneurial performance.

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