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The Role of Collaborative Networks in Business Model Innovation

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Abstract. It seems clear that innovation is a key factor in increasing competitiveness of European enterprises in a global market with new players from developing countries. It also seems clear that innovation in organizations must necessarily be based on an open concept that allows them to take advantage of ideas, competences and external resources, hence the concept of Collaborative Networks. Among the different types of innovation that are likely to be addressed within the concept of collaboration it is worth emphasizing what is known as Business Model Innovation. This kind of innovation aims to analyze and assess the logic of the business and establish new requirements for improving it, or changing it. This paper, based on several empirical research studies developed by the authors, describes the role that Collaborative Networks can play in the Business Model Innovation process.

Keywords: Collaborative Networks, Business Model, Innovation.

1 Introduction

It seems clear that innovation is one of the fundamental engines for improving the competitiveness of European companies, which are facing major threats posed by the entry onto the market of enterprises from new developing countries with lower production costs. On the other hand, it also seems understandable that approaching innovation in isolation is not a very viable alternative for many SMEs within this highly competitive environment. So, such organizations should consider an open innovation, and an open business model approach, to take advantage of ideas, competences and resources external to them. From the needs stated, during the last few years, the interest, both from the academic and business environment, in developing and applying the concept of Collaborative Networks for innovation development, as well as Business Model Innovation, has risen significantly [1][2].

Linking both stated topics seems to be an interesting issue to investigate. And this is what the research developed for this paper has focused on: the analysis of the role that Collaborative Networks can play in the process to specify and implement an Innovative Business Model.

2 Literature Review

The concept of innovation networks, although appearing in the literature in the late 80s [3], did not began to be researched extensively until the last decade. Rothwell [4], in his work on innovation models, already pointed to the fact that the nature of the innovation process evolves towards more interactive models, both on the intra- and inter-organizational levels. From the perspective of innovation networks design and management, the literature includes many approaches, although they are sometimes more conceptual and descriptive in nature [5][6][7] rather than experience based [8][9].

More recently, Chesbrough [10] extended the innovation networks vision through the term Open Innovation, characterized by the cooperation for innovation within wide horizontal and vertical networks of customers, start-ups, suppliers, and competitors. According to the Open Innovation paradigm, companies can and should use external ideas as well as those from their own R&D departments, and both internal and external paths to the market, in order to advance their technology and processes. Along with this line of argument, co-creation with customers/users as well as crowdsourcing have been particularly stressed [11][12].

As regards business models, both the definition of what a business model is, as well as what its key building blocks should be, have been topics for debate in the last few years [2][13][14][15][16][17].

However, there are few articles in the reviewed literature that specifically relate the concept of business models with the one of Collaborative Networks. In fact, those few references that link these two fields are mainly narrowly focused on just identifying the specific place collaborative networks should occupy in the business model framework, but not so much on a broader level related to studying the potential collaborative networks could have in order to redefine the business model itself. The work presented in this paper aims to shed some light on the latter aspect, based on the analysis of nine empirical case studies developed by the authors.

3 Methodology

The research conducted is based on nine application research experiences developed by the authors. These experiences, structured in the form of case studies, were developed following an action research approach. The research methodology adopted can be classified, therefore, as a qualitative research methodology, where case studies are frequently used for exploratory and theory building research [18]. In this research, based on the analysis developed, a set of enablers and inhibitors have been identified in order to foster collaborative business model innovation.

The application research experiences presented belong to different industries, and will be denoted with acronyms in compliance with confidentiality requirements: HINCO (office furniture fittings and hinge systems for automotive and white appliances industry), CARCO (automotive components), VALCO (valve manufacturer), ELCO (elevation systems components), LIFTCO (elevation systems),

MACHCO (machining supplier), COOLCO (refrigerators), COACHCO (luxury coaches), and RAILCO (railways).

In order to structure the insights derived from the empirical research developed, Osterwalder's business model framework has been used [2]. According to this framework: (1) The business model of a company is a simplified representation of its business logic, and; (2) The business model consists of four main areas (customer interface, value proposition, infrastructure management and profit equation) composed of nine basic business model building blocks that describe all the aspects of the business logic (see Fig. 1).

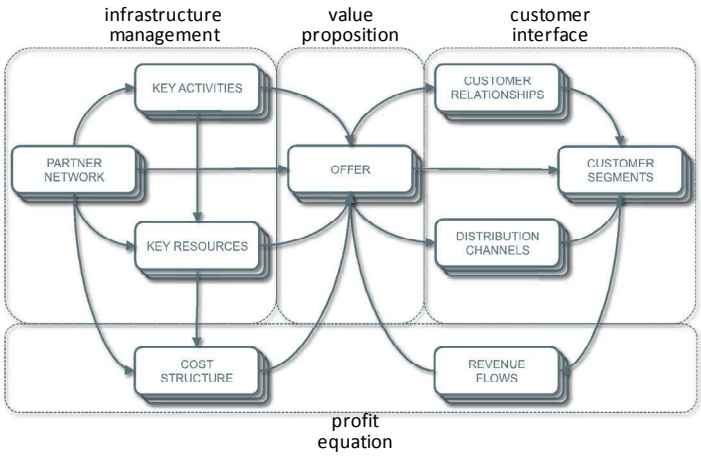

Fig. 1. Four main areas and building blocks of a business model. Source: Osterwalder [2]

4 Collaborative Business Model Innovation: Discussion

In this section, taking the empirical research developed as the basis, some insights on the potential that collaborative networks could play in order to redefine the business model itself are discussed. The presentation of these insights, in the form of benefits and risks, has been structured covering the four main areas of a business model (see Fig. 1). Also, the insights presented are supported by the cases developed and analyzed in the empirical research (see Table 1).

The first area to discuss is the Customer Interface one. In the innovation process of a business model the area relating to customers is crucial. Identifying target customer segments, the relationship to be established with them, and channels to be used, are primary factors of the new business model that drive the contents of the other areas.

The analysis of the Customer Interface, when approached from the limited perspective of a single organization, usually leads to significant inaccuracies: (1) It reduces the range of potential customers to those segments with which the

organization currently works; (2) It segments customers based on criteria related to the current value propositions; (3) It reduces the needs of each customer segment to those directly related to products and services currently offered; (4) It reduces the identification of needs and opportunities to one of the stages in the product life cycle, and; (5) It does not take into account the possibility of induced needs derived from other value propositions based on technologies, provision of services, or new forms of communication and distribution.

From the viewpoint of coming up with a new business model, this is perhaps one of the areas where the contribution of the partners in a Collaborative Network is most needed. In general, the analysis of the segments, needs and related opportunities, should be established with an approach not restricted to current existing products and services, but with a broader customer-related issues approach. Addressing the analysis from this perspective allows other partners to interact and create a wider vision which results in an improved identification of opportunities (see Case 1 in Table 1). However, the analysis of uncovered needs should also consider, not only the final use stage of the value proposition, but also an analysis, in collaboration with other partners, of the other value proposition life cycle stages, since failure to meet the needs of some of the stakeholders in any phase of the product life cycle might jeopardize final market success (see Case 2 in Table 1). Moreover, successful innovations origins are not so much related with collecting explicit needs expressed by the customers, but more from providing product features, accessories or services that customers had not even thought about. So, working in a network with technology partners and service providers in the same market segment can catalyze the generation of successful innovation ideas (see Case 3 in Table 1).

The second area for discussion is the Value Proposition one, which focuses on specifying the value propositions to cover the identified needs and opportunities. In line with what has been noted before, specifying the value propositions from the perspective of a single organization can lead to some inaccuracies: (1) Specifying value propositions that just cover only part of the customer's needs and consequently not having the necessary appeal to capture its buying decision; (2) Missing other potential value propositions that go beyond the current skills of the organization; (3) Not visualizing correctly the form of value proposition that customers want to perceive, or; (4) Not taking into account value propositions coming from the supply chain processes.

The specification of value propositions to serve the customer segments should be a compromise between market-related issues and those related to technology, as well as skills and the production processes domain. So it requires the participation of partners with different perspectives to offer appropriate products and services. Along the same lines, the participation of different stakeholders providing a functional vision throughout the life cycle, plus partners that could provide the necessary competences to develop the potential value propositions, should make up a discussion forum from which the final value proposition map would emerge (see Case 4 in Table 1). Within this collaboration relationship, it is necessary to make special mention of the participation of customers and users as well as key suppliers that add remarkably high value technology, components or functions to the products and services that make up the value proposition. Regarding the latter, in some cases, this collaboration might be

reciprocal (see Case 5 in Table 1). Also, when specifying new value propositions, another point that should not be forgotten is that the value perceived by the customer not only comes from the functionalities provided by products and services, but can also come from substantial changes in the supply chain in the form of more agile and profitable channels for communication or distribution (see Case 6 in Table 1).

The third area to discuss is Infrastructure Management. Identifying value propositions and customer interfaces within a collaborative network is an essential practice for creating an innovative business model. However, the business model specification also requires the consideration of the activities, resources and partnerships required for the creation-communication-delivery of the value proposition. In this sense, the analysis of the Infrastructure area without members of the network entails the following hazards: (1) Establishing requirements related to activities and/or resources that are impossible to deploy; (2) Specifying activities for outsourcing without the necessary contrast and level of commitment; (3) Specifying activities without the necessary sense of integration in the business; (4) Establishing activities and milestones without the required resources, or; (5) Not having the required visualization of the necessary and available partners for the implementation of activities or for complementing resources/capabilities.

The involvement of the network in the process of infrastructure specification for the new business is essential, and the participation of experts in the key processes needed for the creation, supply, and distribution of value propositions should be taken into account (see Case 7 and Case 8 in Table 1). Moreover, the need for outsourcing some of the activities and resources required implies seeking partners in a variety of activities and knowledge areas. These extra competences are not always to be found in what the network's partners can contribute. So another advantage of having a collaborative network is the potential it has for drawing on existing partners as antennas for search, referral and even for managing external networks with the necessary skills (see Case 9 in Table 1).

Finally, the fourth area for discussion is the Profit Equation one. It is always important to remember that the goal of any business is to offer value propositions by reaching an appropriate balance of the profit equation between the revenue streams and cost structure. The specification of a new business model within a collaborative network raises new questions that are different from those usually addressed in the case of a single organization. In this sense, not addressing this issue collaboratively, and therefore not establishing clear criteria of value contribution / return for each partner, can produce the following undesirable effects: (1) Disappointment regarding the return expectations of the network partners; (2) Underestimation of some proposals that may not generate direct income, or; (3) Specification of a model of revenue streams not commensurate with the cost structures of the partners.

In order to clarify the profit equation from a collaborative network context viewpoint, three complementary practices have been identified as highly relevant: (1) The establishing of channels to collect full information about the revenue generated; (2) The validation that the business is sustainable, and; (3) The creation of mechanisms for ensuring that the different partners achieve their return expectations (see Case 10 and Case 11 in Table 1).

Table 1. Case studies

Case	Area	Description
Case 1	Customer Interface	COOLCO, when using functional analysis to identify customer needs, starts from the "preserving food" concept, instead of the usual "refrigerator as machine" concept, and includes several partners of its value network related to the distribution of food.
Case 2	Customer Interface	In its analysis of customers needs, HINCO includes assembly, distribution, exhibition-sale and end users partners.
Case 3	Customer Interface	LIFTCO, incorporates into its innovation network technology centers and universities in order to identify new potential needs derived from the state-of-the-art technology.
Case 4	Value Proposition	CARCO, when addressing the business opportunities arising from the introduction of the electric car, incorporates within its value proposition specification process, customers and users, as well as partners from the insurance industry and charging stations.
Case 5	Value Proposition	HINCO is involved as a partner in the innovation network of its oven manufacturer customer, providing innovative solutions for the opening mechanism. In turn, the oven manufacturer participates in the innovation process of HINCO incorporating into the process a functional vision from the field of home appliances.
Case 6	Value Proposition	The introduction of a commercial product-service configurator, and the implementation of a production monitoring open system with its mold automotive supplier customers, allowed MACHCO, to greatly revalue its offer.
Case 7	Infrastructure Management	The commitment to offer a value proposition based on customization and highly flexible production systems has conditioned the participation of partners with high competences in the adaptation of production systems for mass customization during the business model innovation process of HINCO.
Case 8	Infrastructure Management	Committing oneself to, and launching a product that incorporates high-performance technology, requires the participation of technology centers and universities within the specification of resources in the new business model of RAILCO. The role in this network is twofold, the estimation of resources and time involved, as well the development of new product technology.
Case 9	Infrastructure Management	The need for advanced technical materials knowledge in the design of steel structures for COACHCO has been routed through one of the technology centers in its network. The role of this partner is the identification and management of new external partners not directly involved in the core group of the network.
Case 10	Profit Equation	VALCO, has the support of several technology centers for the task of specifying a new business model based on maintenance and remote diagnosis. Neither of these partners expects to have a stake in the new business.
Case 11	Profit Equation	LIFTCO, has based its new product development strategy on a long-term agreement with universities and technology centers. These partners do not benefit from the exploitation results of their technical developments. By contrast, within the same network, ELCO, manufacturer of elevation systems components, has an agreement with LIFTCO for sharing business results.

5 Conclusions

The results emerging out of the analysis of the empirical research cases developed and presented above, highlight the important role that collaborative networks can play in the process of business model innovation.

The findings presented could certainly help many organizations, especially those devoted to a systemic innovation approach, to set up collaborative networks to support their business model innovation process.

The development of general conceptual frameworks, methodologies and ICT tools that support a continuous process of opportunity discovery, innovation and implementation of new business models based on the collaboration among partners, is envisaged as a major challenge for future research.

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