From innovation networks to open innovation communities: Co-creating value with customers and users

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Abstract

Customer-centric open innovation is increasingly evident in the creation and management of innovation. The traditional perspective to managing innovation networks is based on various project management models. However, the shift from projects to processes in innovation development along with customer-centric open innovation communities brings new challenges and the traditional view becomes insufficient. An open innovation environment such as the living lab suggests that the objectives of the development work are undefined and under constant change, as opposed to the conventional thinking. Moreover, customers and users are co-creators of value, who need to be encouraged to interact via facilitative methods and group work tools, instead of control and command. In sum, managing innovation in open communities should address the importance of users and calls for more flexibility.

Keywords: Open innovation, Living lab, Innovation network, Co-creation, Customer-centric

Introduction

Understanding customers has become an essential part of firms' business and innovation activity. Particularly, the Internet has radically altered the proposition that listening to the customers can help firms improve their products and services (Michel et al. 2008). Today's organizations need a constant flow of ideas while competing through added value factors like emergent technologies or fast new product development (Kao 1997). Thus, as hardly any company can ignore customers' input to its innovation process, a growing number of firms pay attention to the users' views as a source of useful feedback, relevant use experiences, important ideas, and new information. As a result, one of the most important and fundamental trends in contemporary consumer society is the progressive inclusion of consumers in the processes where value is produced around products and brands (Arvidsson 2008). Firms now involve consumers in the co-production of brands, experiences, design, marketing strategies, and even product development (Zwick et al. 2008).

The most valuable technologies are more and more innovated by networks. Innovation networks comprise those linked actors that create, acquire, and integrate diverse knowledge and skills required to innovate complex technologies. According to previous literature (e.g. Snow et al. 1992; Calia et al. 2007), innovation networks provide the necessary resources to change the firm's business model in order to achieve competitiveness. However, there is a major change in the ways firms consider their operation in innovation networks, which is due to the fact that the emerging concept of open innovation is of particular interest to industries today (Wu and Lin 2001; Paulson et al. 2004; Bonaccorsi et al. 2006). Open innovation involves communities of heterogeneous actors that participate innovation development jointly, and its idea of involving customers and end-users as co-innovators has become highly popular.

An organized collaboration among the participants involved is a key aspect of innovation networks (Gadde et al. 2003). Users are primarily integrated to companies' R&D-processes in order to help firms to exploit first-hand use experiences and ideas for new products and stimulate employees' imagination in development projects (Alves et al. 2007). Hence, management in innovation networks often takes the project management perspective and aims at creating value

to customers based on their suggested needs (Andersen and Vaagaasar 2009). However, the depth of integration of customers in the open innovation model differs from the conventional view, and there is variation even between the diverse forms of open innovation such as open sourcing (von Hippel 2001; 2006), crowdsourcing (Brabham 2008), and the living labs model (Mensik and Katzy, 2007; Schumacher and Niitamo 2008; Ståhlbröst, 2008). Along with the fact that customers and users have become true co-creators of value (Möller et al. 2008) the open innovation model is called customer-centric. Yet, the literature is silent of the management challenges in customer-centric open innovation development (Feller and Fitzgerald 2002).

Frameworks and models of the management customer value co-creation from the open innovation perspective are scarce. Thus, our study focuses this research gap by contributing to the discussions of collaborative user innovation development. For clarity purposes, the study focuses on one type of open innovation model, namely the living labs model. Specifically, in this work-in-progress paper we aim to: (1) describe what customer-centric innovation development is, (2) identify the users' roles in the living lab innovation development model, and (3) analyze the managerial challenges in employing an open innovation model as compared to the traditional project model. In the study, we converse open innovation via the living labs model and compare it with the traditional project management model.

This paper is structured as follows: after this brief introduction, we discuss the foundations of project management models. Then, we talk about the changing role of customers and users in innovation development and proceed with the characterization of the living labs model as a form of open innovation. Finally, we introduce our ongoing research and present some preliminary results from the analysis of the living lab innovation model.

Project management and the era of major change

Innovation development can be seen as a project that aims at producing innovative products and services. A project and its distinction from product and services are widely depicted in the literature (e.g. Vasconcellos 1988; Apte and Vepsalainen 1993; Cova et al. 1993). In projects, customer involvement helps companies to better understand the users' needs which reduces market risk in the launch of new products and services, improves return on investment and time to market. All in all, various project definitions (Ahmed 1993; Meredith and Mantel 1995) describe that a project targets to well-defined set of desired end results and a single project itself is non-recurrent. Conversely, there is an assumption that the continuous interest of doing projects refers to recurrent, systematic and planned action. In this vein, operating through projects forms a specific type of project business model (e.g. Leminen 1999; Tikkanen et al. 2007).

The fundaments of management of projects are based on attaining end results. The management of a project reaches goals via using different tools and methods and the project plan and the progress of the project in many industries is controlled with the help of diverse project management models (Eskerod and Riis 2009) such as the 'stage gate model' or the 'spice model'. In these models, the planned and realized utilization of resources, as well as specific sub objectives at certain stage of the project are compared. The decisions of possible corrective actions are hence conducted in different phases of the project. The deviations of projects typically deal with unmet timetable or exceeded budget. Perceived uncertainty can be decreased by splitting the project into short phases or subprojects, as well as by applying the 'water flow' or 'sequential project models' in which different phases overlap each other (Meredith and Mantel 1995).

Project management is now facing new challenges. Traditionally, theories have focused on competencies, knowledge and learning within or between firms (Jeppesen and Molin 2006). Increasingly, knowledge, ideas and even development competencies are gained from the end-users, who join the development work from the scratch in order to get maximal use value of the innovated product or service. Moreover, Kim and Wilemon (2002) state that uncertainty in new product and service development has been connected with the early phases of the project and especially with the so-called fuzzy-end of innovation development process. Whereas the objectives and goal of the innovation development project are usually clearly pre-set, the idea of involving users into project as value co-creators causes traditional project management models to become insufficient. Along with the advent of new technologically enabled forms of creative collaboration such as the "wiki" and collaborative models like the living labs consumers have been recognized as full-fledged collective creative forces in their own right (Kozinets et al. 2008), and the innovation development requires new project management methods.

Increasing importance of users in innovation development

We anticipate that the role of users differs in the forms of innovation creation. Innovative organizations exploit various sources of ideas for new products and stimulate employees' imagination in order to fill the pipeline that nourishes new products (Alves et al. 2007). However, people today live in an ever-shifting world of networks redefining their lifestyles and fragmenting culture (Arakji and Lang 2007). Firms are finding it difficult and costly to understand their customers and it is becoming a challenge to develop products that meet hyper-differentiated consumer demands (Arakji and Lang 2007). Some pioneering companies no longer attempt to grasp the details of consumer needs and use experiences; they are instead reassigning the design aspect of product development to external sources of ideas, including their own customers, thus giving rise to a new business model where firms are outsourcing product innovation and development to their consumers (Arakji and Lang 2007).

The life cycles of products are shortening in many industries. As a result, shorter life cycles lead to the fact that the development phases of products should be increasingly faster and the time period for revenues from the profit should be better addressed (Duhamel et al. 1995). The traditional perspective to innovation development projects uncovers the role of lead users as a response to this challenge; they are those individuals whose everyday life is affected by the consumption of the firm's product, and who have the skills to modify and personalize the product (Dahlander et al. 2007). Moreover, the simultaneous emergence of social media enables users to actively interact and co-create value with firms over the web. As information technology (IT) is permeating the various dimensions of new product development, the innovating firm's relationship with its customers is changing, allowing us to relax the conventional assumption of complete separation between producers and consumers (Arakji and Lang 2007). Technology is enabling new forms of producer–consumer collaboration in the product development process.

The literature has underlined the shifting role of users as innovators (Dahlander et al. 2008). Parallel user and customer insights as a part of the development process is seen to speed up the development phases of products and services. Moreover, it has been documented that understanding of user and customer needs is expensive and labor intensive (Korkman 2006) and Zaltmann (2003) states that at least 80 % of the new product and services fail when launching them into market, even if in many cases customer analysis have been conducted. Therefore, the need for integrating end users and customers to a new product and service development as actual co-developers has been increasingly accepted. A deeper user and customer involvement and

integration to development phases enables a company to understand its customers' actual behavior, needs and future trends better.

The prevailing avenue of integrating users in the innovation development is called customer driven approach. Probably the most widely spread traditional way in innovation projects has been to collect customer feedback concerning the company's products and services as well as its procedures (Hauser 1984; Payne 2006). However, customers and users are now so intimately involved in the development and usage processes that they have become true co-creators of value (Möller et al. 2008) and the new open innovation model is now called customer-centric. To co-create value, the firm and its customers representing the open innovation community must reconcile their objectives and define both the role and effort required from each party and an equitable division of the returns (Chesbrough 2003). In fact, Chesbrough and Appleyard (2007) point out that shifting the focus from ownership to the concept of openness in projects requires a reconsideration of the processes that underlie value creation and capture.

Customer-centric innovation development has challenges. Occasional surveys targeted to the clientele at a set time period do not allow for continuous data collection despite the ever changing customer attitudes. Instead, when developing a new product or a service via customer-centric model, user insight and input steer the direction of development processes heavily. For example, Chesbrough and Appleyard (2007) claim that the notion of openness is defined as the pooling of knowledge for innovative purposes where the contributors have access to the inputs of others and cannot exert exclusive rights over the resultant innovation, thus, value created through an open process would approach that of a public good. Hence, Cassiman and Valentini (2009) argue that the strategic organization of R&D should simultaneously consider the choice of the type of R&D to be performed (basicness) and the organization of R&D, which includes the choice about the exposure of the R&D project to knowledge from outside the firm (openness).

The living lab model: from projects to processes

When employing the open innovation model, user input steers the direction of innovation creation processes heavily (Chesbrough 2003). As opposed to the traditional models, the development work in the open innovation model is based on the needs and co-creation activities of the users and user communities, and the end result of the development work is often unforeseeable. Thus, it is obvious that traditional project management models, where fundamental assumptions of the management are based on a clear measurable goal of a project (Maylor et al., 2008), fail to apply in the open innovation model. It is hence useful to investigate the characteristics of open innovation in order to assess its requirements for the management. Here, we focus on the living lab model, as suggested by, e.g., Leminen and Westerlund (2008). We see the living lab model as a form of open innovation, where innovation creation is not a development project, rather a continuous process of development work.

The concept of 'living lab' has quickly attracted science and practice communities (Ståhlbröst 2006; Mulder et al. 2006; Kusiak 2007). Living labs are user-centric environments for open innovation (Schaffers et al. 2007) which demands greater collaboration between creators and users as it happens through collaboration across diverse communities. A living lab is an open innovation system where users, companies, governments and non-profit organisations interact around complex projects in different societal domains (Mensink and Katzy 2007). The aim is to develop and test innovations that will best meet the customer needs and gain market success at first hand. Furthermore, living labs pursue user community driven innovation based on real life experiments. Hence, Mulder et al. (2006) point out that it represents a research methodology for

sensing, prototyping, validating and refining complex solutions in multiple and evolving real-life contexts. A remarkable aspect of the living lab concept is that it provides a concrete setting compared to other forms of open and collaborative innovation (Schaffers et al. 2007).

Stewart (2007) makes a distinction between different types of living labs. He identifies them as narrow but 'sizable' communities of expert users, whole bounded populations, living labs for technical service development, and living labs for non-technical research using service platform in business clusters. All these types have something in common: they employ an array of actors representing different rationale for joining the innovation development. Indeed, according to Schaffers et al. (2007), networking is an integral part of living labs. Living labs allow a focus on value generation and distribution in a network of cooperating partners. Together these partners, consisting of a number of living labs with customers and end-users, partner firms, public sector and academia, will join forces as a network to develop and offer a gradually growing set of networked products and services and share information, knowledge and experience on the development work at hand.

We approach the open innovation management theme through a qualitative empirical analysis. We focus on a living lab where customers and users co-create value with firms in order to produce new product and service innovations. We study this case thoroughly by collecting primary data from the participants using multiple research methods: semi-structured interviews and the workshop method. The informants in the study include especially senior management, such as CEOs, Chairs of the Board, and sales directors of firms that wish to employ the open innovation model to boost their business. The case living lab locates in the region of Finland. The material is being collected from early 2008 to late 2009, thus the interviews and data analysis are still in progress. However, in this paper we are able to provide some preliminary results and discuss the open innovation management challenge as compared to the traditional project model. We propose that a living lab project management differs from that of traditional ones in several ways (see Table 1).

Table 1 Differences between the traditional project model and the living lab model

	Traditional project model	**Living lab project model**
1. Objective	Targeted to a preliminary defined project goal	Targeted to an undefined objective; final objectives are changing based on the needs of users
2. Role of the project manager	Management and control of resources	Management and control of own resources; facilitation and encouragement of users
3. Control point of the project	Adjustment points are based on a predefined project plan	Adjustment can be done in flexible way in an extreme case on a daily basis
4. Role of users and user communities	Users are an object of a study; they may test and verify products and services	Equal and active participant of project; co-creator of a product or a service
5. Resources and capabilities	To efficiently utilize own and the others' resources in the network	Readjustment and redefinition are the next steps of the project: flexibility in integrating different types of knowledge in the living lab

		network; facilitation of end users and user communities
6 .Tools	Project management tools and methods	Facilitative methods and group work tools

First, it seems that the objective of a traditional project is targeted to strictly pre-defined goals. Success of the project is then evaluated by mirroring the realized outcomes with the original project plan. Based on our experiences from the case living lab, the open innovation model is different. The living lab project targets to an undefined objective with the exception of loose guidelines or directions to initiate the collaboration. Thus, the final objective is merely based on interaction and co-creation processes with firms, customers and end users, as well other possible actors. It is essential to understand that there may emerge also several different results or targets, which may not be seen at the beginning of the development project.

Second, there is a clear distinction in the role of the project manager between the two models. In the traditional project management model, the project manager manages and controls the resources and time in concordance with the project plan. However, in the living lab model the project manager is not able to manage or control the resources to the same degree, because users join the project on a voluntary basis. Hence, the role of the project manager in living labs differs radically from a traditional project and it is necessary to create an adaptable and open working environment; the participants cannot be managed and controlled in a similar way to firm employees or hired personnel. A living lab project is based on facilitating the motivation of end users (see e.g. Leminen and Westerlund 2008), which is resource intensive.

Third, a traditional project model has preset control points. Thus, an adjustment of the project target or, in extreme cases, the termination of project is based on the project plan. However, when involving end users into the living lab type of open innovation model the adjustment of the project points can be done daily. In this vein, the living lab project is self organizing and aims at a target based on the end customers' activity and involvement.

Fourth, the traditional project model sees customers as an object of the study. In general, users may join the project in different roles and phases of the product lifecycle, starting from trend identification and ending at the launch of the product via co-marketing of product and services. Moreover, end users may test and verify products and services (Schumacher and Niitamo 2008; Ståhlbröst 2008). However, users are seen equal to other participants of the living lab as co-creators of value and innovation. Because end users have key role in understanding their everyday life, they are expected to actively participate depth analyses concerning their life or certain situations. In our case, end users describe their everyday needs and experiences in order for firms to facilitate the product and service development processes.

Fifth, resources in the traditional project are based on those possessed by the firm and its partners in the network. The resources are spent on conducting activities on a project plan. Traditional projects emphasize the capability to efficiently utilize extant resources. A living lab project requires new type of resources and capabilities, which are obtained by integrating knowledge in the internal and external living lab network. Therefore, the living lab project leans to end users and user communities. Working with users and user communities is resource intensive and a key managerial capability is to facilitate these user networks and communities. Thus, in living labs one needs to readjust and redefine the next steps of project.

Sixth, a traditional project is controlled via large assortment of available project management methods and tools, such as the stage gate model, or with project management software, such as Microsoft Project. Their idea is to enable the project management to control and monitor efficiently the progress of the innovation development project. Virtually every company has a certain way to manage its own project. However, in a living lab project it is more useful to utilize diverse facilitative methods and group work tools. Dahlander et al. (2007) emphasize that open innovation communities make collective decisions about future directions, control and coordination. Thus, dealing with governance is not a simple matter, as it is a dynamic concept, based on the nexus between heterogeneous actors and their activities.

Discussion and conclusions

Innovation networks have gained increasing importance in scholarly and practitioner writings on the management of innovation. This is because networks are seen as the locus of innovation. The leading-edge companies are now learning to identify areas of interest and then develop both formal and informal mechanisms to create open innovation networks (Gassmann 2006; Chesbrough and Appleyard, 2007). Firms' success depends on how innovation networks function, the ways networks can be nurtured, and the impact these networks will have on the ways firms bring products to market. However, managing innovation can be demanding; doing so in open innovation networks will raise some additional challenges (Dittrich and Dyusters 2007). Companies involved in building and managing open innovation networks are required to be motivated and committed both to their corporate goals and to those of the network. In addition, they should address the importance of customers and users in the networks.

The use of open innovation model, such as the living lab, has managerial challenges. Considering the nature of the living lab, one may ask whether it is a new way of developing products and services. Or, maybe it is the addition to the knowledge of the different types of project model. This paper proposes that the living lab project is a new type of project model. In the traditional innovation development model, objectives and goals of the project are strictly preset in order to reduce uncertainty of conducting risky projects. Furthermore, the project manager should take care of the management and control of resources, and adjustment points are based on the predefined project plan. Moreover, in the traditional model customers and users are the objective of the study; they may, for example, test and verify new products and services. This model requires that the manager can efficiently utilize both the firm's own resources and the others' resources in the network. The task is enforced by the use of project management methods and tools.

The open innovation model is different. Opposite to the traditional model, the living lab as a form of open innovation based project, targets to undefined objectives, with the possibility of changing and evolving objectives. Management and control focuses own resources, because it is fairly difficult to control the voluntarily participating users and customers. Moreover, the project manager, if there is any, should focus on facilitating and encouraging the users to participate the work actively. The open model is flexible: adjustments to goals and operations can be made on a daily basis. The customer-centric living labs emphasize the role of customers and users but call for an equal and active role for the other participants as co-creators of the innovation. This way of working with innovations requires that the next steps of the project are constantly readjusted and refined according to the evolving goals; thus flexibility in integrating knowledge in the network is crucial. The fundamental idea behind flexibility of a project is to strive to multiple solutions which are not seen in advance with the help of users. In addition, resources are spent on collaborative processes with the users, which mean that the planning and conducting of activities

take place simultaneously. This makes a connection with the service science literature, according to which service is produced and used simultaneously (e.g. Vargo and Lusch, 2004). Finally, the operation is supported via facilitative methods and group work tools.

The study has important implications to both scholars and business practitioners. Despite the undisputable benefits of traditional project management thinking, customers and users are increasingly considered as voluntary informants and co-creators of knowledge and value, and not as objectives of one-way market research. Furthermore, customers and users are taking more active roles in co-developing firms' current business and co-creation of their new business. The shift from traditional innovation networks to open innovation communities requires firms to acknowledge that instead of 'following the customers' they now must 'dance with them'. Whereas closed innovation refers to processes that limit the use of internal knowledge within a company and make little or no use of external knowledge, open innovation builds upon the collective design and production of value, goods and knowledge. Open innovation communities enable an organization to leverage new potential for creating and capturing value (Chesbrough, 2007). Harnessing this potential is an interesting issue for further research and the future studies should focus the issue.

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