

Practical Experiments on Designing and Implementing of Local Innovation Ecosystem

Akane MATSUMAE, Yukari NAGAI

School of Knowledge, Japan Advanced Institute of Technology

Abstract :

Due to the limitation of resources and networks in each local SME, it is essential to establish methodology to design an innovation ecosystem to generate a sustainable collaborative project among them.

Since each organization is run independently, generating a sustainable project among organizations is different from one within an established organization or one among organizations in vertical relationships. Gathering various organizations at one place is not enough to form the basis of sustainable collaborative innovation. Forming a knowledge-creating cluster among organizations is required as the first and inevitable phase to found the basis of collaboration.

The authors approached this problem empirically and introduced research methodology of dynamics, referring to knowledge creation theory.

From observation of accumulated case studies, the authors have found the secondary effect of co-creation to form an autonomous knowledge creation cluster among cross-cultural stakeholders.

Keywords : formation process, boundary object, innovation design, distributed local innovation ecosystem, knowledge creation

1. Introduction

The background of this research is the lack of a local innovation ecosystem that is led by the long-standing dominant centralized innovation ecosystem in Japan. Local SMEs remain dependent on vertical relationships with larger companies and excluded from innovative opportunities, channels, and human resources. The more outdated the existing centralized innovation ecosystem becomes, the more necessary it becomes to form an alternative one designed for local SMEs which account for more than 99% of the number of enterprises in Japan.

Due to the limitation of resources and networks in each local SME, it is essential to establish methodology to design an innovation ecosystem to generate a sustainable collaborative project among them.

2. Methodology

The authors approached this problem empirically and introduced research methodology of dynamics, referring to

knowledge creation theories; 1) simplification of research object into dynamic model, 2) empirical experiments, 3) analysis of observed phenomena, and 4) extraction of generalizable knowledge.

3. Key Design Elements

The key design elements are not only the structure of stakeholders but also the methodology dynamically chosen and shared among them. Several fundamental elements of our innovation design methodology and the relationships between them are introduced and explained in this session.

3.1 Co-Creation

The term co-creation is widely used as an important keyword in knowledge creation. However, it has not been defined clearly and the difference between co-creation and collaboration is ambiguous.

In this study we define co-creation as follows: to create something together sharing the phase of socialization among individuals. Inter-subjectivity among stakeholders is formed as the basis of co-creation by sharing socialization, which is the process of converting tacit knowledge to new tacit knowledge through shared experiences and social interaction (Nonaka and Takeuchi, 1995). Sharing a common goal among individuals is not required at the beginning of the co-creation process but appears through the process of dynamically developed co-creation.

On the other hand, we define collaboration, distinct from co-creation, as follows: to work together for a common goal. Sharing the phase of socialization is not required among individuals, but a common goal must be central among individuals from the beginning (Figure 1).

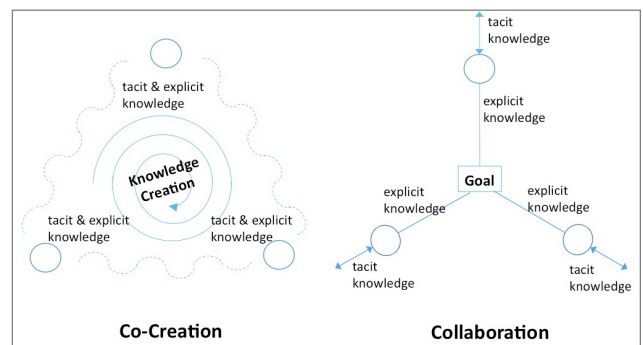


Figure 1. The Definitions of Co-Creation and Collaboration

3.2 Boundary Object

A Boundary Object is an object, which is adaptable to multiple viewpoints and robust enough to maintain identity across them (Star and Griesemer, 1989). By setting an appropriate boundary object in the project, different contexts can be bundled and sharpened. Focusing its function to involve different contexts in this particular co-creation, we introduce two concepts to characterize a boundary object from the analogy of Rankine's combined vortex; one is the size of a boundary object to describe its reach, and the other is vorticity of the boundary object to describe how the boundary object works in each context (Figure 2).

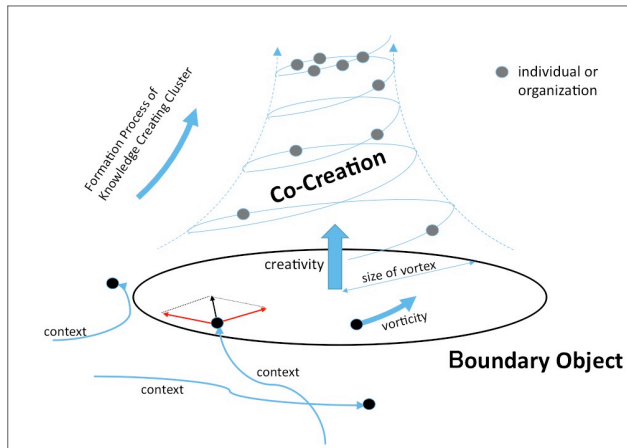


Figure 2. The Relationships among Design Elements in Dynamic Model

3.3 Context

Creation exists in various contexts. Some contexts are described in the same dimension, while others are described in different dimensions. Each individual or organization also has its own original context as a creator. A context can be altered through interaction with other contexts, and contexts can generate a new context.

In this paper we introduce the concept of context force vector to describe the direction and the magnitude of each creators' context. The sum of context force vector components in relation to the specific direction and vorticity of a boundary object is one of the parameters to determine a dynamic process of co-creation.

4. Practical Experiments

In Practical experiments, the authors design and implement horizontal and distributed local innovation ecosystems utilizing local national universities in several fields. In this context, the role of universities in university-industry collaborative projects is fundamentally changed, from the party involved to the facilitative platform among organizations.

4.1 Structural Engineering Experiments with SMEs

A nationwide autonomous knowledge-creating cluster is formed among diverse parties centering on a series of structural experiments to prove the engineering rationale and effectiveness of traditional Japanese architectural structure (Matsumae, 2014).

4.2 Design Thinking Programs with SMEs

The authors have been accumulating case studies globally which apply design thinking methodology to co-create innovation among various profit/non-profit organizations (Matsumae, 2014; Matsumae and Burrow, 2014; Matsumae, 2015). The basic framework of local innovation eco-system is designed focusing on the secondary effect of design thinking methodology to derived from its human-centered and highly collaborative process (Figure 3).

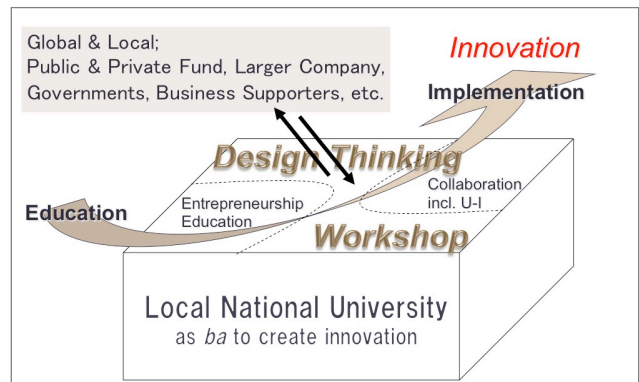


Figure 3. The Basic Framework of Local Innovation Ecosystem

5. Conclusion

From observation of accumulated case studies, the authors have found the secondary effect of co-creation to form an autonomous knowledge creation cluster among cross-cultural stakeholders and utilized to design and to manage innovation ecosystem.

As the engine of innovation ecosystem it is essential to choose a boundary object concurrent with co-creation process in terms of autonomy, sustainability, and the possibility of realization. It is natural that each stakeholder has motivation and capability to realize what is co-created by himself in his own context.

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