

Analysis on the operation mechanism of the ecosystem of crowd innovation space based on grounded theory

Ecosystem of
crowd
innovation
space

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Abstract

Purpose – The purpose of this paper is to study the operation mechanism of the ecosystem of crowd innovation space. Though the crowd innovation space is a new product of China's innovation-driven strategy, there are some barriers in operation. So, this problem is worthy of study.

Design/methodology/approach – In this study, data were obtained through four-month field investigation and semistructured interview, then classified and analyzed through grounded theory, because grounded theory is conducive to the exploration and discovery of new theories.

Findings – This study finds that the relationship between makerspace and entrepreneurs is strong social relational embeddedness. The relationship between crowd innovation space and governments and investment institutions is economic relational embeddedness. Under these social network ties, entrepreneurs, crowd innovation space, social investment institutions and so on can interact directly with each other to different degrees, carry out value cocreation activities and improve the benefits of all elements in the ecosystem and the ecosystem itself.

Originality/value – This study researches the operation mechanism of crowd innovation space ecosystem and identifies the ties between various elements in the ecosystem on the perspective of social network, which is conducive to improve the self-generating capacity of crowd innovation space and enhance the success rate of entrepreneurship.

Keywords Crowd innovation space, Economic relationship embeddedness, Social relationship embeddedness, Value cocreation

Paper type Research paper

1. Introduction

Since the 18th national congress of the Communist Party of China, China's economy is undergoing a transformation from tradition to innovation; in the meantime, the economic growth rate has been shifted from high speed to medium-high speed. At the critical time of China's economic transformation, crowd innovation space has turned into an indispensable of China's "mass entrepreneurship, mass innovation" strategy, bearing a vital mission of innovative development (Li *et al.*, 2017; Lin *et al.*, 2016). Crowd innovation space changes the traditional innovation and entrepreneurship mode from top to bottom, which makes the innovation and entrepreneurship subject diversified. Through resource integration and professional services, crowd innovation space makes innovation and entrepreneurship faster and easier, which plays a great role in China's "mass entrepreneurship and innovation" strategy (Li *et al.*, 2016). With the strong support of governments at all levels, the development



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of crowd innovation space presents a prosperous scene, but in fact, there are serious homogenization problem in field of crowd innovation space. In addition, most of the crowd innovation spaces are lack of resource integration ability and self-generating ability and the like (Li and Chen, 2017). Through investigation, our research team found that many crowd innovation spaces failed to grasp the pain points of entrepreneurs, failed to solve the core problems for the entrepreneurial team, leading to low incubation efficiency. It has aroused the attention of the government and the operators of crowd innovation spaces – how to establish a crowd innovation space ecosystem for the national innovation-driven strategy and make it sustainable? These are two of our research questions.

At present, there are many researches on the components of crowd innovation space ecosystem. Studies have shown that crowd innovation space ecosystem is a complex adaptive system with multiple participants, including entrepreneurs, crowd innovation space, government, universities, intermediary service institutions, financial investment institutions and so on. (Roundy *et al.*, 2018; Li *et al.*, 2014). Xie and Liu (2018) drew lessons from the ecosystem of “makerspace + incubator + Living Lab” and concluded that China’s crowd innovation space is a comprehensive service platform integrating the functions of “innovation” and “entrepreneurship” and “investment” and “incubator” (Xie and Liu, 2018). Neck *et al.* (2004) revealed that the entrepreneurial ecosystem consists of two parts via a two-stage research. The first part is related to the incubator; the second part is the formal and informal networks, infrastructure and community culture composed of universities, government, professional support services, capital services, intellectual resources and large enterprises. Therefore, based on the literature review, this study believes that the crowd innovation space is a center of the ecosystem with the goal of incubating innovation and entrepreneurship and connecting with the government, universities, enterprises, intermediary service organizations, social investment institutions and related environmental supporting elements in specific geographic space. There are few researches on the operation mechanism of the crowd innovation space ecosystem (Chen and Li, 2018; Autio, Nambisan and Thomas, 2018). After development over more than four years, the crowd innovation space ecosystem has not yet formed a theoretical system for the operation mechanism.

This study is based on the perspective of social network theory, combining relevant policy documents, media reports and other second-hand materials of crowd innovation space to design an interview outline (Ahuja, 2000). Our researchers obtained first-hand information through face-to-face interviews with the founders or principals of crowd innovation spaces, then, sorted out the text of the recordings and selected effective sentences centering on the connection between the crowd innovation space and other elements of the ecosystem. It is of theoretical and practical significance to explore the internal operation mechanism of crowd innovation space ecosystem by means of grounded theory and three-level coding.

2. Research design

2.1 Data

In order to improve the universality and reliability of this research, our researchers followed the following three principles: first, choose various types of crowd innovation spaces; second, select crowd innovation spaces with high influence, including the local crowd innovation space and the introduced crowd innovation space; third, the research team collected the data through face-to-face interviews, visits, media reports and internal information, so as to make the data comprehensive and fair. In the end, 13 crowd innovation spaces were selected, with their key information as follows (Table 1).

2.2 Data analysis and coding

The researchers conducted open coding for 13 cases by using double-blind method, which was respectively by two researchers to conceptualization of raw data, then in accordance with

Number	Makerspace	Rank	Industrial field	Core services	The interview time (hours)	Recording text (10,000 words)	Effective statement
1	Daijiaoshan Science and Technology Pioneer Park	National level	Manufacturing intelligent mechanical and electrical	Full chain incubation system, intellectual property	1.2	1.13	12
2	Kechuang Space	Provincial level	Photoelectric information	Technical guidance, industrial resources	2.0	3.18	14
3	ZALL Youth	Provincial level	We media, intelligent manufacturing	The youth community model, industrial resources	1.5	2.16	15
4	TechCode	National level	Artificial intelligence, great health, the new material	Investment, technical guidance, industry resources	2.0	3.28	23
5	Wuhan Makerspace	National level	New materials, new manufacturing	In-depth entrepreneurship guidance, investment	4.0	6.24	14
6	Dandelion Makerspace	Municipal level	New materials, new energy, photovoltaic	Investment, professional counselling	2.0	3.72	16
7	Lenovo Accelerator	Provincial level	Artificial intelligence, biological medicine	Professional counselling, Venture capital	2.0	2.12	16
8	Chuangxinghui Techno Park	Provincial level	Internet+ cultural creativity, intelligent manufacturing	Professional services, venture capital	1.0	1.55	21
9	Angel Wing (Tianshiyi)	National level	Biomedicine, chips, new materials, smart hardware	Investment, in-depth entrepreneurship	2.0	3.36	30
10	Luojia Makerspace	Provincial level	Transformation of scientific and technological achievements	Investment, innovation, incubation	1.5	1.95	13
11	Xinzhongxin Incubator	Provincial level	photoelectric	Incubation, media publicity	1.8	2.67	10
12	Fiberhome Innovation Valley	National level	ICT	The whole chain, joint research and development, industry resources	2.5	3.28	10
13	Wuhan University of Technology Makerspace	National level	Cultural creativity, software, new materials	Incubation	2.7	3.84	22

Table 1.
Summary table of 13 makerspaces

the principle of maximizing the reservation code for the first time. The two researchers obtained 251 and 233 effective statements about the operation mechanism of crowd innovation space ecosystem. We merged the codes of the two researchers, namely the meaning of the same or similar items into one, so we end up with 216 codes. Table 2 shows the coding used in this study.

3. Case study and discovery

3.1 Open coding

Open coding marks the actions or events by analyzing, summarizing and refining the statements in the original data or quoting viewpoints based on the original data (Juliet and Anselm *et al.*, 2015). The open coding about the operation mechanism of crowd innovation ecosystem is shown in Table 3.

3.2 Axial coding

On the basis of open decoding, from the perspective of social network theory, the internal relations among conceptual categories are explored (Juliet and Anselm, 2015; Spigel and Harrison, 2018). The axial coding of the ecosystem operation mechanism of crowd innovation space is shown in Table 4.

- (1) Social relationship embeddedness refers to the intangible affective ties that accumulate in the process of a series of cooperative activities (Li and Yang, 2017). From the original statement in Table 3 and the analysis in Table 4, it can be found that the integration, the fusion and mutual trust between the crowd innovation spaces and the entrepreneurs are important manifestations of social relationship embeddedness (Spigel, 2017). Through frequent and comprehensive interaction, the two sides

Makerspace	Data sources			
	Face-to-face interview materials	Site visit information	The network information	Internal brochures, PPT, etc.
Daijiashan Science and Technology Pioneer Park	A1	B1	C1	D1
Kechuang Space	A2	B2	C2	D2
ZALL Youth	A3	B3	C3	D3
TechCode	A4	B4	C4	D4
Wuhan Makerspace	A5	B5	C5	D5
Dandelion Makerspace	A6	B6	C6	D6
Lenovo Accelerator	A7	B7	C7	D7
Chuangxinghui Techno Park	A8	B8	C8	D8
Angel Wing (Tianshiyi)	A9	B9	C9	D9
Luojia Makerspace	A10	B10	C10	D10
Xinzhongxin Incubator	A11	B11	C11	D11
Fiberhome Innovation Valley	A12	B12	C12	D12
Wuhan University of Technology Makerspace	A13	B13	C13	D13

Table 2. Data encoding of 13 interviewees

Note(s): The number represents the serial number of the case, and the letter represents the data category. For example, “A1” represents the face-to-face interview data from Daijiashan Science and Technology Pioneer Park, and “B2” represents the on-site observation data from Kechuang space

Serial number	Conceptual category	The original statement
1	Profits	<p>We have part of the income from rent, other part from services. That is, we work with other agencies for a fee. There are also many services for free. (A2-10, B2-7)</p> <p>Firstly, our relatively stable income is rent and property; secondly, we have to fight for a subsidy from the government; and the third is investment income. (A13-19, C13-4)</p> <p>The first part of our income is rent, the second part is our service fee, the third part is some income from our external operation and the fourth part is government subsidy. Government subsidies account for about 20% of our income. (A11-11, C11-8)</p> <p>As for our main benefit, the government's subsidy is still the main part. We list it as our daily income. We sign an agreement with the government to subsidize; during this subsidy period, the government buys services from us as part of our source of income. And then the income from the rent is very small, because we do not even set the rent very high. Then there is the return on our equity investment, but our equity has not been refunded. In fact, the equity to calculate, the equity should be the fastest appreciation. (A10-13, B10-9)</p> <p>These project teams are also helping ZALL. For example, we have a Hanpai Alliance, which is also engaged in "we media." Last roadshow, our brand center contacted them soon, hoping that they could cooperate with our brand center. Sometimes they can help us. (A3-12)</p> <p>What really motivated us to do the incubator was the need for development in our industry. Because we found that a lot of innovators are excellent outside our system. In addition, in the process of business development with customers, we realized that some of the demands of customers require in-depth development and cooperation and even a separate company to provide personalized services. Based on our development demands, we established fiberhome innovation valley. The enterprises in our innovation valley have contributed a lot to the business of fiberhome. (A12-11, D12-3)</p> <p>We will remain in communication with the entrepreneur team, even if they leave our space. Because in the development of the enterprise, there will be a variety of problems, so if necessary, we will provide services for them. (A4-18, C4-11)</p> <p>We have regular project meetings, some once a week, some once a month, depending on the progress of the project. (A9-26, C9-15)</p> <p>Because in the early stage of entrepreneurship, there is short of communication between investors and entrepreneurs. For example, when investors evaluate an entrepreneur project, they usually ask a few questions and then leave, or there is no other contact. The entrepreneur did not know what was wrong with the project. So, there's a lot of information bias in this process, and for a variety of reasons, our founders felt that it was very important to do this kind of short-term project incubation, and we had to break down some of these barriers between the entrepreneur and the investor. (A9-3)</p>
2	Supplement each other	<p>(continued)</p>
3	Interaction	<p>(continued)</p>

Table 3.
Open coding of
makerspace ecosystem
operation mechanism

Serial number	Conceptual category	The original statement
4	Mutual trust	<p>We will communicate with the CEO of the incubating enterprise every month in order to timely grasp the demands of the project and provide help. But this is a process of mutual trust between both sides. The enterprise trusts us, and we also trust the enterprise. (A4-20)</p>
5	The fusion	<p>Relationship is very important in Chinese society. People are more familiar with and trust their acquaintances. (A6-11)</p> <p>We offer deep entrepreneurial mentoring, which means our service members will grow with the project until the day it is "sold" or the day it "dies". (A5-13, C5-6)</p> <p>Our staff will follow the growth of the project from the beginning, and then invest according to our evaluation of the project. We not only invest in them, we also provide government project application, financial, legal, business management, diagnostic consulting and other services. (A8-10)</p> <p>While providing physical space, it is more important to provide required services to enhance the relationship between the space and the enterprise. (A2, B2-6)</p>
6	Cooperation with the government	<p>We have a welfare activity for incubated enterprises, which is held once a month. Our incubated enterprises can communicate with each other, exchange technologies and create new ideas in the roadshow hall on the 18th floor through tea breaks or other forms of activity. (A4-23, D4-2)</p> <p>We have direct contact with the government, usually the deputy mayor or the leader of a higher position, because the deputy mayor is very clear about the industrial policy, the local industrial situation, economic situation and demands of government are very clear. (A9-30)</p> <p>Incubators have to deal with many departments related to commerce, such as human society, organization, science and technology. These departments also require us to provide some data frequently, because the government also needs to know the operation of incubators and enterprises. (A2-6)</p> <p>We show the government what we can do. If we cannot meet all the targets, not have good projects, not create some good activities, the government would help us once. When they feel that our crowd innovation space is not contributing to the local area, they would not provide additional help any more. We can create some influence for Wuchang district and help to improve the influence of Wuchang district in Wuhan, so the government will naturally pay more attention to us. I think it should be mutual. (A4-24)</p>

(continued)

Serial number	Conceptual category	The original statement
7	Cooperation with universities	<p>They provide us with a lot of persons with ability, and in return we offer them some internship position to help graduates on the job. Mutual benefit. (A8-14, B8-3)</p> <p>The universities we cooperate with include Wuhan University, Central China Normal University and Wuhan University of Science and Technology. For example, we have set up a small cooperative base in Wuhan University of Science and Technology, mainly in the field of new materials. (A4-5)</p> <p>We are also trying to go deeper into university laboratories, such as professors' research projects, which will be a pity if they are only used for publishing, but not for commercialization. However, it is not realistic for academic research professors to do such commercial things. Because their patents or technologies are still far away from commercial application, generally these technologies may lead the market for 5-10 years, so they need platforms like ours to help them connect with relevant enterprises and let them do the commercialization. (A7-9)</p>
8	Cooperation with other makerspace	<p>If the crowd innovation space should not only do seed incubation, but also do intermediate incubators and accelerators, this is unrealistic because the capital cost and the resource capacity requirements are too high. We can choose cooperation, not necessarily to do the whole stage of entrepreneurship. (A7-15)</p> <p>We cooperate with other crowd innovation spaces and incubators. Our investment fund will also invest in other projects of the other crowd innovation space, and then some of them will also ask us to assist in the project screening. We all have cooperation. (A9-23)</p> <p>At present, we only do small and medium-sized enterprise incubation, but do not do acceleration, because the physical space needed for acceleration is too large, we do not have the corresponding land. (A2-11)</p> <p>We usually cooperate with industrial parks, because we cannot invest so much money to build a park, the construction cycle is too long, the capital investment and the human cost are too high. This is not what we want, we hope to invest to return the profit quickly. (A8-18)</p>

Table 3.

Table 4.
Axial coding of
ecosystem operation
mechanism of crowd
innovation space

Serial number	Main conceptual category	Corresponding conceptual category	The corresponding relationship connotation
1	Social relational embeddedness	Interaction The fusion Mutual trust	The interaction and integration between the crowd innovation spaces and the incubators reflect the affective trust generated by understanding with each other. According to the actual demands of incubated enterprises, the crowd innovation spaces have to provide accurate services to help the enterprises grow and expand. Therefore, it is significant to know well about the information of incubated enterprises. Timely and effective communication is the guarantee of mutual understanding. In this process, the crowd innovation spaces should be aware of the details of the project or enterprise, and the project team needs to know the incubation capacity of the crowd innovation space. Only on the basis of mutual trust can the two sides be honest with each other, so as to master the real information to promote the development of them The profit of crowd innovation spaces cannot be guaranteed by government subsidies and rent income alone. The most important thing is the return on investment for the project. Investment in shares or service for equity, both of which make the crowd innovation space and the incubated enterprise be keen to promote project growth. After the success of the project, the crowd innovation space gains equity income, which can not only increase the income source of the space, but also make the crowd innovation space more dedicated to provide services for the growth of the project and help the enterprise to grow The cooperation between crowd innovation space and other subjects is more about the connection of material, that is, the sharing of more production materials, equipment and other materials. For incubation of the project, the crowd innovation space provides all kinds of service for entrepreneurs, in need of funds to provide financing services, in need of technical support to provide related technical guidance, in need of the market to provide the corresponding industry resources. The government, universities and other institutions of the crowd innovation space ecosystem, to provide entrepreneurs material, equipment, human resource, money and other tangible resources. The development of the project can create value for the enterprise itself, for the crowd innovation space to improve the income, for the government to improve the performance, for the university to improve the transformation of scientific and technological achievements
2	Value cocreation	Profits	
3	Economic relation embeddedness	Cooperation with the government Cooperation with university Cooperation with other makerspace Supplement each other	

establish trust and understanding, so that the crowd innovation spaces can truly understand the development demands of the incubated enterprises, providing them with targeted services and solving the entrepreneurial problems of the incubated enterprises. This is the premise and basis for the makerspace to accurately provide services for the incubated enterprises.

- (2) Economic relationship embeddedness refers to the formal interest ties between the two parties due to the input of tangible capital such as material and human resources (Li and Yang, 2017). The cooperation among the crowd innovation spaces and the government, universities is more of a connection of interests. The crowd innovation space aims to obtain the entrepreneurial resources needed by enterprises, while the government, universities and other crowd innovation spaces can also get the benefits they demand. Through cooperation with various subjects, crowd innovation space provides tangible entrepreneurial resources, such as capital, technology and talents, for incubated enterprises to help them grow.
- (3) Value cocreation theory holds that value is created by customers, enterprises and a large number of stakeholders; in addition, direct interaction is the core of value cocreation. Direct interaction is a simultaneous, interwoven and conversational process (Grönroos and Voima, 2013; Aarikka-Stenroos and Jaakkola, 2012). According to Table 3, it can be found that various elements of the crowd innovation space ecosystem form an entrepreneurial ecosystem of value creation by innovation and entrepreneurship subjects, crowd innovation space, government, universities and other relevant institutions interacting with each other in order to help the start-ups grow (Roundy *et al.*, 2018).

3.3 Selective coding

After the analysis of the open coding and axial coding of crowd innovation space operation mechanism, selective coding is carried out to abstract the connections between categories. The selective coding is shown in Figure 1.

4. Model implications

In order to make the crowd innovation space ecosystem run effectively (effective), it is needed to form a relationship embeddedness with all elements of the crowd innovation space ecosystem. The tie between crowd innovation space and entrepreneur is embedded with more attributes of social relationship, while the tie with government, universities and other elements is embedded with more attributes of economic relationship. Li *et al.* (2017) proposed the duality of relationship embeddedness, which is divided into economic embeddedness and social embeddedness according to its nature. Among them, economic relationship embeddedness refers to the formal interest connection between the two parties due to the input of tangible capital such as material and human resources. Social relationship embeddedness refers to the intangible affective connection formed by the two parties in the process of carrying out a series of cooperative activities centering on the relationship embeddedness. The degree of interaction between enterprises in repeated transactions determines the strength of social relationship embeddedness [11].

The social relationship between the crowd innovation space and entrepreneur is the start. In the interview, when describing the connection with incubated enterprises, the leaders of crowd innovation space emphasized the interaction, the fusion and mutual trust between the two sides. The crowd innovation space selects high-quality projects in familiar fields and interacts frequently and comprehensively with the project's founding team to get detailed

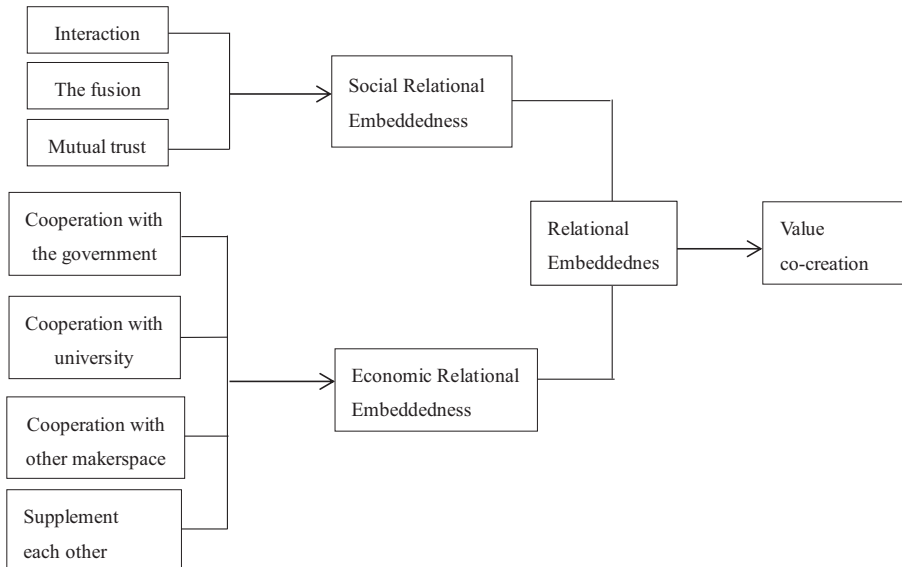


Figure 1.
Selective coding of
crowd innovation
space ecosystem
operation mechanism

information about founders, technical field, product market, financing demand and many other aspects. The project team also got to know the basic information and service ability of the crowd innovation space and other important aspects in the interaction process. On the basis of mutual trust, the two sides communicated frankly and effectively to form in-depth interaction. Depth of interaction is not only in the beginning period, but also throughout the growth of the project until the crowd innovation space exits the equity investment of incubated enterprises. During each period of project, both sides should maintain in-depth interaction, so as to facilitate the crowd innovation space to provide accurate and practical services for the project and promote the project. In a series of cooperative activities, a strong affective tie is formed between the crowd innovation space and the entrepreneurs (Vargo *et al.*, 2008).

The tie between the crowd innovation space and the government, universities, social investment institutions and other elements of interest generated by the input of tangible resources such as material, human and capital is equally important. The economic behaviors of both sides are affected by the network relationship between each other to varying degrees, forming the economic relationship embeddedness (He and Zhang, 2017).

In the face-to-face interview, the leader of crowd innovation space mainly mentioned the interaction and connection with the government, universities and investment institutions, but rarely mentioned the in-depth interaction with the third-party service institutions. The ability of a crowd innovation space is limited, which leads it difficult to maintain frequent interaction with every network node of the ecosystem, therefore, for some social network relationships that cannot make the crowd innovation space form unique competitiveness, they can spend less time and energy to acquire and maintain, for example, the crowd innovation space with third-party service institutions often need only through the contract in the form of the connections in a business, without the need for frequent interaction. Both sides of the economic behavior are affected by weak relationships embeddedness (Soda *et al.*, 2018).

The crowd innovation space is embedded in the relationship with all elements of the ecosystem and has frequent interactive behaviors with some them, which provides a

foundation for value cocreation (Alves, 2013; Christian and Annika, 2011). The core point of value co-creation is “direct interaction,” without direct interaction, there is no value cocreation (Kaushik *et al.*, 2015).

The innovators and entrepreneurs are the value source of the crowd innovation space ecosystem (Spilling, 1996; Spigel, 2017). The value of crowd innovation space is generated through direct interaction with the innovators and entrepreneurs. Through direct interaction with other elements of the ecosystem, crowd innovation space can obtain entrepreneurial resources needed for the growth of entrepreneurial enterprises and integrate government, universities and other resources to provide incubation services for projects. The value increment of a start-up comes from the process of value creation involving multiple parties (Wang and Liu, 2017).

Therefore, the value generating mechanism of the crowd innovation space ecosystem can be described as: the entrepreneurs and innovators and crowd innovation space form social relationship embeddedness, and the government, universities and other institutions form economic relationship embeddedness, in the coupling relationship between embedded in the direct interaction, then, value appreciation is generated, so as to realize the value of the crowd innovation space ecosystem.

5. Discussion

5.1 *The management suggestion for the crowd innovation spaces*

5.1.1 *Identifying key resources.* In the context of Chinese society, strong relationships are easier to obtain resources, strengthen cooperation, share knowledge and so on (Bian, 2000). Therefore, the establishment of strong relationships with key elements in the ecosystem plays an important role in the information acquisition and resource integration of crowd innovation space, which can improve their service capability. For example, the ties with third-party service institutions are necessary but not important for the crowd innovation space, because the connection between the crowd innovation space and third-party service institutions is easy to establish and maintain. As the crowd innovation space positioned at the transformation of scientific and technological achievements, then universities and research institutions with strong scientific research strength are its key resources. They should mainly focus on acquiring resources of universities and research institutes, forming strong relationship embeddedness and set acquiring other resources as their second target.

5.1.2 *Social relationship embeddedness.* Innovators and entrepreneurs are the most important elements in the ecosystem, because they are the source of the wealth for crowd innovation space (Mcmullen, 2018). Therefore, the crowd innovation space should mainly focus on obtaining high-quality project and entrepreneurial team, establishing strong social relationship embeddedness that can lead to trust based on mutual understanding. Then, the crowd innovation space and entrepreneurs will have a comprehensive understanding of each other and form an invisible affective tie during the process of the interaction and fusion. Crowd innovation space should have a deep understanding of the technology, market and talent demand of incubated enterprises, provide them with accurate services and practically solve the difficulties in the process of entrepreneurship. The mission of crowd innovation spaces is to help entrepreneurial enterprises to obtain entrepreneurial resources contributing to development and growth. Therefore, it is more important to establish social relationship embeddedness between the crowd innovation space and incubated enterprises so as to promote the common benefits of crowd innovation space ecosystem.

5.1.3 *Economic relationship embeddedness.* Social investment institutions, financial service institutions, large enterprises providing industrial resources and other elements in the crowd innovation space ecosystem are all profit-making organizations. With the goal

of pooling entrepreneurial resources, crowd innovation space cooperates with such organizations in terms of tangible capital to form formal interest ties. Economic relationship embeddedness is mostly aimed at economic benefit, based on the material interaction between enterprises, centering on the investment of assets and equipment. As an incubation service organization, crowd innovation space should form an economic relationship embeddedness with these entrepreneurial resources to integrate them for incubated enterprises so as to improve the entrepreneurial service capabilities of themselves.

5.2 Future research direction

5.2.1 Research from the perspective of structural embeddedness. Granovetter (1985) divided embeddedness network into relationship embeddedness and structural embeddedness, two dimensions (Granovetter, 1985). This study focuses on the relationship embeddedness analysis; while it can be analyzed on the perspective of structural embeddedness in future, dig out the structure of the crowd innovation space ecosystem network through network location, network density and network scale and improve the understanding of the social network of crowd innovation space ecosystem.

5.2.2 Transition from qualitative research to quantitative research. The research data on the crowd innovation space ecosystem can be transformed from semistructured interview to questionnaire collection and from qualitative analysis to quantitative analysis. Questions related to the communication between crowd innovation space and other elements in the ecosystem can be transformed into questionnaires. The combination of qualitative analysis and quantitative analysis makes the results more accurate and reliable.

5.2.3 Research from different subject perspectives. The elements of crowd innovation space ecosystem are multitudinous, including entrepreneurs, crowd innovation space and the government and so on. In a different perspective to explore the social network and the value creation mechanism of crowd innovation space ecosystem can help us to understand the inner mechanism of crowd innovation space ecosystem more comprehensively.

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