Service Innovation in Business Ecosystem: The Role of Enablers and Formation Cycle

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Abstract. Service innovation in business ecosystem is attracting more research interest; however, there is less insight into how the formation of ecosystem enables service innovation. The limited prior research on the formation of an ecosystem is characterized by different phases and activities associated with lifecycle of an ecosystem, however it is not connected to the service innovation processes. This work addresses this gap by proposing formation cycle of an ecosystem for service innovation.

Keywords: Service innovation · Business ecosystem · S-D logic

1 Introduction

Service innovation in business ecosystem (SIBE) refers to the process of innovating services through combining ecosystem partners (business partner, customer and other stakeholder) and their resources (e.g., knowledge and capabilities) that not only collaborate relationship amongst ecosystem but also appropriately configures value proposition for ecosystem partners.

Various studies in service innovation (SI) and ecosystem research stress the role of resources for successful innovation [1–3]. These studies show that resources are key element of successful ecosystem. Integration of resources is seen as key component of service innovation [4]. Regardless of acknowledgement of the significance of resource in the formation of ecosystem for service innovation, existing research has little to say about how firms can essentially develop ecosystem with regards to service innovation.

Therefore, research opportunity arises since little knowledge is known about formation of business ecosystem for service innovation [5], their resources configuration, actor interaction, network facilitation and its management [2, 6]. To address this research gap, this work aims to examine how firms can use resources in the formation of business ecosystem and linked that with service innovation. More precisely the paper;

- identifies the service innovation enablers; factors that support service innovation in ecosystem
- suggests the formation cycle of ecosystem consisting the role of resources that is used for crating ecosystem for service innovation purpose

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This aim is achieved by drawing on an extensive literature on service innovation, ecosystem and resources from mainly resource based view (RBV) and Service-dominant logic (SDL) and Service Science theoretical lenses. The first Section presents literature on service innovation in business ecosystem. Service innovation enablers in ecosystem are identified in Sect. 3. Having suggested ecosystem formation cycle, the final Section presents further research agenda on the topic.

2 Service Innovation in Business Ecosystem

The service industry makes more than three quarters of major economies of the world and is seen as a key for growth and competitiveness [7, 8]. The functions and significance of SI is defined as "it introduces something new into the way of life, organization, timing and placement of what can generally be described as the individual and collective processes that relate to consumers" [9]. Additionally, specifying the types of SI, IFM and IBM [10] defines service innovation as the combination of technology innovation, business model innovation, socio-organizational innovation, and demand innovation to improve existing or create new service value propositions (offerings or experiences) and service systems.

Service Science and SDL define innovation differently than traditional approach of manufacturing. It considers the role of customer as co-creator of value, where they use resources to co-create value [11]. It also defines innovation as a continuous and interactive process that involves the interaction among groups of actors who are interrelated in a dense network [4]. Therefore, service perspective conceptualizes innovation as a process of joint value creation with customer and other partners based on a wide integrated network approach [12].

As these definitions propose the previously ignored field e.g., network approach [12] or service systems [10] to maximize the value of innovation, it imagines the concept of ecosystem, where the value is co-created with its partners. This idea of business ecosystem was initially proposed by Moore [13], which is defined as "an economic community supported by a foundation of interacting organizations and individuals - the organisms of the business world" [13]. According to European Commission (EC), *business ecosystem* is the network of buyers, suppliers and makers of related products or services as well as the socio-economic environment [14].

This concept of SIBE denotes the process of innovating services e.g., types [10] through combining ecosystem partners. This concept of business ecosystem has been used widely. For example, European Commission (EC) has promoted the concept of ecosystem and service innovation under Euro 2020 to boost growth and jobs [15].

The concept of ecosystem flourishes from establishing relationships between business networks to the level of co-creation of value with business partners and their customers. In this process of co-creation of value in business ecosystem various factors play key role, which are termed as enablers. The following section discusses SIBE enablers.

3 Identification of Service Innovation Enablers in Ecosystem

The study of Tax and Stuart [16], Fyrberg and Juriado [17], and Vargo et al. [18] supports the active involvement of actor in service innovation. Similarly, RBV approach to service innovation [1, 2, 19] supports the view that service innovation process requires bundle of resources. The study of Vargo and Lusch, [19], Vargo et al. [11] argue that value proposition or benefit that any innovation brings must be considered for any tie ups. Similarly, work of Edvardsson and Tronvoll [6] demonstrates the significance of schemas in service innovation process. Thus, it is proposed that SIBE is enabled and simplified by four fundamental factors as;

- Resource capabilities: this includes all the operant i.e., skills and knowledge and operand i.e., physical resources [11] required for service innovation
- Actor involvement: this involve actor willingness, relationship, trust amongst innovation actors, their leadership skills and vision
- Changes in schemas: these are norms and rules that guide the actor and institutionalised forces that supports innovation [6]
- Value proposition: this includes for example, benefits that new offerings bring, equal distribution of value amongst service provider and customer

Capabilities are competence of resources mobilization and resources are as taken from the S-D logic both operant and operand resources that are required for service innovation [11, 19]. Actors are considered as resource integrators [19] who guide service innovation process. Changes in schemas such as to challenge status quo, norms and rules e.g., from inward R&D focus to open innovation orientation also enable service innovation [6]. Appropriate distribution of value amongst actors, and the benefits that new innovation brings to the ecosystem is defined as value propositions, which play key role to enable service innovation [11, 19].

These enabling factors bring S-D logic to the center of service innovation concept as it introduces service-dominant thinking [18, 19] to elaborate these factors e.g., operant resources i.e., application of skills and knowledge of actors to propose value. Proposed model also highlights the significance of social norms for service innovation, which was previously ignored [6].

These four factors set the foundation for firm to instigate their ecosystem. Ecosystem formation cycle is presented in the following section.

4 Towards Ecosystem Formation Cycle for Service Innovation

Moore [13], Thomas and Autio [5] presented various phases of ecosystem emergence. Service science and S-D logic have extended the boundary of firm for value creation. The significance of ecosystem is that no single firm could have created alone [20]. Based on the earlier discussion, as well as considering the theory of RBV and S-D logic this work offers six phases of ecosystem formation for service innovation. Figure 1 provides the six different steps that are required for the firm to initiate service innovation activities within their ecosystem.

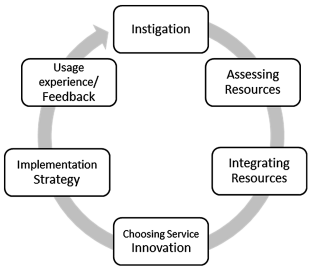

Fig. 1. Formation cycle of an ecosystem for service innovation

The formation of ecosystem for the purpose of service innovation starts right from the instigation of ecosystem [13] by identifying purpose of new initiative, partner, supplier, market, customer or other stakeholder who may be interested in the development of new service [5]. Ecosystem instigator needs to clarify the purpose of ecosystem that they want to build. The first step may involve the ecosystem activities identified by Thomas and Autio [5].

Having identified purpose, partners and market for the new development, the next step requires assessing and identifying resources which are needed for the new development. The work of Rusanen et al. [2] provides guidelines for identifying resource need for the new service offerings.

As value is created through integration of resources that is brought forwards by actors [21], it is essential for firms to establish system/procedure that simplifies resources integration between different stakeholders. However, this step is challenging as there is less academic insight as well as danger of disrupting existing service system of a firm. It also involves cost, time and effort [16].

Choosing types of resources is also reliant on types of service innovation [10]. Type of service innovation can be divided into several dimensions such as business model innovation and process innovation [10]. Choosing one dimension over other options vary in terms of available resources and objective of ecosystem formation. Business model innovation, for example, may need more customer operant resources in comparison to organization's internal process innovation. Similarly, nature of business also affects this choice, e.g., a mining company may need more operand resource in comparison to a consulting firm. Thus, choosing resource is dependent on the nature of business and types of SI.

Similarly, resources implementation stage brings various challenge, e.g., firm needs to carefully design processes that fulfil the resources for new development. Only the right resource implementation strategy brings assurance of finishing the new development at the right time. Therefore, proper planning is required, which involves various managerial works. Last but not least, the overall process may end up producing something unique that can be achieved as a result e.g., product or services. Customer can experience the service, or they may use product. How they experience the service/use product, their feedback is valuable to improve the overall function of ecosystem. It can be improved based on market feedback, and it is continuous process, thus, it is called formation cycle.

From the ecosystem instigation to the resource implementation phase, the success of process is more dependent on the initiator of the service innovation project, as initiator is the one who wants to create new space or modified service system. The rest of the phases of formation cycle rely on the customer as they are the ones who can define new space for new offerings.

5 Conclusion and Future Research

This work has drawn literature on service innovation in ecosystem. It has identified service innovation enablers as well as proposed ecosystem formation cycle. By proposing such enablers and cycle, we have responded the call of Thomas and Autio [5] among others [2, 6] The work contributed to the Service Science and SDL literature by identifying service innovation enablers and ecosystem formation cycle. The paper also attempts to discuss the concept of ecosystem from the perspectives of Service Science and SDL. In our knowledge the concept of SDL is not applied to the ecosystem literature, and previous researches have ignored the application of SDL in ecosystem [5, 13]. This study reveals that there are many factors that enable service innovation in ecosystems and firm has to go through various stages of ecosystem formation cycle. Initiating firm's own business ecosystem needs wider attention from the management so as to better manage enabling factors and formation cycle. Proposed model could serve as a basis for studying ecosystem formation cycle.

There are various limitations of this work; the overall work needs to be empirically validated as it only offers conceptual progressions requiring practical application of the model to validate the ecosystem formation cycle. Similarly, there are various challenges associated with every step of ecosystem formation. How an ecosystem initiator overcomes these challenges that makes a difference in the success of an overall project. Therefore, resources integration as well as their implementation for the new development remain research opportunity.

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