

NETWORKING FOR RESOURCES IN SERVICE SOLUTION DEVELOPMENT

Abstract

Purpose of the paper and literature addressed: In this study a resource perspective is taken to the study of networks. The purpose of the paper is to provide insight into the resource access through relationships for the purpose of new service development. The paper discusses the resources sought in business networks for new service development, resource strategies applied both in intra-firm and inter-organizational networks and nature of relationships that each resource strategy requires. The study draws on the IMP industrial network approach and the strategic network concept.

Research method: The empirical research applied a qualitative case study where 33 interviews were conducted in three case companies in Finland. The studied companies provide technical services for business and public customers, and they had several ongoing new service development projects at the time of the study.

Research findings: When seeking resources for new service development in intra-firm and inter-organizational networks, the applied resource strategy depends on the nature of the sought resource. Thus new service development may necessitate various resource strategies in the business network. The resources sought in business networks either assist in the development process or become part of the new service. They are mostly accessed through mobilizing which takes place within existing business relationships or in intense new service development relationships depending on the nature of the sought resource. Resources that can be mobilized in existing business relations consist either of financial and physical resources which assist the development process or informational and organizational resources that are accessible in connection with specific customer solution development. Further, some relational resources can be mobilized in existing business networks. Mobilizing of resources is possible also in new business relationships when the supplier both creates and provides a service element inside a larger service entity. The resources accessible through business networks do not, however, interact considerably with each other, which sets limits to their value in new service development compared to resources that can interact with each other and enable the firm to develop valued service offerings (Madhavaram & Hunt 2008).

Resources that interact with each other and are thus the most valuable in new service development are accessible only in intense new service development relationships. Such resources are mainly knowledge-based and include dynamic resources such as specific professional knowledge and skills. As intense collaboration necessitates trust and commitment, it is most probably pursued in strategic partnerships and customerships.

Main contribution: The study contributes to industrial marketing knowledge and new service development literature by providing new conceptual understanding of resource access in case of collaborative new service development. It provides a theoretical framework that connects the applied resource strategies to the nature of sought resources and required relationship characteristics.

Keywords: resources, resource access, resource strategy, business services, solutions, new service development, development network

INTRODUCTION

Past research demonstrates the crucial role of new service development (NSD) for the competitiveness of a service firm (Brentani 1995; Johnson et al. 2000; van Riel, Lemmink & Ouwersloot 2004; Smith & Fischbacher 2005). More recently, service development has become a source of strategic competitive advantage also for manufacturing and industrial companies (Gebauer 2008; 2009; Matthyssens & Vandenbemt 2008; Kindström & Kowalkowski 2009). Researchers remark that in turbulent environments where service life cycles become ever shorter, new offers need to be brought to markets constantly (Kandampully & Duddy 1999; Stevens & Dimitriadis 2005), and in order to create superior value with services, a firm should be the first to handle customer problems in a new way, to apply new technologies, or to create innovative processes (Brentani & Ragot 1996; Kandampully 2002).

Literature on a broad front emphasizes the role of collaborative relationships and networks for innovation. Networking in innovation are studied in economic and regional geography, organizational behavior, sociology, operations management, political economy, entrepreneurship and small business, technology management, marketing and strategic management (Pittaway et al. 2004). Networks in general are viewed as vehicles for transferring information and accessing resources in order to generate innovations (Brass et al. 2004; Waluszewski & Håkansson 2007; Huggins 2010). The industrial network approach puts particular emphasis on interactive relationships between companies as platforms for combining and creating new resources and as important facilitators of access and use of both internal and external resources (Ford & Håkansson 2005; Harrison & Håkansson 2006; Gadde & Håkansson 2008). Innovation is considered to occur within a business network, where companies combine and seek control over the resources (Easton 1992, p. 24; Baraldi & Strömsten 2009).

Considering the extent of research interest in innovation in networks and the pressure of B-to-B companies to compete with services, it is surprising how little researchers have paid attention to resource collaboration for the purpose of new service development. Although some studies demonstrate the relevance of committed, inter-organizational relationships for successful service innovation (Eisingerich, Rubera & Seifert 2009), NSD research only occasionally includes the networking aspect (Syson & Perks 2004; Kandampully 2002; Agarwal & Selen 2009). From a service company perspective it would, however, be critical to understand what kinds of resources NSD requires and how a company can gain access to such resources through networking. Resources have been examined at a very general level. Kandampully (2002) found that technology, knowledge and networks are the key resources for service innovations. Sheehan (2006) states that in innovation surveys, both service and manufacturing firms see machinery and equipment as the primary resources underlying innovation. Still, very little is known about the resource needs or the type of resources required in developing services. Strategies that companies use in order to gain access to needed resources have hardly been addressed at all.

The purpose of this paper is to examine how companies seek resources within business networks for the purpose of new service development. Networks are examined from a focal company's perspective the focus being on the build-up phase of a service development network where the focal company tries to activate existing relationships and to form new ones in order to get access to needed resources. Empirically the study is based on a qualitative case study of three companies that provide technical business services and are all active in new service development and have various collaborative NSD projects on going.

Theoretically the study draws on the IMP industrial network approach (Håkansson & Snehota 1995; Håkansson & Ford 2002; Waluszewski & Håkansson 2007) and the strategic

network concept (Jarillo 1988; Gulati, Nohria & Zaheer 2000; Möller, Rajala & Svahn 2005) to make sense of networking as a service development strategy. As service and product development typically occurs both within and between companies (Lievens, de Ruyter & Lemmink 1999; Smith & Fischbacher 2005) we broaden the business network perspective to cover company internal units and define accordingly a network as a web of company internal and external relationships formed for the purpose of developing a new service. It is noteworthy that the network is intentionally formed and contains a finite set of actors but at least three with agreed roles (Möller, Rajala & Svahn 2005). Actors may be firms or other organizations as well as company-internal units. We also use strategic management literature to complement the network literature, for instance, for describing the nature of sought resources.

The study contributes to industrial marketing knowledge and new service development literature by providing new conceptual understanding of resource access in case of collaborative new service development. The paper gives insights into the nature of resources sought from network actors, strategies and relationships applied to access the resources and the link between resource need and strategy type. The importance of studying new service development apart from physical product development has been stressed by several academics. The features characteristic to services make their development different from tangible products (Martin & Horne 1993; Kelly & Storey 2000; Menor, Takikonda & Sampson 2002; Syson & Perks 2004). Services are a combination of products and processes which means that far more attributes, and potentially also actors, need to be considered in the NSD than in the tangible product development (Smith & Fischbacher 2005; Eisingerich, Rubera & Seifert 2009; Halliday & Trott 2010). As services are mostly produced and consumed at the same time and all parties involved affect the service process, simultaneous innovation in the service product and procedure is required (Callon, Laredo & Rabeharisoa 1997). Hence, studying resource collaboration particularly in the context of service development makes an important contribution.

The paper is organized as follows. First, we will provide an overview of the resources sought for NSD and present a preliminary description of getting access to resources. Secondly, we will describe the empirical research methods and the studied service development cases. Thirdly, the findings are presented. Finally, we conclude with implications for research and practice.

ACCESSING RESOURCES FOR NEW SERVICE DEVELOPMENT

Resources in product and service development

Current studies on service or product development in networks offer very little knowledge on the nature of resources that companies seek from other actors for R&D purposes. The resource needs that motivate the building of relationships are seldom elaborated on, with the exception of knowledge, which is frequently mentioned as a resource exchanged in collaborative new product development (e.g. Hong et al. 2004; Cassiman & Veugelers 2006; Sammarra & Biggiero 2008; Kang & Kang 2009; Vega-Jurado, Gutierrez-Gracia & Fernandez-de-Lucio 2009).

Research indicate that the lack of necessary resources is the key driver for firms to enter into collaborative innovation arrangements (Tether 2002) and new product ideas and solutions to problems are typically sought beyond the firm's boundaries (Vega-Jurado, Gutierrez-Gracia & Fernandez-de-Lucio 2009). Yet, the majority of NSD research has an internal perspective to innovation. Studies have addressed company resources that facilitate successful NSD endeavors (e.g. Froehle & Roth 2007). Many authors note the importance of

combining versatile resources across different functions, professions, and departments (e.g. Brentani 1989; Lievens & Moenaert 2000; Neu & Brown 2005; Love & Roper 2009).

In this study we see resources to arise outside a firm's boundaries but also within the business units of companies involved. Two different perspectives to resources are used to create preliminary understanding of the type of resources: the Industrial Network View (IMP) (Håkansson & Waluszewski 2002) and the resource-advantage theory that relates to service-dominant logic view (Hunt 1997; Hunt & Madhavaram 2006; Madhavaram & Hunt 2008).

The IMP approach puts emphasis on inter-firm interaction and regards resource combining as a critical part of product development, suggesting that developing and combining resources of multiple actors creates major opportunities for innovation (Håkansson & Ford 2002). Resources represent an essential element of the network model and are regarded as heterogeneous assets created in interaction with other actors' resources (Harrison & Håkansson 2006). Single resources are shaped by previous interaction processes which embed them in many other resources providing them with specific features (Håkansson et al. 2009, p.67–68). A single resource also needs to be activated in interfirm interaction in order to become valuable for the parties (Håkansson et al. 2009, p.65).

The IMP approach lacks a general agreement on resource classification (Gadde & Håkansson 2008). Axelsson and Håkansson (1979) discuss technical resources, input goods, marketing resources, personnel and capital, whereas Håkansson and Snehota (1995) list manpower, technical facilities, knowhow, financial resources and materials. Håkansson and Waluszewski (2002, p.17) have developed a four R model for analyzing the development and usage of commercial solutions in companies. This model emphasizes organizational and technological resources, distinguishing organizational relationships as one resource category. Classifications thus vary and provide, unfortunately, only limited guidance for studying resource seeking for NSD.

Currently, service-dominant logic perspective emphasizes the study of resources in new offering development (Lusch & Vargo 2011). The resource advantage theory promoted by Hunt (1997) rests on the resource-based view and takes the perspective of service-dominant logic. It broadens the view on company resources by emphasizing the strategic interface with markets and other external actors. Resources are defined as “tangible and intangible entities available to the firm that enable it to produce efficiently and effectively a market offering that has value for some market segment” (Hunt & Madhavaram 2006, p.69). Resources are considered anything that has an enabling capacity (Hunt 1997). Resource advantage theory has constructed a coherent resource classification system where basic resources are categorized into financial, physical, legal, human, organizational, informational, and relational resources. Physical and financial resource categories consist of operand resources on which an act or operation is performed. Other five resource categories include basic operant resources that act on other resources and are therefore especially valuable for the firm. Further, resources that can influence each other through interaction are the most valued resources since they have the capability of reinforcing each other in enabling the firm to produce valued market offerings. The service-dominant logic perspective has shifted the focus on intangible dynamic resources that enable firms to respond to changing environments. Special attention is paid to specialized skills and knowledge (Madhavaram & Hunt 2008).

Together with the IMP view, the resource advantage theory offers a useful basis for the study. Extant literature tells, however, very little about the characteristics of resources that companies acquire through networking or about resource needs that are characteristic to new service development.

Role of relationships in resource access

Based on the reviewed literature, the study starts from the assumption that resources needed for NSD can be accessed through interactive relationships, either externally or internally. No business enterprise has a direct control of all the resources necessary. When an actor is embedded in a network of external relationships, it has potential access to the resources of other companies (Harrison & Håkansson 2006). The same counts for company-internal relationships. Even if the resources were in company control, they still need to be accessed and activated through interactive relationships between functions, units and departments. Relationships are thus crucial for getting access to resources.

In order to access resources, companies can activate their existing relationships, or initiate new ones either between functional departments or business units within the firm, or with other companies (James 2002). Companies build relationships to actors that possess important resources or are expected to be capable of developing necessary resources in cooperation (Love & Roper 2009; Hirunyawipada, Beyerlein & Blankson 2010). Companies may form partnerships and networks that are more or less structured, hierarchical, and goal oriented (James 2002). For R&D purposes, firms typically seek for external resources through various partnerships agreements like licensing or R&D outsourcing (Cassiman & Veugelers 2006), joint ventures (Bower 1993; Baraldi & Strömsten 2009) or research agreements with universities (Arora & Gambardella 1990). Important resource collaboration may also occur in ongoing business relationships between suppliers and customers (Harrison & Håkansson 2006).

In terms of external actors, customers, suppliers, competitors, consultants and research organizations have been considered as key sources of resources for innovation. Studies discuss *customers* as sources of information about needs, wants and ideas that are crucial for developing new offerings that meet market demand (Enkel, Perez-Freiye & Gassmann 2005; Lagrosen 2005). Their role is emphasized particularly in the context of service development which also highlights the knowledge about service usage obtained from customers (e.g. Love & Mansury 2007; Kristensson, Matthing & Johansson 2008; Edvardsson, Gustafsson & Witell 2010, p.568). As service is essentially a process that is realized in interaction with the customer, it is difficult to develop it without insights into the experiences of customers (Matthing, Sandén & Edvardsson 2004).

Integration of *suppliers* in the innovation process has been regarded as one of the most important factors in innovating (Kaufmann & Tödtling 2002; Romijn & Albu 2002). Syson and Perks (2004) identified a range of intangible resources such as reputation, information, knowledge and experience as important resource contributions by suppliers for NSD. Since such resources are embedded in the organizational structure and routines, it may, however, be challenging for another firm to access or make use of them (Syson & Perks 2004). Intensive interaction with suppliers is potentially needed for accessing the resources.

Consultants, universities, research centers and funding agencies also act as an important source of resources such as information, technology and finance for the innovation process (e.g. Mohannak 2007; Johnson 2008). Reliance on universities and research centers as an information source has been discovered to influence a company's knowledge development potential and ability to integrate internal and external innovation activities (Cassiman & Veugelers 2006; Tether & Tajar 2008). In other words, university cooperation is likely to enhance the company's capabilities for new service development.

Cross-functional team work is a potential option for activating intra-firm resources (Love & Roper 2009; Arora & Gambardella 1990). Companies establish intra-organizational teams between departments and professions to get access to versatile knowledge, skills, and expertise (Love & Roper 2009; Hirunyawipada, Beyerlein & Blankson 2010). A study by

Hong et al. (2004) demonstrated that cross-functional teams where knowledge about customers, suppliers, and internal capabilities were shared within a company, enhanced product development process performance and strategic outcomes, such as time to market and value to customers.

Notwithstanding the institutional form, relationships are established to get access to other actor's resources in order to enable service development. A recent study by Baraldi and Strömsten (2009) examined how combining and controlling resources takes place at a network setting between actors that aimed at product innovation. The authors point out that identifying the resources that need to be combined, the actors that control these resources, and the way these actors could be mobilized are critical questions to pose at a firm level before starting network level processes. This gives an impetus to examine the strategies that companies can use to access or activate resources within their network.

Resource access strategies

Acquiring resources and mobilizing resources are two alternatives commonly discussed in connection with resource exchange. The current literature argues that the nature of resources influences the way they can be accessed (Syson & Perks 2004).

Acquiring resources through market transactions refers to purchasing products and services against money. Market transaction is short-term by nature and requires only limited interaction (Lefaix-Durand & Kozak 2009). Exchange of resources in an arm's length business relationship is a viable option to get access to needed resources, if the resource requirements can be clearly specified. This is however, more probable in the development of physical products than services (Syson & Perks 2004).

In strategic networking the target is, however, to access rather than acquire resources (Huggins 2010). Håkansson and Snehota (1995, p. 136) identify mobilization as a resource-based aspect of innovation in a network perspective. Mobilization refers to the process of accessing resources to achieve changes in activities (Lundgren 1992, p.160). It is through relationships that different resources can be mobilized, made available and offered to others. Customer information can be attained for example by recruiting customers to focus groups and customer panels, or to become pilot customers (Syson & Perks 2004). Mobilization is "the outcome of utilizing a company's relationships to move other actors such as customers, suppliers, partners and even competitors to work within the plans of the mobilizing company" (Mouzas & Naudé 2007). It is thus evident that by mobilizing other actors the focal company aims to get access to and also control over other companies' resources. Mobilizing can be applied also inside the company, for example, through formal processes, such as documenting the knowledge and making it available to the whole organization or through social processes, such as interactive online platforms (Javernick-Will & Levitt 2010).

However, resources can be accessed and used through mobilizing only temporarily as the ownership of the resource does not transfer. Thus the relationships have to be sustained if the firm wishes to continue to access the resources (Glover & Parry 2005). Mobilization may occur in two ways. It can be engineered, starting with the focal company that is willing to establish new relationships in order to further its product development, or it may be emergent, focusing on activating existing business relationships for product development purposes (Jokela 2006; Doz, Olk & Ring 2000). Change in a network, that establishing new relationships would entail, is initially dependent on the existing structure and resources. It is therefore more difficult for a company to seek resources from new counterparts than to mobilize resources within existing relationships, where some investments have already been made and where costs and benefits of collaboration are more apparent (Håkansson & Ford 2002).

Some of the resources cannot be readily acquired on a market which necessitates other means to access them (Chi 1994). Some valuable resources cannot simply be transferred, but require a more intensive relationship. Generally these are intangible resources such as material know-how, knowledge of the market, application know-how or technology (Håkansson & Snehota 1995, p.143). A mutual learning relationship is required, for instance, to share tacit knowledge (Vrande, Lemmens & Vanhaverbeke 2006) which is not very transparent or articulated and not codified or incorporated in any material element. Firms are increasingly involved in interactive long-term relations to access such resources. This kind of relation can be called 'learning by interaction' (Fernández, Montes & Vázquez 2000). This requires established relationships, characterized with trust and commitment (Eisingerich, Rubera & Seifert 2009; Håkansson et al. 2009, p.18).

Interdependence between companies increases the likelihood for the formation of future innovation partnerships (Huggins 2010; Ring & Van De Ven 1994). Also, the higher the degree of business embeddedness, in terms of contacts and relations, the higher is the probability for joint product development (Andersson, Forsgren & Holm 2002). Embeddedness is thus likely to enhance the possibilities to access other parties' resources.

METHODOLOGY

Research approach

An empirical study was conducted to provide more light on the contingencies between the resources and the used resource access strategy in the context of NSD. A multiple case strategy was used to develop new theoretical understanding of resource access through networking. Case study research is considered as suitable approach for studying complex issues with a view to identifying theoretical implications in a theory building approach (Woodside & Wilson 2003). Multiple-case study is used when the aim is to develop a rich theoretical framework (Yin 2003, p.47) and to reach an understanding of or a general conclusion on the topic in question (Gummesson 2003). The empirical study focused on technical business service development in three case companies. Networking for resources was studied from the perspective of the focal company (Halinen & Törnroos 2005).

The companies were selected to provide rich and versatile information of resource access strategies in service development. Technical service companies were selected as case companies because their profitability has generally declined as a result of increasing competition and new possibilities to acquire technical services from low cost markets. According to empirical studies, technical service companies are also more likely to engage in cooperative innovation (Tether & Hipp 2002).

The case companies were chosen to represent different approaches to networked service development. Company A represents a company with a large existing business network including customers, suppliers and subcontractors. It aimed to include actors from its business network for new service development and to establish internal NSD networks between the business units. Company B's business network included mainly customers and construction companies but it had a wide variety of technical units inside the company. It faced both the challenges of establishing internal NSD networks that would consist of various technical fields and including customers to NSD. Unlike company A and B, company C was only starting to provide service solutions to customers instead of only selling physical products. It thus needed to find both new partners and customers for service development.

All three case companies were going through considerable strategic changes which required internal and external collaboration in new service development. Two of them had

some experience of finalized collaborative NSD projects and all three had collaborative NSD projects ongoing. New projects were in the initiation phase and involved the resources of multiple actors. The gathered data paints a picture of a broad range of recent service development projects realized within intra-firm and/or inter-organizational networks. Altogether 15 service development networks could be identified in the studied companies: company A acted as the focal company for ten networks, company B for three, and company C for two networks.

Data collection and analysis

Qualitative interviewing (Warren 2002) was used as the primary data collection method. Data collection involved a total of 33 personal interviews in the three focal companies. First, we interviewed CEOs and R&D managers or coordinators in the companies to get an overview of their service development and to identify individual cases for closer examination. Second we interviewed key people involved in the studied cases, for example country managers, business unit directors, business operations managers, R&D directors and coordinators, key customer managers, marketing and sales managers and designers, and heads of supplies and spare parts. Informants representing various units, departments and hierarchical levels provided us with rich data that we complemented further with background information about the companies acquired by visiting companies' Internet pages, reading articles and press materials.

Interviews were carried out by a group of researchers in January – September 2010. At least one of the authors was present in each interview. The interviews were conducted face-to-face in the case companies' premises except one that was conducted over the phone. Each interview took 60–90 minutes and all informants were interviewed once. Sixteen of the interviews took place in company A, eight in company B and nine in company C. All interviews were audio recorded and transcribed verbatim. Interviewees spoke very openly during the interviews and the atmosphere was relaxed after the first minutes of the interviews.

Interviews followed a thematic guide including topics such as the company's NSD practices and experiences, forms of resource access, and experiences in and expectations for resource sharing between actors for NSD. The interview guide was used very flexibly depending on the informant's position in the company and knowledge of the studied topics. The interviewees could also pose new topics for discussion.

The aim of the data analysis was to uncover how the studied companies seek resources for NSD. In accordance with the abductive logic (Dubois & Gadde 2002), theoretical literature guided data analysis, but simultaneously, the findings of empirical data influenced the emergence of the resulting theoretical framework. The data analysis begun with an initial coding and categorization procedure according to the actors involved in NSD, resources sought through actor relationships, and the strategy of accessing resources. In the initial coding, resource advantage theory and IMP literature provided the categories for resources, and actor categories were adopted mainly from NSD literature. In the next phase the resource access strategies described in the preliminary framework were drawn on to refine the initial resource categorization and to amplify the framework with understanding of required relationships characteristics. The case analysis was an iterative rather than linear process where the framework and analysis evolved simultaneously (Dubois & Gadde 2002).

CASE DESCRIPTIONS

Case A

The focal company A is a multinational group delivering construction, maintenance and professional services within energy, telecom and industry sectors in Finland, Sweden and Baltic countries. Company's turnover was 310 million euro in 2010 and the number of personnel totals 3,000. Company A's new strategy is to provide comprehensive service solutions to its customers with the aim of solving customers' problems and helping them to reach their business goals. Earlier company A had mainly acted as a service contractor to its customers. Its Grid-segment builds power distribution networks and telecommunication networks, implements installations, and provides maintenance and consultancy services for electric power industry and telecom industry. The Industry-segment provides maintenance services and energy data management for manufacturing industries.

The new strategy meant that the company would become a service integrator where the customer would hand over a significant part of its functions to the company, who in turn would take the full responsibility for the management of the defined entity. Most of the practical work would be contracted to suppliers and subcontractors. To become a service integrator, company A had decided to first establish strategic partnerships both with some of the key customers and with the strategically important suppliers and subcontractors. As the company already had a large business network comprising of equipment and software suppliers and subcontractors, the strategic partnerships would be developed inside the existing network.

New service development was an important part of the process of becoming a service integrator and it would be carried out through forming of development networks for accessing the needed resources. Those networks would include cross-functional teams, and cooperation with the suppliers, subcontractors and customers with whom strategic partnerships would be concluded. Intra-firm networks would be organized through service development teams consisting of members of different company segments and technical fields as well as different functions inside the segments. Including suppliers and subcontractors was seen the most probable path for the future.

The strategy of the company highlighted the idea of collaboration between the focal company and its key customers, suppliers and partners in order to find new kinds of solutions to changing situations. To be able to coordinate service development inside the company, an organization reform had been lately carried out and a development management organization established.

Case B

The focal company B is a Finnish subsidiary of a multinational engineering, design and consultancy company employing almost 9,000 experts in Northern Europe, Russia, India and Middle East. The subsidiary's turnover was 90 million euro in 2010 and it has about 1,300 employees. It has been established mainly through acquisitions of several engineering companies in recent years. Currently, company B provides consulting within energy field, traffic infrastructure, industry, civil engineering and environment, primarily to public sector organizations and industrial companies.

In recent years the company has introduced a service development strategy which highlights novel ideas and their project-based development into new service products. Earlier the new service development had meant particularly buying of firms from various technical fields and increasing technical knowledge and service scope that way.

The motive to start developing new services in projects and networks had arisen from the situation where engineering companies were mostly paid by hourly rates for their planning. As much of such work was being transferred to countries where work expenses were fundamentally cheaper, company B found it necessary to include more added value to its services. It saw specializing in certain technical niches, positioning as a manager of larger project entities and innovation for pioneering services as important means for this end. In addition, planning in the construction field was carried out increasingly at the same time with the concrete construction work. This meant that instead of the hourly rates, more effective and faster processes were regarded as a competitive advantage in the market. This was regarded to offer good opportunities to forming partnerships with other firms and developing new offerings together.

Company B had lately nominated three persons to manage R&D operations inside the company. The aim was that these persons would support business segments in their service development work. The first task of the R&D coordinators had been to add understanding of the importance of service development in the organization. The company had also bought an IT program which could be used when evaluating development ideas. Service development networks were built up with intra-firm teams and customers, but the aim was to increasingly commit also other partners into service development.

Case C

The focal company C is a technical trading company operating in Finland. Its main product fields consist of machine tools, construction machines, engines and generators, but it offers also various services for its customers that mainly represent metal and building industries. The concern's turnover was 109 million euro in 2010 and it employed about 180 persons. The company has lately expanded its business strategy towards a service solution provider. The company entered service business through acquiring a maintenance firm some years ago. More recently it had decided to start systematic new service development, particularly in mechanical engineering. As the future of the mechanical engineering industry seemed uncertain in Finland, the CEO of the company concluded that it was their role to increase the competitiveness of their customers through service development.

The group president regarded transition to services as strategically crucial since technical trade business was not growing any more. Connecting industrial services to technical trade would provide something new to the whole technical trade business. The company had tried to enter the service business already earlier but the management had then discovered that service business and new service development require specific knowhow and experience that the company did not have at the time. Later the company appointed a new CEO who had required experience.

The service knowhow was regarded as a resource that the company needed to possess. Acquiring service firms or employing people with service knowledge were considered the best means to access such knowhow. The company argued that this knowledge was necessary also if they were to succeed in finding partners for service development and if they wanted to be a credible service provider to their customers.

The company C aimed currently at networking with new partners and some reference customers for new service development. This would enable developing life cycle solutions and extensive mass customized services for manufacturing industries.

RESULTS

In a networked service development, two resource strategies – market transaction and mobilization – could be identified for the purpose of accessing resources for new service development, although mobilization was far more commonly used. Some of the resources were acquired through arms' length relationships, some could be mobilized through existing business relationships and some resources required an intense new service development relationship to be accessible.

The findings indicate that resources sought through business networking relate to the service development process in two different ways: They were either to assist the NSD process or to be integrated into the service offering. The following sections describe the findings related to the used resource strategy and resource relationship type when seeking for resources for new service development. Table 1 summarizes the key findings.

Resources accessed through market transactions in arms' length business relationships

Market transactions refer here to acquiring ready-made resources through arms' length relationships. The ownership and control of the resource is transferred to the purchaser. Single resources were only occasionally acquired through market transaction during the new service development process in the case companies. A tangible and productized ready-made resource that did not require any considerable customization or longer relationship between the deliverer and purchaser could be accessed through market transaction. An example of market transaction was a ready-made software that the company B had purchased for evaluating new ideas during the NSD process.

Market transaction was used to acquire resources for the developed service offering when it was possible to use ready-made tangible resources. A ready-made software or device could compose the core product around which the service was developed. "We carry out more like one-time transactions with the measuring device suppliers. We purchase meters from them and deliver them during the next four years to our customers. Then we will maintain them. Our connections to those suppliers are rather limited." (divisional director, Company A).

Further, when the company B needed modeling information for the service development, the analyses were ready purchased if another company had earlier developed a suitable model. "There are some firms that have specialized in modeling traffic, for example. They have some key customers to whom they have already constructed the models. Even though we have this knowhow as well, it is not profitable to build a similar model at our company. Instead we buy the analyses of the models from those firms." (R&D coordinator, Company B).

Some resources could be acquired through market transaction also during the launching phase of a new service. In the case company A, the needed ready-made equipment was purchased from technical trade companies to be able to produce the service.

Table 1. Resource access strategy, needed relationship type and use of NSD resources

		RELATIONSHIP INTENSITY	USE OF RESOURCE	
			assisting in NSD process	part of new service
RESOURCE STRATEGY	Market transaction	Arms' length business relationship	Suppliers: <ul style="list-style-type: none"> • R&D software 	Suppliers: <ul style="list-style-type: none"> • plug-in software • equipment, device • modeling analyses
	Mobilizing	Close business relationship	Customers: <ul style="list-style-type: none"> • financing • references • test environment Suppliers: <ul style="list-style-type: none"> • relationships to third parties Public organizations: <ul style="list-style-type: none"> • financing • relationships to third parties 	Intra-firm: <ul style="list-style-type: none"> • ideas Customers: <ul style="list-style-type: none"> • ideas • customer intelligence • knowledge about production process Partners, suppliers: <ul style="list-style-type: none"> • ideas • supplier developed service
		Intense new service development relationship	Intra-firm: <ul style="list-style-type: none"> • relationships to customers Public organizations: <ul style="list-style-type: none"> • development knowledge and tools 	Intra-firm: <ul style="list-style-type: none"> • technical and other professional knowledge • professional skills, expertise • customer intelligence • experience • skill to envision Customers: <ul style="list-style-type: none"> • employee knowledge and skills Suppliers and partners: <ul style="list-style-type: none"> • IT knowledge • knowledge of special fields and technologies • employee skills • market intelligence Consultants: <ul style="list-style-type: none"> • technical and user knowledge and expertise • experience Public organizations: <ul style="list-style-type: none"> • firm specific scientific knowledge • employee knowledge and skills • experience • references

Thus, resources for NSD were acquired through market transaction only if they were tangible, ready-made and the seller was willing to transfer the control of the resource over to

the purchaser. Such resources included ready-made software, models and equipment. Software could assist in the development process or be connected to the new service. Physical equipment became part of the new service solution.

Resources mobilized through business relationships

Mobilizing refers here to utilizing a company's relationships to access the needed resources. The owner of the resource does not lose his ownership over the resource when he allows the other actor to access it, but the control aspects may be ambiguous, especially when the resource is intangible. The nature of the resource sought seemed to have effect on it whether the resource was accessible through existing business relationships or only through intense new service development relationships. Business relationship refers here to a situation where the resource owner does not actively collaborate with other network actors to develop the new service, but provides some resources for NSD on the basis of their existing business relations.

Resources that were mobilized from other actors in existing business networks and assisted in the NSD process included relationships of suppliers and public funding agency to third parties. Suppliers with whom the focal company had close business relations helped to establish relationships with their contacts who owned resources required for NSD. "Although our suppliers are product sellers, they help us in many ways. For example, we have been able to establish new contacts with their help." (development director, Company A). The public funding agency helped, for example, to establish relationships between the companies participating in their development programs.

Resources mobilized in existing business networks to assist the NSD process could also include financing. When new service development aimed at solving specific customer problems, customers could provide financing for the project. Customers did not, however, necessarily participate very intensively to the actual NSD process. Financing could be acquired also from the public funding agency when the focal company proposed a collaborative development project that was implemented under a development program of the funding agency. In such cases the funding agency supervised the development process but was not actively involved in it except for common workshops. "The only way a low-margin firm can react actively to market changes is participating in a collaborative development project. We cannot start spending a lot of money for the development work." (development director, Company A).

Important resources that needed to be mobilized in the early phase of new service development were the new service ideas provided by employees, customers and suppliers. Equipment suppliers with whom the focal company A had close business relations provided also ideas for new services "Our key suppliers come to ask us if we have considered launching this kind of service. They are a big help if we want to start new service development because they have a long experience in their business field." (development director, Company A). Customers were an important source of new service ideas. Ideas could be accessed when meeting the customers in everyday business situations or discussing their problems. To access the ideas of the company's own employees seemed, however, to be demanding. Idea banks and virtual discussion groups had been tried but the results were not very promising so far. Mostly new ideas emerged in everyday work.

A customer's profound knowledge about their processes was a resource which needed to be accessed in order to be able to develop a suitable solution. The whole process was studied in detail together with the customer: "First me, as the Key Customer Manager, and the customer studied their telecommunication room thoroughly through. Then I formed an intra-firm team who developed the service proposal." (key customer manager, Company A).

The focal firm had to consider the end-customer needs as well when developing services since their customer's success depended on the value the customer could provide to their own customers. Thus customer intelligence provided by the customers was a necessary resource in the service development. It could be accessed when the focal firm created a solution to the customer. "In the business-to-business world a relationship with a company means always engaging to customers behind this company. Relationship is an access to some needs behind your customer. The more you understand those needs, the more you can provide added value to your customer." (development director, Company A).

During the development process, customers' premises or sites were used as test environments. Service delivery process could be often developed only at the environment of a customer. "Our firm is too small to be able to develop generic concepts. It's better for us to develop specific customer cases. Of course, we must develop a lot before entering customer's environment but we cannot test only theoretically how the service works. We typically need to have a customer case where we make the decisions, then." (divisional director, Company A). The aim could be also to get customer references for the launching phase of the service. "When the software reaches a certain stage we seek for a reference customer who will use it and give feedback to us." (divisional director, Company C).

Mobilizing of supplier resources for new service offering could mean that after the requirements and contents for the service were determined in the intra-firm development team, the focal company chose suppliers to create some entities for the service solution. "It has gone so that we have first discussed what each party would like to do. After we have seen how much our suggestions overlap and if the service parts fit to each other. Then we have stated that this might be a suitable entity. This has been the starting point." (business area manager, Company A). Because the resources of the supplier were connected as a part of the total service offering and the supplier normally also produced the service, mobilization required a long-term contract. Normally mobilizing of resources for NSD required existing close business relations but in this case contract could be concluded either with a new supplier or with an existing supplier. "We have established a partner network consisting of device manufactures, operators and local subcontractors. We have had to conclude nine new partnerships because of the new service development." (divisional director, Company A).

Thus resources assisting the service development and mobilized in business relationships included relationships to third parties, financing by customers and public funding agency, test environment and customer references. Resources that were connected to the new service included customer intelligence and service parts provided by external actors.

Resources accessible through mobilization in intense NSD relationships

The intangible nature of the needed resource could require intense collaboration in the new service development to access the resource. Such resources were typically knowledge-based and included tacit knowledge. They resided in the organizational actions or consisted of employee knowledge and skills and were thus not easily accessible or transferable. A long-term collaboration might be required to access the resources. The close NSD relationship was regarded as necessitating long-term committing and trust from all the actors and therefore the case companies entered into collaborative new service development only with strategic partners and customers. "A good example of an intense collaboration with our customers is a project where we have done three years development work together with a key customer. Only now the first results start to be concretized." (R&D director, Company A).

The furthest way to collaborate with the customers in service development could be described almost as open innovation. "In the landscape architecture, for example, the

collaboration with the customers is very interactive.” (R&D director, Company B). The customers could, for example, have specific knowledge which the focal company did not have. “It may be that the customer knows more about the thing and the background than we do.” (R&D director, Company B). This could mean that both the focal firm and the customer worked to find a solution according to a mutually prepared work plan. In regular meetings the solution was iterated together and then developed further. Thus, the customer offered also employee knowledge and skills to the development process. “Customers are really actively involved in many of our development projects. The work is organized through regular and formal meetings. There we give homework for both of us. Then in the next meeting we see again what we have accomplished and what we are going to do and decide next.” (development director, Company A).

The aim of the company A and B was to strengthen the new service development processes through intra-firm development teams. “Intra-firm teams are required to be able to accelerate the service development and to learn from each other. We have chosen to view this from the process perspective. We have determined the customer processes and development processes which cross the segment borders. This will necessarily lead to collaborative forums where people from different business fields work together. This is a natural way to start creating new ideas and learn from each other.” (development director, Company A).

Collaboration between different technical fields and functions was found an effective way to change ideas and offer technical and customer knowledge, employee skills and technologies in the development process “A significant strength which we have in service development is having an expert in-house almost for every situation.” (R&D manager, Company B). The expertise of each team member was the resource mainly sought for. At least one member needed to have the skill to envision where the team was aiming at and one member had close relationship to the customer. The company A had employed a considerable amount of customers’ employees through outsourcing and acquisitions recently. They provided customer intelligence in the NSD teams. Sharing the former service and process experiences was regarded an important way of learning from each other. “During this month we have already found some good operation models used in our industry segment. They could produce added value to our grid segment customers.” (development director, Company A).

Suppliers and partners provided knowledge, skills and market intelligence from their special field when the new service was developed in collaboration. “We have a lot of collaboration in such business fields where our abilities to do specific things are by no means sufficient to develop new solutions.” (development director, Company A). Suppliers might also have technologies and IT knowledge and systems that enabled, for example, the development of needed IT software for the new service. “We have understood that all knowhow doesn’t need to be inside our company but we can network and create partnership with somebody who has the expertise we are looking for.” (divisional director, Company B).

The company C had found a machine provider with whom they had concluded a partnership contract to develop and deliver a new service solution together. “We wanted to differentiate ourselves from other firms selling the same machine through providing a complete solution.” (divisional director, Company C). The partner company had the required knowledge for the physical product development and the focal company for the development of services around the technology. They had also a partner who had the needed skills for software development.

The company B based its operations notably on the scientific research. Therefore it regularly participated in the research projects under the programs of the public funding agency similar to the company A. The research projects were managed by universities and the public research centre which provided ideas, latest knowledge, ready developed products

and skilled employees for the service development of the focal company. The company A had separated research and development so that the needed basic research for NSD was acquired through universities and the public research centre which conducted research in the focal companies. “These projects are based on research. The companies that are actively involved in them learn to know a lot about those things and have then a good position especially when developing new business.” (development director, Company A). Universities and the public research centre also provided means to see behind the conventional solution. “My idea is that research knowledge helps to see behind the status quo. This means to me that employees learn to think in a new way.” (development director, Company A).

The company B hired dozens of students to prepare their theses every year. It was found a good way to access the latest scientific knowledge and skills. Motivated students provided the needed development resources for the focal company and hiring of students was regarded the basic way to develop in the company B. “At the moment we have something like 90 theses writers in our firm. They give us a huge additional potential for NSD.” (divisional director, Company B).

The company C had only little experience in service development, and such expertise was possible to access through the research centre that helped them in managing the development project. “This research project came just in time. To my mind the biggest help to us is that we have now several people collaborating in new service development. We haven’t got enough resources ourselves.” (divisional director, Company C). This collaboration helped also to convince the new partners of the NSD project and the focal firm. “We highlight our collaboration with the research centre when we market this development project to potential partners.” (CEO, Company C).

Consultants were hired to provide such technical and other professional expertise that was needed only for a shorter time and thus employing a person was not reasonable. “We have to have ready networks where we can choose a suitable expert to work for us. We have relations to many single professionals whom we connect to our NSD projects when needed. And in the same way they connect us to their NSD projects.” (divisional director, Company B). To differentiate from the competitors the company B had, for example, made a contract with an association of disabled people to involve them in the development network. They provided knowledge and experience about the problems that the disabled met for example in public places and traffic.

Intra-firm collaborative NSD networks were thus needed to access the organizational and employee knowledge, skills and experience as well as customer relations and intelligence residing in various business units of the focal firm. Intense collaboration with customers for NSD provided possibilities to access the customer’s employees’ professional knowledge and skills. Suppliers could also have technical and professional knowledge that was needed in new service development. Joining a publicly funded NSD project or employing thesis writers from universities provided latest scientific knowledge, and expertise of the professionals from universities and public research centre as well as tools for development.

DISCUSSION

Theoretical conclusions

In this study we have taken a resource perspective to the study of networks (instead of an actor or activity view) and studied *how companies use different resource strategies and relationships to get access to different resources for the purpose of developing services*. Current research on networking and relationship building has offered little knowledge in terms of the specific resources or resource access strategies.

The results revealed that the resources that are sought in intra-firm and inter-organizational networks for new service development can be divided into two groups according to their application purpose. First, there are resources that assist in the NSD process. Secondly, there are resources that become part of the new service. Although the developed solutions appear to consist of combinations of intangible and tangible resources, the major part of resources sought for service development in networks was found to be intangible, as the current literature also posits (e.g. Love & Mansury 2007; Syson & Perks 2004; Johnson 2008). This result restrains the usage of four R model developed specifically for solutions, as the model requires a situation where both physical and organizational resources are combined (Bengtson & Håkansson 2008).

The results indicate that the chosen resource strategy depends on the nature of resource. This is further supported by the fact that various resource strategies were applied in a single service development network. The results suggest that the needed new service development resources are sought from actors either through market transaction or through mobilizing. Mobilizing appears to be, however, used considerably more often than market transaction. Market transactions take place in arms' length business relationships where the ownership of the resource is transferred to the purchaser and limited interaction is needed between the actors to perform the transaction. Only some physical ready-made products, such as software and device, seem to be acquired from suppliers through market transactions for new technical service development. As they are easily imitable operand resources they are not considered very valuable according to service-dominant logic when developing new offerings (Madhavaram & Hunt 2008; Lusch & Vargo 2011), which is confirmed by the results. The result that service solution development mostly includes intangible resources supports earlier findings presented by Syson and Perks (2004) but is contradictory to the results by Sheehan (2006) that emphasized machinery and equipment both in service and physical product innovation.

It appears that mobilizing can be used for resource access in new service development either through existing business relationships or through intense NSD relationships. Mobilizing refers here to accessing resources without a transfer of the ownership over the resource. However, as a large share of resources that are mobilized for NSD seem to be intangible, especially in case of intense NSD relationships, controlling the use of resources might prove challenging. Mobilizing requires thus more trust and interaction in relationship than market transaction. It further necessitates confidence in mutual benefit from the collaboration (Håkansson & Ford 2002). This benefit was found to be normally realized in business relationships, even if the resources are mobilized in NSD networks. Therefore mobilizing of resources for NSD seems to assume a business relationship that continues after the resource access.

The results revealed that existing business relationships are used to mobilize NSD resources that may include financial or physical operand resources, like finance provided by customers or public funding agency, or test environment. Also operand relational resources consisting of relationships to third parties, as well as customer references might be mobilized in existing business relationships. Those resources assist in the NSD process. Further, business relations provide a way to access some resources that will be integrated into the new service. They include informational operand resources, that is, new service ideas as well as customer knowledge provided by customers. Organizational operand resources include production process knowledge of the customer firm. Those resources may be accessed in connection with specific customer solutions.

When developing larger service combinations, the suppliers may create entire service elements according to specifications provided by the focal firm. Those elements are integrated into the service entity in the launching phase. As suppliers normally also produce

the service element in the service offering, mobilizing may require a long-term business contract between the parties. Unlike with other NSD resources, this kind of resource mobilization appears to be applied both to new relationships and existing relationships, which refers to the division to engineered and emergent mobilization suggested by Jokela (2006) and Doz, Olk and Ring (2000).

The findings indicate that companies mobilize resources in intense NSD relationships when the resources they seek for are knowledge-based and include tacit knowledge that resides in organizational actions, such as development knowledge, or is employee specific, such as professional skills and knowledge or relations to customers. Mutual learning is predominantly required if the actors wish to access such resources (Vrande, Lemmens & Vanhaverbeke 2006) which necessitates close and intense long-time collaboration.

The resources sought in intense NSD relationships appear to consist of human (employees' professional knowledge, skills and expertise), organizational (development knowledge), informational (market and customer intelligence) and relational (relations to customers) operant resources. The importance of knowledge for NSD can be identified from results where knowledge is a resource sought from all the actors involved in NSD networks. Technical service companies tend to emphasize specialized technical knowledge and skills and scientific knowledge in NSD. This result supports the service-dominant logic view which emphasizes intangible dynamic resources that enable firms to respond to changing environments (Madhavaram & Hunt 2008).

Most of the resources that are sought in intense NSD relationships become part of the new service. Assisting resources include customer relationships that are provided by intra-firm network actors, and NSD knowledge accessed through collaboration with public organizations. The study indicates that mobilizing of resources in intense NSD relationships may take place within intra-firm development networks and with strategic partners and customers. The requirement for strategic partnerships suggests that long-term investments in the relationships are expected from the actors when entering into collaborative NSD relationships. This can mean working closely together for NSD for a long time – even for several years.

As indicated by the nature of resources, needed resource access strategy and nature of required relationship, the results suggest that basic resources accessed in market transactions and existing business networks for NSD do not have the capability to interact considerably with each other and they are thus not as valuable for the new service development as the resources that can interact with each other. The results further indicate that resources accessed through intense NSD relationships are more likely to interact and influence each other, thus forming higher-order interconnected operant resources when combined. Such resources stand highest in the resource hierarchy according to the resource-advantage theory (Madhavaram & Hunt 2008).

The findings further suggest that resources are not only sought through intra-firm development teams for new service development, but also from external actors. It thus adds to the NSD research that has so far had mostly internal perspective to resources (e.g. Froehle & Roth 2007).

Managerial implications

Resources that are needed to be obtained inside the firm and from external organizations for new service development include resources that help to manage the development process and resources that become part of the new service. Most of those resources cannot be purchased. This means that they can only be obtained through existing business relations or through

close long-term cooperation between intra-firm teams, customers, suppliers and public organizations when developing new services.

Different resources require different strategies to obtain them. Resources may be purchased for new service development when they are ready-made physical products and the ownership and control can be transferred to the purchaser. The applicability of such resources seems, however, be limited in the new service development process and they are not considered dynamic resources that enable the firm to respond to changes in markets.

When the service is developed as a solution to a specific customer, the customer can provide ideas, financing, end-customer knowledge, production process knowledge and references as well as test environment during the development project. This requires trusted business relationship where meetings and open discussions take constantly place and where the customer feels that he benefits from providing the resources to the company that is developing a service. The benefit is obtained when the problem of the customer is solved through a new service solution.

The existing product and service suppliers may also provide new service ideas and connections to parties with suitable resources for new service development. Even though suppliers would not participate intensively to the new service development process, they expect to benefit from their resource contribution in business relations. Both new and existing suppliers can create service entities that are then connected to the total service package for example on the module basis. The modules are produced by the suppliers also after the launching phase which necessitates a longer business relationship.

Employee knowledge and skills and customer relations are, however, possible to obtain mainly only through close collaboration during the new service development process. Collaboration often needs a longer time and sufficient commitment from all parties in order to lead to results. Therefore entering into strategic partnerships and customerships often precedes new service development collaboration. Learning plays an important role in collaborative service development. Therefore it would be important to include both intra-firm teams and external parties to the development network in order to obtain wide variety of knowledge and skills. Especially specialized employee knowledge and skills available inside the company and provided by customers, suppliers and consultants is valuable for new service development. When universities and research centers are included in the service development process, they provide the latest scientific knowledge and development knowledge as well as tested methods for new service development. Research made by universities and research centers inside the companies provide the needed company specific information for new service development.

Limitations and research implications

The aim of this paper was to provide new conceptual understanding about the relation between resources, resource strategies and relationships in new service development networking. Empirically the study focused on the establishment phase of service development networks, which creates its major limitation. In the future there is need to study the later phases of the networking process to find out how managers' understanding of the needed resources and relationships change over time, how collaborative NSD evolves as a learning process and how resources are actually integrated and created in interaction with other actors.

The study provides findings on service solution development in particular, excluding physical product development. Whether resource and relationship strategies differ in physical product development from the ones presented in this paper remains to be studied more in the future. The empirical data is limited to experiences of three focal technical business service companies in new service development. Those three cases offered relatively rich data to

develop theory on resource access and resources needed for service solution development. Still it may not be generalizable to other types of services.

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