

THE IMPACT OF INTRA- AND INTERFIRM COLLABORATION ON SERVICE INNOVATION IN B2B FIRMS

Competitive paper

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Abstract

Service innovation is recognized as a fundamental source of competitive advantage in B2B settings, with positive effects on customers, business partners, employees, and society. Scholars have pointed out that innovation does not result from a single economic actor but from a complex process in which a range of actors interact. Previous studies on service innovation in B2B highlight the integration of multiple actors in the service innovation process and suggest that it improves performance. However the knowledge on the performance effect of intra- and inter-firm collaboration is nevertheless not conclusive. The aim of this study is to provide new perspectives in explaining how intra- and interfirm collaboration in B2B can improve service innovation performance. Specifically, we examine the effect of involving employees, customers and partners in the service innovation process for incremental and radical innovation. In order to pursue our aim, an empirical study was conducted on a sample of 404 B2B firms in five European countries (Finland, Austria, Italy, Sweden and Switzerland). The results of the study show that actors have different roles in service innovation: intra-firm collaboration and customer collaboration have an effect for both incremental and radical service innovation, while business partner involvement has an effect on radical service innovation.

Keywords: Service innovation, cross-functional teams, customer involvement, collaborative innovation, innovation performance, business-to-business services

INTRODUCTION

Research suggests that, “innovation is a powerful explanatory factor behind differences in performance between firms,” and that, “firms that succeed in innovation prosper, at the expense of their less able competitors,” (Fagerberg, 2005, p. 20). As world’s economies and business become more service-oriented, service innovation is recognized as a key ingredient to compete and a fundamental source of economic growth, with positive effects for customers, business partners, employees, and society as a whole (Chesbrough & Spohrer 2006). Firms thus are increasingly searching for new ways to organize and manage service innovation for sustainable business. Due to the nature of services as actors’ activities and interactions in value creating processes where various tangible and intangible elements are combined, several actors and resources need to be considered in service innovation (e.g. Halliday & Trott 2010; Eisingerich et al. 2009). Companies are dealing with the challenge of establishing and managing service processes, relationships and interactions among the actors, using and combining resources, and performing activities in order to enable value creation in the service innovation process. In particular, Melton and Hartline (2010) found that involvement of both customers and employees have an effect on service innovation performance.

The growing and multifaceted role of services in the modern economies has progressively led to the emergence of various research contributions that share a common effort to take into account the crucial role of actors’ resource integration in innovation processes (Metcalf and Miles 2000; Gallouj 2002; Carlsson et al. 2002). Furthermore, research increasingly emphasizes the importance of studying not only the innovation output itself but also the service innovation process including the network of actors constituting the context for and source of resources for innovating (Rusanen et al. 2014; Gummesson & Mele 2010; Perks & Mosley 2011). These networks can be conceptualized as service systems that are “configurations of resources including people, information, and technology, connected to other systems by value propositions” (Vargo et al., 2008, p. 145). Lusch and Nambisan (2014) describe service innovation as a collaborative process involving a diverse network of actors where resource integration is the fundamental way to innovate. In the service system, innovation is generated from the interaction between several actors (Håkansson & Olsen, 2012). Furthermore Vargo, Wieland and Akaka (2014) argue for a more dynamic approach when studying innovation and break free from a narrow focus on firms as innovators and customers as adopters to a systemic view in which multiple actors are engaged in service innovation efforts through innovative forms of collaboration. Considering the service innovation process as an outcome of collective efforts, implies the need to adopt a service system-level perspective incorporating the views of multiple actors involved in interaction (Rampersad et al., 2010).

Overall, the literature on B2B service innovation tends to favor the integration of multiple actors in the innovation process, describing it as a collaborative approach that improves innovation performance (Homburg and Kuehln, 2014). Our knowledge on the performance effect of intra- and interfirm collaboration is nevertheless not conclusive. Extant research provides mixed evidence on whether and how firms should involve different actors in service innovation. As an example, Lee et al. (2009) found that while engaging in small networks increased service innovativeness, involving an increased number of innovation partners diminished service innovativeness. Noordhoff et al. (2011) showed that embedded ties with customers may weaken how much suppliers can benefit from customer knowledge in service innovation. The performance effect of customer and partner involvement on service innovation therefore warrants further investigation for B2B firms.

Moreover, most research on the role of actors' activities, interaction and collaboration in service innovation does not take into account the degree of change in the offering and the service system. The most common distinction of service innovation is between radical and incremental service innovation (Gallouj and Weinstein, 1997; Janiero et al., 2013). Service innovation can range from investigating changes in the service interaction and delivery process (Stevens & Dimitriadis, 2004), development of supporting information systems and organizational routines (Shulver, 2005), to more radical changes in the offering (Silvestro & Silvestro, 2003). However, only a handful of studies discuss how the extent of service innovation efforts relates to the extent to which different actors can contribute to and thus should be involved in the service innovation process.

To address these research gaps, the aim of the present study is to provide new perspectives in explaining how intra- and interfirm collaboration and interaction can improve performance of the service innovation process in firms operating in business markets. Specifically, we examine the effect of involving employees, customers and partners on service innovation performance for incremental and radical innovation. In order to pursue our aim, an empirical study was conducted in 404 B2B firms in five European countries (Finland, Italy, Sweden, Switzerland and Austria). The results show that employee and customer collaboration are important for both incremental and radical service innovation, while partner involvement is important solely for radical service innovation. These findings broaden existing understanding on the role of intra- and interfirm collaboration in service innovation, thereby making a contribution to the fields of service innovation and the IMP literature.

THEORETICAL BACKGROUND

SERVICE INNOVATION

Service innovation is a multidimensional construct that in the today's service-centered economy has been the objective of a growing consideration both from researchers and practitioners (Ordanini & Parasuraman, 2011). Ostrom et al. (2010) suggest that what distinguish service innovations are the changing roles of customers, service companies, and partners in the value network, as well as how they interact. Gallouj (2002) views service innovation as any change that affects one or more terms of one or more service characteristics or enabling resources. Menor et al. (2002) describe how new service development and service innovation often are used interchangeably as alternative descriptions of how services are developed. Thus, service innovation is a multifaceted concept that often is used both for the offering (output) and the development process (process) (Carlborg et al., 2014).

In terms of what change in the offering that describes a service innovation, Cheng and Krumwiede (2012) suggest that "the degree of service innovation ranges from a totally new or discontinuous innovation to a service involving a minor adaptation or improvement of an incremental nature". Several service innovation types have been proposed in literature (i.e. Avlonitis et al., 2001; Paswan et al., 2009) but of particular interest is the focus on the greatest and least degree of service innovation, that is to say incremental and radical innovation.

Janeirio et al., (2013) differentiate between radical and incremental service innovations through substantial difference in the technology (current or new) and to the consumer needs (existing or new) being met. In contrast, Brown and Osbourne (2013) suggest that a radical service innovation concerns a discontinuous change including a new service, a new policy, a transformed process or a new configuration of an existing set of relationships to fulfill a task. In their paper on "Innovation in services", Gallouj and Weinstein (1997) suggest that a

radical innovation is the creation of a totally new offering, where the characteristics do not share any elements with previous offerings, while incremental innovation (i.e. incremental and improvement innovation) concerns minor changes in the characteristics either through adding new characteristics or through improving existing ones.

Agarwal and Selen (2009) argue that service innovation is multi-dimensional and collaborative in nature. They present and operationalize the concept of “elevated service offerings” (ESO) in collaborating service organizations. ESO stands for new or enhanced service offerings that can only be created as a result of partnering or collaboration with different actors. ESO puts forward the need to include a service network or service system's dimension in service innovation research. Agarwal and Selen (2009) highlight the complex nature and multi-dimensional character of innovation and the need for internal and external collaboration in service innovation projects and process. In the present paper, we will use the ESO concept as our point of departure when we operationalize incremental and radical service innovation.

Service innovation can be viewed as a continuous process affected by interaction between multiple actors: employees, customers and partners. It is addressed as the application of resources (knowledge, relational, physical and economic) through learning cycles that foster the development of core competencies via actors' relationships in order to enable value creation (Rubalcaba et al., 2012). The complexity that characterizes service innovation has been addressed over time by adopting various conceptual and analytical frameworks (Sebastiani & Paiola, 2010; Rubalcaba et al., 2012). However, comprehensive frameworks for integrating the service innovation multiple dimensions remain scarce (Frei, 2008).

We argue in this paper that intra-organizational interaction with units and employees and interactions with customers and partners has a role to play throughout the service innovation process including (1) stimulating and (2) realizing as well as (3) capturing value. First, stimulating service innovation involves leadership, knowledge and capabilities, culture and processes to stimulate innovations. Important issues are idea generation and idea management that occur in a specific service system or customer relationship. These activities often take place in what is described as the fuzzy front end (FFE) of innovation (Khurana and Rosenthal, 1998; Kim and Wilemon, 2002). From a managerial perspective it is important to induce creativity as well as to understand the potential business opportunities (Edvardsson et al., 2010). Second, realizing service innovation concerns the development of the content, including the activities and processes as well as resources needed to realize the new resource configuration in a service system. Also within the scope for this theme is the service system change needed to realize service innovations in which products, services, technology and other resources are embedded in the new resource constellations forming the basis for the service innovation. Third, value capture refers to how to create a revenue stream to the provider, which is related not only to the value being created, the competitive situation in the market but also to the internal strategies and business models. How to capture value is a multi-faceted phenomenon and concerns issues on both the strategic, tactic and operational level. One of the more important steps in value capturing is to understand how customers view a company's value proposition in relation to other companies' propositions.

COLLABORATION FOR SERVICE INNOVATION

Several studies have pointed out that innovation does not result from a single economic agent but from a complex process in which a range of actors interact (Powell, Koput, & Smith-Doerr, 1996; Porter & Stern, 2001). According to Sundbo and Gallouj (2000:18) “Service firms still maintain a great deal of flexibility in innovation activities, which involve

several actors and trajectories”. The locus of innovation is thus progressively shifting from individual firms to networks of inter-organizational relationships, outlining innovation as an evolutionary, non-linear, and interactive process between a company and its context, which involves relationships with several actors inside and outside the firm (Kaufmann & Todtling, 2001). This view of innovation as a collective phenomenon has progressively led to deepen the roles of actors in such a process (Cantù, Corsaro, & Snehota, 2012).

Interactions between business actors facilitate access to, and the use of, internal and external resources (Harrison & Håkansson, 2006; Gadde & Håkansson, 2008; Wynstra et al., 2006). Internally, innovation is mostly a loosely coupled process in which the employees including managers at all levels are involved (Sundbo and Gallouj, 2000). Previous research has endorsed the use of cross-functional teams to secure intra-organizational collaboration (Joshi & Sharma, 2004). In terms of external interaction, literature has addressed involving customers to ensure fit with market needs and demand (Matthing et al. 2004; Edvardsson et al. 2012), and collaborating with partners to access external resources (Rusanen et al. 2014; Chen et al., 2011). In the following we will discuss the intra- and interfirm collaboration focusing on employees, customer and partner interaction in the development of incremental and radical service innovation.

Intra-firm collaboration that goes across functional and departmental borders is considered a success factors for B-to-B service development (Neu & Brown, 2005). The benefits of cross-functional teams are argued to arise from different views, skills, and expertise that are shared among individuals in interaction (Love and Roper, 2009). They facilitate the collecting, sharing, and processing information among all members engaged in the service innovation process. New knowledge can be generated either from the periphery of the organization or from the center (Ordanini, Maglio, 2009). According to De Jong and Vermeulen (2003: 851) “firms that develop new services without cross-functional teams may suffer from functionally departmentalized structures that impede NSD”. Sundbo and Gallouj (2000) state that firms’ approach to innovation is generally unsystematic and collective; employees operating in different functions may be involved both at the formal and informal levels in service innovation processes.

Previous studies highlight that involving cross-functional teams in service innovation projects is positively related to innovation effectiveness (Avlonitis et al., 2001) and performance (Edvardsson et al. 2013). They not only provide new combinations of knowledge and competencies but also support the implementation stage by solving the problems that may arise (Gallouj & Weinstein 1997).

Collaboration with customers has received considerable attention in NSD and service innovation research. As service is a process that typically involves interaction with the customer (Matthing et al., 2004), learning about customers’ preferences and usage experiences is considered pivotal in service innovation (Joshi & Sharma, 2004; Kristensson et al., 2008; Edvardsson et al., 2010). Many times, service innovations are a question of changing the customer’s role or to combine existing resource configurations in new ways. The challenge is to mobilize existing resources (linked to the customer, the provider or other resources in the service system), such as knowledge, experience and motivation into co-creation of value.

To gain access to the knowledge created by the customer as a primary resource integrator, Witell et al. (2011) suggest activating the customer in a process of co-creation for others. While a customer performs co-creation for use for his or her own benefit, co-creation for others is intended to create value for other customers by aiming to provide an idea, share knowledge or participate in the development of a product or service. In an experiment in

which customers were invited to engage in co-creation through interviews, focus groups or active participation, the methods that enabled the customer to be an active co-creator produced significantly more original ideas (Witell et al., 2011). Engaging customers in active dialogues to access their skills and knowledge (Prahalad and Ramaswamy, 2000) enables the service development project to better understand and anticipate latent customer needs (Matthing et al., 2004).

Collaborating with customers is beneficial for service development (Carbonelli et al., 2010; Witell et al., 2014). In addition, Edvardsson et al. (2013) show that collaboration between employees and customers supports the development of service innovations. The present study focuses on the concept of customer co-creation of value for themselves and others; that is, activities in which customers actively participate in service innovation by contributing information about their own needs and/or suggesting ideas for future services that they would prefer.

Finally, *collaboration with partners* is considered important for innovating as it provides access to external resources (e.g., Cassiman and Veugelers, 2006; Perks and Moxey, 2011; Rusanen et al. 2014), and functions as an important source of new product ideas (Vega-Jurado et al., 2009). Rusanen et al. (2014) studied how companies access resources through network relationships for the purpose of service innovation. Their findings indicate that access to tacit resources that are difficult to transfer, such as skills, knowledge, experience and creativity, necessitates strong relationships and high-intensity inter-organization collaboration. When actors are engaged in intense interaction, they can bring together their tacit resources, resulting in joint creation of transformed, new types of resources (Rusanen et al. 2014). This suggests that intensive interaction is needed to benefit from the more tacit resources of other actors, but when a rich set of resources can be combined, potential for radical innovation increases. Empirical evidence for this is nevertheless scarce. Collaboration with external actors has also been found beneficial in terms of in commercializing the innovation (Aarikka-Stenroos & Sandberg 2012).

METHODOLOGY

SAMPLE

Data for the empirical investigation was obtained from firms in Finland, Italy, Sweden, Switzerland and Austria. The data was collected in 2013 through email and traditional mail. The research team generated a list of industries eligible for the study and then decided on the rules for conducting the study to ensure the comparison between the different countries. The sample includes firms in industries such as banking, insurance, healthcare, hotels, transport, rental accommodation and real estate, construction services, business services, machinery, plastics, pulp- and paper and electrical components

A survey was sent to managers responsible for service innovation in European B2B firms selected from an external database in Finland, Italy, Sweden, Switzerland and Austria. The empirical investigation was performed in similar ways in the different countries and yielded an overall response rate of 20 percent including 404 B2B firms. The typical key informant was employed for 12 years at his or her firm, indicating adequate experience and knowledge to be able to complete the questionnaire (Gebauer et al., 2010).

CONSTRUCTS

The present study includes four types of constructs, independent, control, output and a categorization of development projects into incremental and radical service innovation. The studies relied extensively on existing scales, but adopted, modified and extended existing scales when needed (Churchill, 1979). Since the study was conducted in multiple countries in Europe, the questionnaire was provided in several languages. Having agreed on an English version of all questions in the questionnaire, it was then translated to the local languages. Where the meaning of a question had become lost in translation, a discussion in the research team took place to resolve each question.

The independent variables consist of three constructs relating to intra-firm collaboration and collaboration with partners and customers. First, intra-firm collaboration is operationalized through the concept of integrated development teams. Existing scales were adopted from Joshi and Sharma (2004) suggesting that intra-firm collaboration concerns including individuals representing different functional areas, by viewing functional areas as resource pools and by giving teams a budget and responsibilities for NSD. Collaboration with customers is a newly developed construct building on Witell et al. (2011) and Gustafsson et al. (2012) measuring collaboration with customers beyond traditional market research techniques such as interviews and focus groups. Collaboration with partners is built on Gruner and Homburg (2000) and their operationalization of customer interaction where partners have replaced customers. For measure validation, we used conventional methods such as cronbach alpha, item-to-total correlations, and exploratory factor analysis (Churchill, 1979)

For control variables, market turbulence and technology turbulence were included to control for an industry's dependence on market and technology (Moorman and Miner, 1997). The amount of resources was measured on two levels, firm resources and project resources. Firm size influences product development (Narver and Slater, 1990) and is an indicator of the level of firm resources (Rust et al., 2002) while project resources are measured through the size of the development team for the service innovation project. The last control variable was country, and it was included to control for possible differences between the different countries included in the study.

As output measure, NSD performance adapted from Moorman and Rust (1999) was used. It captures how a new service is performing in relation to the service development objectives. The dimensions of NSD performance range from financial, to customer to innovative dimensions of the service being developed (Storey and Kelly, 2001).

The last part concerns our operationalization of incremental and radical service innovation. Our view of service innovation is based on the dimensions of elevated service offering (Agarwal and Selen, 2009; 2011) suggesting that a service innovation can be viewed as a multi-dimensional construct. The dimensions include a new service offering, new customer encounter interface, new operating structure, a new service delivery process, improvement of service attributes. We used cluster analysis to identify different constellations of dimensions of service innovation reflecting incremental and radical service innovation. The cluster analysis was based on four of the dimensions, while two dimensions were retained for verification purposes. The cluster analysis revealed two clusters with 221 B2B firms that developed incremental service innovations and 183 B2B firms that developed radical service innovations. A comparison was made between the two groups regarding the different dimensions and the radical service innovations have a higher degree of change in all dimensions ($p < 0.01$), also the two dimensions that were retained for verification purposes.

ANALYSIS

This study used principal component analyses to operationalize the constructs in the empirical investigation (Gustafsson et al., 2005). For each set of measures, the first principal component was extracted to create the constructs used in subsequent analyses. For all of the constructs, only one principal component had an eigenvalue larger than 1. Cronbach alphas were calculated for each construct, all key constructs exceeding the level of 0.7 (Nunnally, 1967) and the control variables all exceeding the level of 0.65 sufficient for exploratory research. Table 1 includes the cronbach alphas and correlations for the key constructs.

A general linear model was estimated to test the role of intra-firm collaboration, customer and partner collaboration in service innovation. The model included the direct effect of three collaboration constructs as well as a set of control variables. In addition, we tested the interaction effects between the different modes of collaboration, but no such effect was found why these are not reported in our results section.

Table 1: A correlation matrix for key constructs of the research.

	Cronbach alpha	FS	SDP	MT	TT	IC	CC	PC	P
Firm Size (ln) (FS)	N.A.								
Size of development project (SDP)	N.A.	0.26*							
Market turbulence (MT)	0.65	0.03	0.04						
Technology turbulence (TT)	0.85	0.05	0.11	0.38*					
Intra-firm collaboration (IC)	0.76	0.04	0	0.09	0.03				
Customer collaboration (CC)	0.77	-0.02	0.12	0.22*	0.22*	0.25*			
Partner collaboration (PC)	0.87	0.02	0.06	0.24*	0.14	0.2*	0.42*		
Performance (P)	0.80	0.05	0.04	0.17*	0.14	0.33*	0.37*	0.19*	

RESULTS

DESCRIPTIVE STATISTICS

On average a firm performs 6.65 service innovation projects each year of which 4.47 are introduced on the market and 4.16 survives the first year on the market. Most B2B firms invest about 1-2 percent of their turnover into service innovation and about 12 percent of the turnover comes from services that have been on the market less than three years. In general, 5 employees participate in a development project together with 6 customers and 2 partners. The number of employees that participate in a development project are in line with previous research (Edvardsson et al., 2013), but it shows that the role of both customers and partners have been underestimated in previous research. There are no specific differences between incremental and radical service innovation projects except that radical service innovation projects on average have more customers involved ($p < 0.05$).

TESTING THE EFFECT OF COLLABORATION ON SERVICE INNOVATION

The results of the analysis show that collaboration has a substantial effect on service innovation performance for both incremental and radical service innovation, see Table 2. The two models for incremental and radical service innovation explains 31 and 19 percent of

variation in performance. After controlling for market turbulence, technology turbulence, country, firm and project resources both intra-firm and customer collaboration have an effect on performance for both incremental and radical service innovation. The effect for intra-firm collaboration is 0.33 and 0.27 for incremental and radical service innovation respectively, and for customer collaboration the effect is 0.26 and 0.27 respectively. As can be seen, there is no difference in the effect of intra-firm and customer collaboration on performance between incremental and radical service innovation. For service firms, Edvardsson et al. (2013) identify an interaction effect between intra-firm and customer collaboration, but no such effect can be identified for B2B firms. Partner collaboration has an effect on performance for radical innovation (0.14, $p < 0.05$), while no such effect can be found for incremental innovation.

Table 2: The role of collaboration for incremental and radical service innovation.

	Incremental Innovation		Radical Innovation	
Country				
	Sweden	- 0.17	-0.53	*
	Finland	0	0	
	Austria	- 0.06	0.14	
	Switzerland	0.01	-0.23	
	Italy	-0.10	- 0.42	*
Firm Size (ln)		0.09	-0.11	
Size of Development project		0	0	
Market turbulence		0.11	0.028	
Technology turbulence		0.04	0.12	
Intra-firm collaboration		0.33 **	0.27 **	
Customer collaboration		0.27 **	0.26 **	
Partner collaboration		- 0.04	0.14	*
Intercept		- 0.26		
R^2		0.24	0.33	
Adjusted R^2		0.19	0.31	
F		4.80	9.96	
N		183	221	

* $p < 0.05$, ** $p < 0.01$

DISCUSSION

THEORETICAL IMPLICATIONS

The purpose of this study was to provide new perspectives in explaining how intra- and interfirm collaboration and interaction can improve service innovation performance in firms operating in business markets. We examined the effect of involving employees, customers and partners on innovation performance for incremental and radical innovation. Our results confirm previous research related to the importance of intra-firm collaboration for service innovation (Avlonitis et al., 2001), i.e. the use of cross-functional teams has a positive effect on service innovation performance for both incremental and radical service innovation. As a matter of fact cross-functional teams have the potential to improve internal coordination to support service innovation and to reduce development time and costs by acting as resource integrators (Melton & Hartline, 2013).

Recent research suggests that one of the core issues firms need to address in fostering service innovation is how to identify, manage, and develop organizational conditions and competencies aimed at benefiting from collaboration with external actors in the service innovation process (Chen et al., 2011; Homburg and Kuehln, 2014). Homburg and Kuehln (2014) found that ".....with a low and an intense degree of interfirm collaboration, service firms can satisfactorily co-create value in NSD" (P. 1365).

Our results demonstrate that customer collaboration by integrating external resources with the internal ones has a positive effect on innovation performance for both incremental and radical innovation. Previous research conducted in a business-to-consumer context found that customer collaboration enhances the capacity to generate new service ideas, but those ideas may not represent radical departures from current offerings (Ordanini and Parasurman 2011). The present research shows otherwise, it seems plausible that in the business-to-business context, service innovations are triggered by joint development of customized solutions to customer needs, and customers themselves possess complementary expertise and resources (Aarikka-Stenroos & Jaakkola, 2012), which makes customer collaboration pivotal also when developing radical innovations.

We also found that partner collaboration has no effect on incremental innovation but is positively associated with radical innovation. This finding finds support in previous innovation research where it has been indicated that cooperation with external partners can be useful to achieve radical innovations (Cohen and Malerba, 2001), where considerable departures from the existing knowledge base are required (Eisenhardt and Schoonhoven, 1996). The rationale is that including various resources, perspectives and knowledge domains in an innovation process improves the potential of breakthrough, radical innovations (Bougrain and Haudeville, 2002). This finding extends into service research in a business-to-business context. The process nature of service innovation is linked to reconfiguration of resources and actor roles as a key innovation mode in the context of a service system (see e.g. Gallouj and Weinsten 1997; Windahl et al. 2004). In accordance with Nonaka's (1994) theory of knowledge creation - where the combination of different existing knowledge is fundamental to generate new knowledge - the approach to innovation could be a combination of complementary internal and external components of knowledge (Fleming and Sorensen, 2001). Furthermore, many actors are involved in and contribute in various ways to service innovation performance; both internal and external actors. What emerges from our study is that internal and external actors play different roles in service innovation: intra-firm and customer collaboration are important for both incremental and radical service innovation, while business partner collaboration becomes valuable in case of radical service innovation.

MANAGERIAL IMPLICATIONS

Our results demonstrate the importance of intra- and inter-firm interaction and collaboration for successful service innovation. On the basis of our findings, we recommend that firms involve cross-functional teams and customers in service innovation projects ranging from incremental improvements to more radical ones. Our findings indicate that in the business-to-business context, firms would benefit from developing methods beyond traditional market research for involving customers. When targeting a radical innovation, firms should also develop intensive collaboration and interaction with business partners.

FUTURE RESEARCH

Future research should investigate whether intra-firm collaboration is a prerequisite for benefiting from external collaboration, and elaborate on the way cross-functional teams should be organized to achieve the best results. Research elaborating on the processes of stimulating and realizing service innovation in projects that involve extensive collaboration is also needed. What approaches and methods should B2B firms use to involve their customers and business partners?

More research is also needed to elaborate on the performance effects of collaboration. For example, as extensive collaboration with a range of actors can be assumed to put a strain on internal resources, future studies should address the productivity of collaborative service innovation projects. Furthermore, it would be useful to study the long-term viability of collaborative innovations.

At last, not all B2B firms have the same prerequisites for collaboration with employees, customers and partners and the effect of collaboration might not show the same pattern between incremental and radical service innovation. Wynstra et al. (2006) show that different capabilities might be needed for different types of business services and further research can use a more detailed classification of new business services to better understand the effects of collaboration on business performance.

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