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**Title** The Development of Entrepreneurship Education Ecosystem in Chinese Research Universities: A Case Study  
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## **Introduction**

Chinese universities have begun to develop entrepreneurship education more than two decades, and this movement was fueled in 2002 that the Ministry of Education launched an initiative to facilitate the development of entrepreneurship education in nine selected research universities (Li, 2003). Research found that the promotion of entrepreneurship education requires building an ecosystem (Carvalho, 2010). The entrepreneurship ecosystems in European and American higher education institutions allow entrepreneurship activity and entrepreneurship education well-interacted, yet little research has been conducted to examine this regard in the Chinese context (Liu et al, 2009).

The purpose of this study is to analyze the current situation of entrepreneurship education in Chinese research universities, and to identify the elements and their dynamics of the entrepreneurship education ecosystem (this proposal will use abbreviation EEE thereafter). This study will provide an intuitive understanding of the operating mechanism of entrepreneurship education ecosystem in Chinese research universities.

## **Literature review**

The concept of entrepreneurship education ecosystem was first proposed by Katharine Dunn (2005) in the article entitled "Entrepreneurship Ecosystems". Through analyzing the practice in MIT, Dunn found that MIT has developed dozens of projects, organizations and centers to cultivate the entrepreneurship spirit in the campus, however, she did not provide definition of EEE.

Literature identified two levels of EEE: the macro social EEE and institutional EEE. At the macro level, EEE is a part of social entrepreneurship ecosystem, and is comprised of multiple actors: the individuals, groups, organizations, events, and community stake-holders (Brush, 2014). At institutional level, EEE is made up of a large number of closely linked and complementary projects, centers, student groups and entrepreneurship curriculum in a university (Liu et al, 2009). This study will identify key elements and examine their interactions in an EEE at institutional level. Literature about EEE can be classified into three groups: first, the studies on the concept connotation of EEE; second, the studies on elements and characteristics of EEE; and third, case studies on a particular university's EEE. According to Dong & Xu (2015), EEE means "dynamic and interactive communities composed of varied subsystems that generate symbiotic synergy to college entrepreneurship education and transformed from fragmented parts to an ecological system." Feters and associates (2010) studied the EEEs of three universities including the internal entrepreneurial activities as well as the interaction with external entrepreneurship community, and provided a series of recommendations for the development of a comprehensive university-based entrepreneurship ecosystem. Rice and associates (2014) highlighted seven key success factors that enable each of the six case universities in the study to achieve a sustainable and high-impact EEE.

Although increasing number of studies focus on EEE, little has explored on the operational mechanism of EEE, especially in the Chinese context. This paper aims to fill this gap by examining the interrelationships and dynamics among the structural

elements of the system. Therefore, this study will address the following two research questions:

- 1) How does Chinese research universities implement entrepreneurship education?
- 2) What are the elements of EEE in Chinese Universities? What are the relationships and interactions of these elements?

### **Theoretical perspective**

This study adopts “the four hierarchical structure of organizational ecology” as its analytic framework. The theory of organizational ecology adapts insights from biology to understand the relationship between organizational elements and environment. The four hierarchical structure of the organization ecology indicates that there are four hierarchical levels of organization from individuals, populations, communities to organizational system, which develop from lower to higher level (Liang & Xin, 2003). This study applies “the hierarchical structure of organization” framework to conduct in-depth study of the organization and its internal dynamic from individual level to system level. On the basis of describing the components and structural hierarchy of the EEE, this study applies the “D-I-C-E” model to explain the dynamic interaction among different parts and the environment in entrepreneurship education. The D-I-C-E model describes four ecological relationships in an ecosystem: distribution, interaction, competition and evolution. These four ecological relationships interact with each other, thus forming a complete ecosystem.

### **Methods and data sources**

This study adopted case study method. We chose S University in East China as our case for two reasons: First, S University is one of the flagship research universities in China. Second, S University was awarded the experimental university of entrepreneurship education by the Ministry of Education and Shanghai municipal government in 2002 and 2009 respectively. In 2010, S University established the School of Innovation & Entrepreneurship, one of the first such schools in Chinese universities.

According to the research questions, we collected/are collecting following data:

- 1) We requested institutional documents, records, and news reports of the practice of entrepreneurship education from the School of Innovation and Entrepreneurship of S University.
- 2) We are conducting in-depth interviews with institutional and departmental administrators, faculty members, entrepreneurs and students about their experiences, perceptions and concerns on the EEE of S University.

### **Preliminary findings**

S University established the School of Innovation and Entrepreneurship (SI&E) in 2010. SI&E recruits 50-60 full-time students each academic year across all colleges of the university, who are interested in starting their own business without change of their college affiliation. Faculty members in SI&E are all adjunct from S university and outside business. Coordinated by SI&E, the university is concentrating and integrating resources from diverse channels for entrepreneurship education at institutional level. Figure 1 shows the organizational hierarchy of education ecosystem:

### **Organizational Hierarchy**

### **Connotations in S University's entrepreneurship education ecosystem**

Individuals a course; a teacher; an activity or program, a students' organization, etc.

Populations curriculum system; teaching staff; key institutions; all kinds of activities, programs and organization, etc.

Communities Core Platform of Entrepreneurship Education; Dynamic network organization; Guarantee and supporting system;

Technology transfer channel, etc.

Ecosystem Entrepreneurship education ideas + Communities (evolving)

Figure 1. Organizational Hierarchy of S University's Education Ecosystem

At the individual level, a single course, an activity and an entrepreneurial education program forms the basis of entrepreneurship education ecosystem, each of which is responsible for certain goal. At the population level, these individual items form the population. For example, all courses form a curriculum system that teaches theoretical knowledge and practical skills of entrepreneurship. At the community level, same or related populations compose ecological communities. For example, curriculum system, teaching staff and all kinds of activities, programs and organizations make up the community of core platform of entrepreneurship education which serves as the main body of implementing entrepreneurship education. All these communities together with the university culture form the entire ecosystem. As entrepreneurship education starts relatively late in S University, and the entrepreneurial culture needs to be developed, S University's EEE is still evolving. Compared with mature university EEEs in developed countries, S university is engaging to improve the current imperfect curriculum system, offer high quality and professional enterprising teachers, strengthen the technology transformation function of the technology licensing office, and motivate the effective interaction between different parties for more effective entrepreneurship education.

## Conclusions

From the preliminary analysis of the current data, the study finds that although still very fragmented, an EEE in S University is in the making. This study will discuss the problems and strategies of developing a systematic design and construction of EEE through analyzing the text and interview data, and will reflect on the implication for other HEIs to develop EEE within and beyond the Chinese context.

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