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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 enterprisingindividuals need to make a proactive action on promising entrepreneurialopportunities. Shane and Venkataraman (2000) state thatentrepreneurship "involves the processes of discovery evaluation, and exploitation of profitable opportunities," thus, entrepreneurshipcan be considered a series of activities that include identifyingopportunity; assessing and exploring; and delivering new products, services, governance structure, marketing methods, procedures, andmaterials to clients or markets that have not existed before.

High-technology entrepreneurship is a prominent process of newtechnology commercializing in uncertain high-technology industries, thus the experts' market competence, employees' perception ofnew technology, and technological capabilities are critical to new orhigh-technology venturing firms, especially the nascent technologyenterprises. In the funding phase, lack of key resources and abilitymake it hard to survive in the market. However, embedding inan industrial network can be critical to the success of small andmicrotechnology enterprises. Access to the network can help withobtaining 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 samenetwork and are exploring the new market, which involves sharingnew technology knowledge, capabilities, and market information.

Working with others can help the small and microtechnology enterprisecut down on transaction costs. Third, the industrial networkcan attract plenty of technological expertise and high-technologicalventuring 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 thatthe technological small spin-offs' starting-up process at UC Berkeleyand Stanford were impacted saliently by the embedding networkenvironment.

In a "surplus economy," innovation and entrepreneurial capability are vital for the enterprise's survival (Kornai, 1986). Entrepreneurshipin small and microtechnology enterprises strives to make more andmore obvious contributions to emerging industry formation anddevelopment and regional industry upgrading. Contrary to largeenterprises that rely on scarce resources and the government's "softbudget constraint" to win competitive advantage, the small and microtechnology enterprises embedded in industrial network canfully explore their own core resources, absorbing different kindsfrom the network to exploit opportunity and carry out technologicalentrepreneurship. According to the Third Plenum of 18th CPCCentral Committee the allocation of resources plays a decisive rolein the market. It will provide good policy guidance for the small andmicrotechnology enterprises to gain competitive advantage by developingnew models and exploring entrepreneurial opportunities.

In the United States, many of the well-known large enterprisesin the information technology industry, such as Microsoft, Intel, Apple, and Facebook, are expanding from the science and technologysmall and micro-enterprise the number of small and microtechnologyenterprises account for more than 50 percent of the total, and the quantity of small and microtechnology enterprise increases2 percent per year, contributing about 20 percent of US gross domesticproduction. The GEM2011 survey data unveiled that in "productinnovation" 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 anddevelop entrepreneurial opportunities in small and micro-enterprisesis not fully tapped and released, therefore, the new model ofidentifying and exploiting entrepreneurial opportunities for China’ssmall and microtechnology enterprise can make a quick technologytransferring, technological innovation and implementation of “innovation driven” the national strategy. In this study, we will drawinsightful, practical implication from these research questions oftechnological 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 onentrepreneurship that the concept of opportunity be introducedinto entrepreneurship; it helps the academics who consider businessventuring as an “opportunity identification, development, andexploration” process (Stevenson & Gumpert, 1985). Similar withother core concept of entrepreneurial management theory such asroutine and ability, entrepreneurial opportunities can be regardedas a black box, although previous literature makes “opportunity” a preliminary classification for “discovered, created, and imaginedopportunity” (Kirzner, 1997; Foss, Klein, Kor, & Joseph, 2008; Klein, 2008), which triggers the dispute regarding whether the conceptof entrepreneurial opportunities is subjective or objective, latentor cognitive. Thus, the unit of choice in the analysis of entrepreneurialopportunities is controversial: some scholars believe that “theprocess of identifying opportunities” should be treated as the unitof analysis, but obviously the opportunity is not equally appealingto all entrepreneurs (Dimov, 2010), and opportunity judgments aremade by relating personal entrepreneurial experience and previousknowledge, which indicates the subjective nature of opportunitypursuit. Other scholars insist that the entrepreneur who identifiesopportunity should be the unit of analysis; a few scholars underlinethe latent trait of opportunity concepts, thus entrepreneurial actioncan be treated as a proxy unit of analysis. Because of the inconsistencyof entrepreneurial opportunity cognition, more and moreentrepreneurs will be inevitably confused by the market and unable to effectively forecast the risks in the field of high-tech venturing andalso will not make relatively precise strategic decisions and reasoning.

Therefore, to understand the characteristics of entrepreneurialopportunities, the focus of research should be based on the perspectiveselection of entrepreneurial opportunity.

Since the 2000s, China's domestic scholars, such as ZhangShujun and Li Xinchun (2011), also focused on "entrepreneurialopportunities" research, initiating that small and micro nascententerprises that lacked resources pushed enterprises to make growthstrategy using two dimensions: technology factor and productmarket. Yang Jing and Wang Chongming (2012) elaborated thatmost entrepreneurial opportunity research to date has addressed "objective and subjective integration perspective, constructive perspective," although throughout China and abroad, literature onentrepreneurial opportunity argued that few scholars developeda network embeddedness perspective to explore entrepreneurialopportunities. The present domestic and foreign inquiry into entrepreneurialopportunity made assertion that in this area of researchmainly concentrated on three different perspectives: objective discoveryand cognitive perspective; creation subjective perspective; and entrepreneurial action integration perspective. Although theprior studies provide a system of perspective for entrepreneurialopportunity, these research perspective for the study of the systemof entrepreneurial opportunity lay a solid foundation for the scholarswho have not formed a consensus regarding the different perspectives.

In respect to research methods, a good deal of theoreticalwork adopted the qualitative analysis method; the findings basedon this method, however, theorized about inductive logic and tooksome conclusions from special case study, obviously lacking theuniversality of real applications, thus the theory was unable to helpdifferent types of enterprises effectively identify and seize entrepreneurialopportunities. In other words, most studies in entrepreneurialopportunities explained what "opportunity" is but rarelyfocused on how and why diverse types of entrepreneurial opportunitiesimpacted entrepreneurial outcomes. Therefore, in response, based on the network embeddedness perspective, this study willdivide entrepreneurial opportunities into three types "discovery, creation, and imagine opportunities" to explore and develop the relationship linking the entrepreneurial opportunities to entrepreneurialperformance.

.2.1 Network Embeddedness, Entrepreneurial Opportunities, and Entrepreneurial Performance

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

Uzzi (1999) contends that the likelihood of a resource exchangebetween two market actors depends on the quality of their mutualtrust and their relationship; the ties existing in the entrepreneurialnetwork shows that entrepreneurs do not have confidence in theclaims of new institutional economics, through which the actorshave adopted its system design and the implicit contract of "universalethics" to regulate business behaviors and strengthen the antifraudfunction of ties. Network embeddedness emphasizes that thestrength of the network relationship (or structural relationship) canform trust and prevent fraud. Bringing the network embeddednessperspective into the entrepreneurship research field, scholars haveadvocated that entrepreneurs are embedding in a social network, which plays a critical role in the entrepreneurial process; however, the relationship among network embeddedness, identification ofentrepreneurial opportunities, and entrepreneurial performance isremaining underexplored. Therefore, the major task of this studyis to examine how these three main constructs are associated witheach other.

Network Embeddedness, Identification of EntrepreneurialOpportunities, and Entrepreneurial Performance

Faced with increasingly fierce global competition, the science andtechnological small and micro-enterprise can't survive individualcombat and grow behind closed doors without external resourceexchange. The requirements of diverse cooperation within theentrepreneurial networks increases from the firm's inception, andit strengthens interpersonal and interorganizational relationshipsbetween entrepreneurs. The mutual trust and cooperation are necessityfor the small and micro-enterprises to enhance their competitiveand cooperative ability. Embedded in the entrepreneurial network, these enterprises can share social capital, financial resource, innovativetechnology, and fine-grained information, even though theyare legally independent enterprises, in order to promote technologyinnovation and product development. Evidently, scholars cannotensure that being embedded in an entrepreneurial network will

promoteperformance improvement or technology innovation in smalland micro-enterprises., although the existing literature contendsthat strategic networking can enhance the enterprise's competition'sability and the entrepreneurial performance of small- and mediumsizedenterprises from different perspectives. Unfortunately, theentrepreneurs are reluctant to face the practical question: how doesthe strength of entrepreneurial network embeddedness promoteentrepreneurial performance and why will the strength change duringdifferent enterprise locations? Having no answer to these problems in previous entrepreneurial research, this study puts forwardthe following hypothesis:

H1: the network embeddedness of the science and technologicalsmall micro-enterprise will positively impact technological entrepreneurialperformance (financial performance and innovativeperformance).

H1a: the embedded network size of the science and technologicalsmall micro-enterprise will affect technological entrepreneurialperformance.

H1b: the network embeddedness strength of the science and technologicalsmall micro-enterprise will impact technological entrepreneurialperformance.

H1c: the heterogeneity of the science and technological small microenterprisewill impact technological entrepreneurial performance.

How Network Embeddedness Impacts on the Typesof Entrepreneurial Opportunities

The entrepreneurial network in which the individuals of technologyentrepreneurship or technological ventures embedded is regardedas an important resource of many new creative ideas and profitableopportunities. Hills et al. (1997) found that over 50 percent ofentrepreneurs 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 venturingorganizations (Aldrich & Martinez, 2001). Evidently, knowledgeand information are two critical variables associated with theentrepreneurial network. Coleman (1988) advocated that a strongtie with a network can help the actors access a broad network ofresources and encourage mutual cooperation and trust; thus, thestrong tie with an external or entrepreneurial network is a long-termrelationship, in which the entrepreneurs' embeddedness will obtainmore market information of products and services, and this will assistthe entrepreneurs in improving the capability of exploiting entrepreneurialopportunity.

Contrary to Coleman (1988), other scholarscontend that weak ties with external network resources could relievethe negative effect of intimacy network resources inertia and allowthe actor or entrepreneur access to diverse resources through differentchannels. Obviously, relative to the networks in which the entrepreneursare embedded, both the weak and strong ties, are helpfulin the process of technology venturing and starting-up. Hence, forscience and technological small and micro-enterprises, the degree ofnetwork embeddedness, the size of network, and the heterogeneity

of network will affect their entrepreneurial opportunity exploringand technological entrepreneurship performance? Therefore, thisstudy puts forward the following hypothesis:

H2: the network embeddedness of the science and technologicalsmall micro-enterprise have a positive effect on the entrepreneurialopportunity identification.

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

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

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

The Mediating Role of Entrepreneurial Opportunities

Economic resource exchange between two actors will take the previoussocial 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 anddevelopment. These help us to make a further supposition that theopportunity discovery relies on prior knowledge and information.

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

Then, after successfully identifying available technical entrepreneurialopportunities, useful resources, and a rational justification of opportunities, how does networks embeddedness impact theenterprise's technological entrepreneurship performance? In thisstudy, we need to figure out how the science and technological smalland micro-enterprise's network embeddedness affect opportunitydiscovery? How does an entrepreneur effectively obtain resources toimprove the technological and entrepreneurial performance, especiallythe scale of network embeddedness, the strength of embedding (strong tie or weak tie), and how the network characteristicsaffect the entrepreneurial opportunity identification and how theabove factors ultimately affect the enterprise's technological entrepreneurshipperformance? Thus, this study puts forward the followinghypothesis:

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

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

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

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

Based on the above mentioned theoretical analysis and hypothesisof the network embeddedness, this study tries to construct theconceptual framework of the types of entrepreneurial opportunitiesand technological entrepreneurial performance in figure .1.

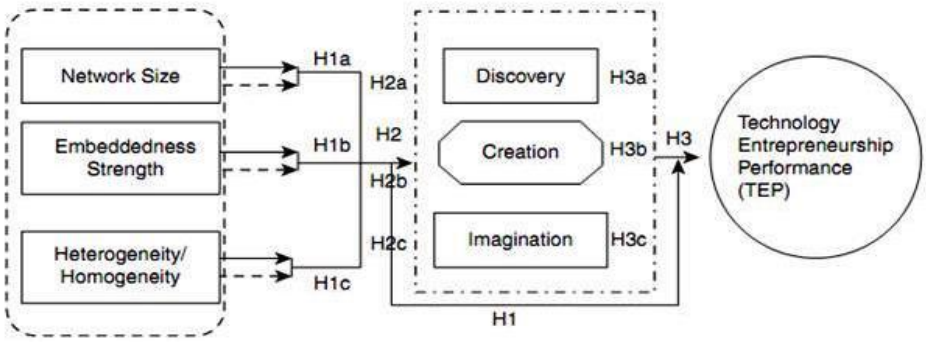

Figure .1 The conceptual framework.

3 Research Design

.3.1 The Research Sample

In this study, according to the "conditions and methods of nationalhigh 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 smalland micro-enterprise is defined as "a technology company, it isexploring height ratio of high-tech human resource and technologyresources (depending on its patents or unique inventions; employingmore than 30% of the total staff; annual technical product developmentfunds not be less than 3%) which engages in new technologyproduct research, development, production and service with a certainsize (its number of workers is no more than 100)." However, thisstudy mainly draws samples from the Center of China Ministry ofScience and Technology's Technical Innovation Project Fund website, which publishes annual assisting 2012 technological innovationresearch object for the enterprise of science and technology smallandmedium-sized enterprises.

Our investigation started from March 2013, and endedSeptember2012. We sent a total of 1,000 questionnaires to 800high-tech small and micro-enterprises, which were released bythe Ministry of Science and Technology and 350 university spinoffcompanies. This study finally collected 412 valid questionnaires (including 201 recovery from the Ministry of Science andTechnology 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)

Industry	*Number*	*Percentage (%)*	*Year*	*Num(%)*	*Region*	*Num(%)*
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)

Variables	*Dimensions*	*Items*
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 entrepreneurshipin selecting

different type of partners, and another variableis “how many the tight partner whose distance is over 30 minutesdriving from the nascent entrepreneurial company in the beginningphrase?”

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

(The details are shown in Table .2).

Entrepreneurial Opportunity

At present, there is no consensus for the measurement scale forentrepreneurial opportunities, however, some academics such asTimmons tried to organize a scale that included eight parts, industryand market, feedback ability, economic factors, competitive advantage, management team, fatal flaws yes or no, entrepreneurshiptraits, and strategic distinction, and other fifty-three indicators toevaluate the opportunities. Based on Timmons’ study, Haitao Chenand Li Cai (2008) adopted the clustering analysis method to exploittwo dimensions (profitability and feasibility) and six sub-dimensionsof entrepreneurial opportunity model; Li and Chen adopted twodimensions of opportunities consisting of “the opportunity of enteringthe market” and “the opportunity to declare new products andservices.” Learning from the Klein’s measurement and the aforementionedscholars’ scale, this study takes three dimensions and six itemsto measure the different types of entrepreneurial opportunity: discoveryopportunity, creation opportunity, and imagination opportunity.

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

Technological Entrepreneurial Performance

As a technology venturing enterprise, it’s established and growth is ahigh risk and resource-consuming process, especially for some nascenttechnology startups own very limited management and financialresources in most cases; therefore, they are especially vulnerable inthe technology venturing process and so easy failed in the early phaseas a minimization problem. Li

and Atuahene-Gima (2001) contendthat the technological entrepreneurial performance refers to financialperformance and market performance, which are made up of five financial indicators and four market indicators. However, dueto a high correlation between the nine indexes, nine indicators areintegrated into only one indicator. Based on the above view, in thisstudy, 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 ofinnovation and growth performance; all items also use the 5-Likertscore 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 takethe following steps: first, we will use the pre-investigation data ofeach measure test items, and drop out the measure item which ownCrossing Loading, according to the Churchill and Peter (1984) recommendations, we make a judgment on the main variables reliabilityif it verified by Cronbach's αcoefficient.

Judging by the test results in Table 6.3 , the network embeddednessscale reliability coefficient Cronbach α= 0.594, and its various dimensions,which are numeric types temporarily unable to obtain reliabilitycoefficient; the entrepreneurial opportunity reliability coefficientCronbach α= 0.784, and the reliability coefficient of three dimensions are between 0.600–0.753; the technological entrepreneurshipperformance reliability coefficient Cronbach α= 0.726, reliabilitycoefficient of the two dimensions were 0.582 and 0.599. The reliabilitycoefficient 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 entrepreneurshipperformance by the validity of convergent validity and discriminationvalidity, respectively. First step, determine the convergent validity, mainly according to the criteria of Fornell and Larker (1981) thatmeasurement items loading factor

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

Table 6.3 shows that factor loading of each measurement items isbetween 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 performanceAVE value: 0.609 (the two dimensions of AVE were 0.634, 0.583, respectively). If AVE values were more than 0.55, the measurementscale had good convergent validity. Second step, to determine the construct discrimination validity, we mainly processed the followingtwo steps: first, each of the two constructs' correlation coefficientsshould be less than 0.85; second, the AVE value of constructitself must be greater than the correlation coefficient square value

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

Variables	*Cronbach's α value*	*Dimensions*	*Cronbach's α of sub-items*	*Items*
Network embeddedness	Cronbach's α = 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 α = 0.784	Discovery	Cronbach's α = 0.633	Opp1-Opp2
		Creation	Cronbach's α = 0.600	Opp3-Opp4
		Imagination	Cronbach's α = 0.753	Opp5-Opp6
Technological entrepreneurship performance	Cronbach's α = 0.726	Finacial Prf	Cronbach's α = 0.582	Tep1-Tep2
		Innovation Prf	Cronbach's α = 0.599	Tep3-Tep4

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

.4 Empirical Results

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

The mediating role of entrepreneurial opportunity between networkembeddedness and technology entrepreneurial performance oftechnology-based small microenterprise, the testing method is in linewith Baron and Kenny (1986). In **Table .4,** network embeddedness

of discovery opportunities and creation opportunities have had apositive effect (=0.06, p<0.05; =0.08 p<0.05;, =0.084, p<0.0,1); theH2 is supported, and the “embeddedness scale” has the effect ofpositive relation with entrepreneurial opportunities (regression coefficientfor =0.14 p<0.01), thus,the H2a is supported; the other twodimensions 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 imaginationopportunities (=0.09, p<0.05), the creation opportunity isnot significant, thus, the H2c gets partially support.

Table .4 Multiple regression results

Item	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Dependant variables	*Opportunity*	*Discovery*	*Creation*	*Imagination*	*Perf*
Constant	3.09***	3.55***	2.86***	2.61***	2.36***
Control variables					
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
Independent variables					
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***
Opportunity					−0.37**
Discovery					0.14*
Creation					−0.01
Imagination					0.12**
F-Value	8.97***	6.797***	4.91***	7.32***	9.38***
ΔR^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 entrepreneurialopportunity and main dimensions of variables into the regressionformula,, the effect of network embeddedness influence technologyentrepreneurship performance significantly change; first of all, the overall coefficient of network embeddedness decreased from 0.348to 0.23, for the positive role of network embeddedness scale, whichis 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 judgethat entrepreneurial opportunities play a significant mediating role

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

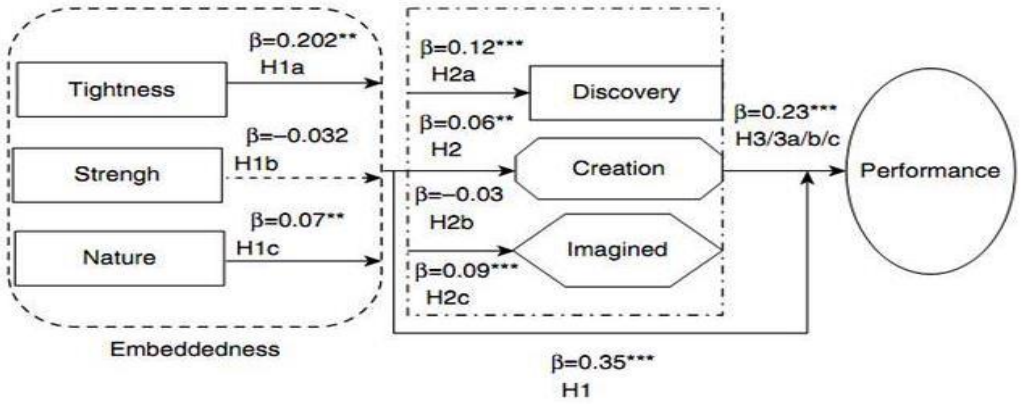

Figure .2 The testing result.

$$Y_{TEP} = 2.329 + 0.348X_{EMB} + 0.202X_{EMB\_t} - 0.032X_{EMB\_s} + 0.069X_{EMB\_h} + \varepsilon_1 \quad (6.1)$$

$$Y_{TEP} = 2.36 + 0.23X_{EMB} - 0.08X_{EMB\_t} + 0.04X_{EMB\_s} + 0.16X_{EMB\_h} - 0.37M_{OPP} + 0.14M_{opp\_d} - 0.01M_{opp\_c} + 0.12M_{opp\_i} + \varepsilon_{31} \quad (6.2)$$

5 Findings and Implications

This study discusses the network embedding behavior of small andmicrotechnology enterprises, the mechanism between of entrepreneurialopportunities, and technological entpreneurial performance.

Entrepreneurial opportunities and network embeddedness have beendivided into multi-dimensions, according to the multiple regressiveanalysis, it is revealing that small and microtechnology enterprises'network embeddedness, network size, and network heterogeneityare conducive to enhancing the performance of technology entrepreneurship;

the major dimensions network embeddedness help smalland microtechnology enterprises identify and develop imaginationtype entrepreneurial opportunity. The main types of entrepreneurialopportunities are playing a significant mediating role between network embeddedness and technical entrepreneurial performance.

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

Especially, in the mobile Internet era. No business can survivewithout considering other companies' shared interests, it shows thatsmall and microtechnology enterprises cannot simply protect theirown technological and commercial secrets by keeping distance withthe dynamic industry network, which can incubate more and morefantastic small and microtechnology enterprises, and these enterprisesare definitely not to keep up with the market's increasing customerdemandHigh-tech small and micro-enterprises continuously upgradetechnology entrepreneurial performance to get more businessopportunities through a network embedding and by identifying anddeveloping opportunities. Enterprise networks are often embeddedresources, bringing together a variety of unique and diverse informationand professionals, which will inspire more new ideas and opportunitiesand create an industry. From earlier empirical results, we cansee that high-tech small and micro-enterprises prefer to be embeddedinto large-scale enterprise networks and heterogeneous networksand are not concerned about the size of embedding degree, indicatingthat these companies realize the reality of the issue, namely thedevelopment of entrepreneurial opportunity to get together with lowbarriers to easily form an innovative project launched many othersmall and micro-enterprises. These businesses can immediately enterthe market and quickly saturate it, so companies cannot maintain alasting competitive advantage. Technology entrepreneurship is characterizedby high investment and high risk; the product may be new, but the market outlook may not be clear. This requires technologyentrepreneurs and start-ups to have the ability to recognize opportunityand have many different characteristics of different businessesand qualitative resources to help the enterprises to create, imagine, or seize new business opportunities.

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

Subsequent studies also needto add a dimension to a comprehensive study of cognitive corporateemphasis 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 nothave to be considered. Future research also will need to consider thatpolicy and industrial factors within different locations will have animpact on the company's technology entrepreneurial performance.

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