THE RELATIONAL CAPABILITIES OF R&D COLLABORATION

Tuomas Huikkola thui@uwasa.fi Finland University of Vaasa

Juho Ylimäki juho.ylimaki@uwasa.fi Finland University of Vaasa

Marko Kohtamäki mtko@uwasa.fi Finland University of Vaasa

ABSTRACT

Building on a resource-based theory and analyzing relational capabilities in the R&D collaboration context, this paper examines what relational capabilities firms possess in a dyadic R&D collaboration. We apply a qualitative comparative case method to analyze seven dyadic R&D service interactions which were selected from quantitative data. To identify the cases, we clustered relationships with two average variables: 1) the breadth of the R&D service offering in the relationship and 2) the extent of relational learning in the relationship. The study's results indicate that within a relationship, the firms develop and nurture various complementary and distinctive capabilities to develop trust, promote innovations, decrease information asymmetries and transaction costs. From the supplier viewpoint, our results highlight supplier's need to develop processes to identify its customers' key decision-makers and to interact effectively, thus creating a platform for comprehensive R&D collaboration. Customers highlighted the importance of value in supplier interactions and consider relational structures as means to enable valuable interactions. By investing in dyadic relationship-specific assets, combining the distinct capabilities of the parties and creating common relationship-specific processes, procedures and practices, the firms could create relational capability. Relational capabilities led to increased trust and reduced relational transaction costs. This paper contributes to the literature by developing a model on relational capability, which considers relational capability as a sum of the firms' complementary capabilities, relationship-specific investments, processes, structures and practices.

Keywords: R&D collaboration, R&D services, relational capability, resource-based view of the firm, case study, supplier-customer relationships

Authors: Tuomas Huikkola, Juho Ylimäki and Marko Kohtamäki (University of Vaasa, Finland)

Competitive paper

INTRODUCTION

Economic downturn requires manufacturers and customers to seek new ways to create competitive advantage within industrial ecosystems of companies and relationships. In these industrial business environments, within which companies bundle products and services into solutions, and then customize them according to customer needs, effective R&D cooperation is needed. Yet, these R&D interactions between manufacturers and customers are far from easy consisting of vast information asymmetries, generating transaction costs and prohibiting innovation. Therefore, effective R&D cooperation requires relational processes, such as enabling structures and social capital, which support joint value-creation from R&D services. Unique combinations of capabilities and processes of manufacturer and customer are often coined as relational capabilities. These relational capabilities have a central role in creating competitive advantages for the manufacturer and the customer operating within an industrial business ecosystem (Theoharakis et *al.* 2009: 915).

Prior studies on the R&D services of industrial companies do consider the role of cooperation, but often focus on networks of suppliers, customers or horizontal R&D partners. We add to this discussion by taking a specific approach by examining the mechanisms of collaboration in the manufacturer-customer relationship. The prior relational research on R&D collaboration is dispersed and often quantitative, neglecting important relational capabilities, processes, structures and practices. The scarce research that views R&D cooperation relationally requires case-based qualitative, comparative studies on the relational capabilities of R&D collaboration. Therefore, the present study poses the following research question: What are the relational capabilities in a complex R&D collaboration between the supplier and the customer? We intend to answer our research question by studying seven relational cases identified from generalizable quantitative data on 91 supplier-customer relationships. The data are particularly interesting because of the case-selection process, in which the 91 cases were clustered into three groups according to two validated dimensions: 1) the breadth of the R&D service offering in the relationship and 2) the extent of relational learning in the relationship. For the qualitative data collection and case comparison, we selected seven relationships that scored relatively high in both dimensions. Therefore, as a unit of analysis, we assumed a supplier-customer relationship, collecting qualitative data from both sides of the relationship.

In sum, this paper contributes to the literature on relational capability and R&D collaboration by examining the distinctive relational resources, capabilities, processes and practices of dyadic R&D service interactions. Considering the knowledge asymmetries characteristic of R&D service interactions, this paper investigates what type of relational capabilities firms possess and how the firms deploy them in a complex R&D collaboration.

THEORETICAL BACKGROUND

R&D service interactions

R&D services, such as prototype-building and prototype-testing services or product-tailoring services are often complex and require thorough knowledge of the end product, end-user preferences and the customer's core processes. Nevertheless, R&D interactions typically suffer from information asymmetry between the supplier and customer. These asymmetries may hinder cooperation and the creation of value between the parties, lengthen negotiations and lead to increased transaction costs and opportunistic behavior (Williamson 1985; Stump, Athaide & Joshi, 2002). Additionally, R&D services are socially demanding because the economic uncertainties, increased profit pressures and short-term sub-optimization by the organizational actors may cause controversies between the parties. Because of complexity of R&D service interactions, firms engaging in R&D exchanges require combining different social, structural and strategic forms of integration, such as trust, open discussion, relationship-specific investments and good social relations in different organizational layers to decrease the risk of partner exchange. In addition, R&D services may be difficult and costly to outsource, and they often include elements of *value co-creation*, i.e., *value in use* (Vargo & Lusch 2004: 10-11), which means that the value is based on the relationships and the shared processes of the parties. Ramirez (1999: 50) notes that "*value is not 'simply added' but is mutually created and re-created among actors with different values*". The value constellation literature (e.g., Normann & Ramirez 1993: 66) stresses that "*successful companies conceive of strategy as systematic social innovation: the continuous design and re-design of complex business systems*". In sum, because of the complexity of R&D services, the managers responsible for relationship development must create commitment and trust between the different actors within the relationship to gain the benefits of R&D collaboration. However, Prahalad and Krishnan (2008) argue that value is created in the mind of the customer, whereas the supplier's role is to provide a platform that enables the customer's value creation. Grönroos (2011: 279) claims that customers are not always co-creators of value. Rather, service providers receive opportunities to co-create value together with their suppliers. This assessment differs significantly from Vargo and Lusch's (2004: 10) statement that "*the customer is always a co-creator of value*".

A resource-based view of the firm

A resource-based view of the firm (RBV) (e.g., Wernerfelt 1984, 1995; Prahalad & Hamel 1990; Barney 1991, 1995; Amit & Schoemacher 1993: Long & Vickers-Koch 1995) suggests that firms possess or control unique combinations of resources (competences) and processes to create competitive advantage (Leonard-Barton 1992: 112; Long & Vickers-Koch 1995: 11; Prahalad & Hamel 1990: 85). Several authors (e.g., Barney 1991: 106-112; Leonard-Barton 1992: 112; Amit & Schoemacher 1993: 38) consider these distinctive, highly useful and unique resources and capabilities valuable to the customer, rare within the industry, inimitable by other companies, difficult to substitute for, scarce, complementary and non-tradable. Long and Vickers-Koch (1995: 12) describe core competences as a firm's special knowledge, skills and technological know-how that distinguish the firm from other firms, whereas Prahalad & Hamel (1990: 81) coined the term *core products* to define the outcome (products or services) of a firm's core competences.

Researchers frequently divide a firm's resources into assets and capabilities (e.g., Amit & Schoemacher 1993: 35, Theoharakis et *al.* 2009: 915). Assets are considered tangible resources that the firm has accumulated, such as reputation, brand or economies of scale. In contrast, capabilities are the so-called glue uniting these assets and enabling the firm to deploy them advantageously. Capabilities include the skills underlying innovativeness and the superior quality of a firm's products or services (Amit & Schoemacher 1993: 35; Day 1994: 38). Long and Vickers-Koch (1995: 13) among others (e.g., Hansen & Wernerfelt 1989; Prahalad & Hamel 1990; Leonard-Barton 1992; Barney 1991, 1995; Liker & Morgan 2006) emphasize the role of an organization in exploiting resources. Long and Vickers-Koch (1995: 13) define core capabilities as the sum of *core competences* and *strategic processes*. Strategic processes are business processes that deliver special know-how in the form of products and services valuable to the customers and stakeholders. Thus, core capabilities are considered *"the most critical and the most distinctive resources a company possesses, and the most difficult to copy when effectively linked with appropriate strategic targets in a value chain."* (Long & Vickers-Koch 1995: 13.) Amit and Schoemacher (1993: 37) believe that capabilities often refer to a firm's capacity to deploy the resources that the firm possesses or controls. These same researchers note that the industry-structure view (e.g., Porter 1980; Schmalensee 1985) should not be excluded from the analysis. Instead, they suggest that economic rents are comprised of a firm's possessed or controlled resources and capabilities as well as strategic industry factors, such as environmental factors and the actions of a firm's suppliers, rivals and customers (Amit & Schoemacher 1993: 37).

A relational view of competitive advantage

The resource-based view has been described as highly introspective and centered on the firm (Porter 1991: 107). However, strategic resources can be either internal or external to the firm (Amit & Schoemaker 1993: 38; Theoharakis et *al.* 2009: 915). The relational view (e.g., Dyer & Singh 1998; Madhok & Tallman 1998) suggests that a firm's critical resources may be comprised of the firm's boundaries and embedded in interfirm resources, routines and processes (Dyer & Singh 1998: 660). Because competition has been shifting from competition between single firms toward competition between networks and clusters, the importance of research on networks and relationships has increased (Theoharakis et *al*. 2009: 915). Compared with the industry-structure view of strategy (e.g., Porter 1980, 1985), the relational view considers that relationships between organizations are not merely governance structures, such as relationships involving supplier and customer negotiation power, but a productive resource for value creation (Madhok & Tallman 1998: 326).

One study defines relational or network competences as follows: *"Company's network competence, which captures the level of network management task performance and the network management qualifications possessed by the people handling a company's relationships."* (Ritter & Gemünden 2004: 549). Cooperative competency is *"derived from related concepts of mutual adjustment, absorptive capacity and relational capability is posited as the key factor affecting new product development success, regardless of whether it is an intra- or interfirm endeavor"* (Sivadas & Dwyer 2000: 31.) Dyer and Singh (1998: 663) consider that a firm's overall competitive advantage is based on the firm's relationships, relationship-specific assets,

knowledge-sharing routines, the complementary or scarce capabilities the firm possesses and effective governance among the firms. Theoharakis et *al.* (2009: 918) consider relational capabilities as external capabilities that describe company interdependencies. These external capabilities consist of the *customer-linking capability* and the *strategic-partnering capability.* The customer-linking capability is composed of the abilities 1) to create relationships with key customers or customer groups and 2) to maintain and enhance relationships with key customers. The strategic-partnering capability consists of the abilities 1) to pool expertise with strategic partners, 2) to share trust with strategic partners and 3) to share mutual commitments and goals with strategic partners. To successfully gain advantages through partnerships, firms must maintain the capability to appropriately apply a suitable combination of relationship-governance mechanisms. These mechanisms include the price-based market mechanism, the authority-based hierarchy mechanism and the trust-based social mechanism (Adler 2001: 215). According to Adler (2001: 216-219), the use of the combinations with social mechanisms is particularly important in knowledge-intensive partnerships. Other authors have noted the importance of hierarchical mechanisms in addition to social mechanisms for learning in the relationship (Kohtamäki 2010: 52).

Figure 1 illustrates the background of the study. The study´s logic is based on concept which assumes that relational value is created between a customer and a supplier through their shared processes (e.g., Ramirez 1999: 50; Normann & Ramirez 1993: 66). On the other hand, the study relies on the resource-based view of the firm and relational capability theory suggesting that firm's competitive advantage is based on firm's possessed and controlled resources and capabilities (e.g., Amit & Schoemacher 1993: 37; Long & Vickers-Koch 1995: 13; Theoharakis et al. 2009: 918).

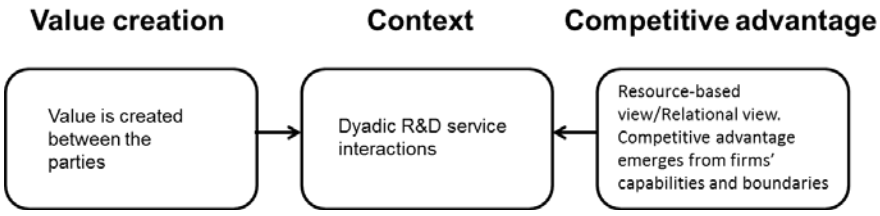

Figure 1. Background of the study.

Our study takes a somewhat unusual position in relational research by defining relational capability as a combination of complementary capabilities that require relationship-specific investments and these resources are deployed effectively through relational processes, structures and practices. Thus, we argue that the value and, particularly, the sources of potential value perceived by the customer result from a unique relational capability deriving from the relationship-specific combination of a supplier's capabilities as well as relationship-specific investments, relational processes, structures and practices. Therefore, we argue that value and relational capabilities are unique and relationship-specific. Building on the resource-based theory and relational capability theory, figure 2 demonstrates that relational capability emerges from firms' generic and distinct resources and capabilities, their relation-specific investments and

shared processes (Long & Vickers-Koch 1995: 13). Thus, the relational capability is manifested in the form of valuable, scarce, inimitable and un-substitutable outcomes (e.g., Barney 1991: 49).

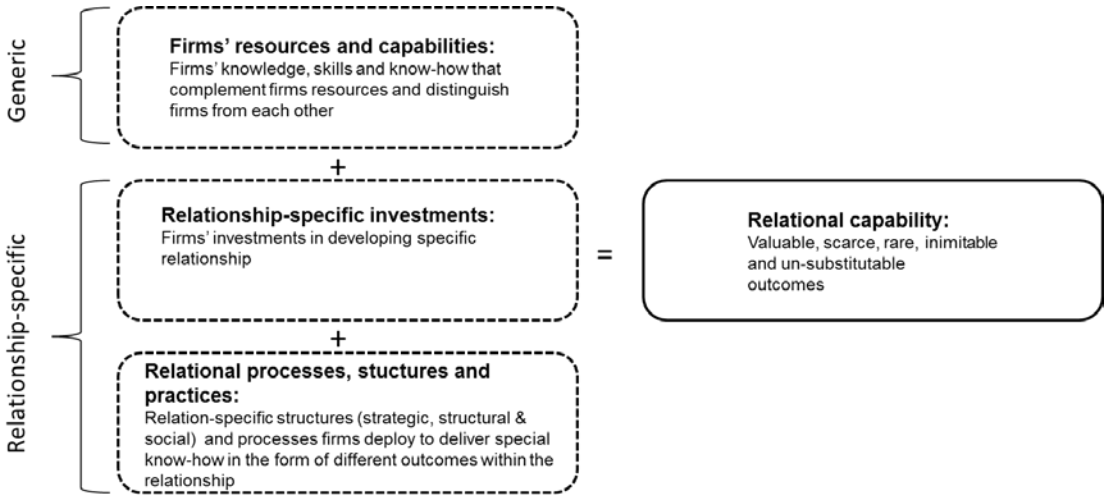

Figure 2. Theoretical framework for analyzing the origin of relational capability.

DATA AND METHODOLOGY

This paper relies on an interpretative (e.g., Burrell & Morgan 1979), comparative multiple case-study approach based on the analysis of seven dyadic R&D service interactions. The qualitative multiple case study was found a suitable method to examine the subject given the abstract nature of the relational-capability view. Additionally, the multiple case study enables the collection of in-depth information through interviews and provides generalizable information on the practices that companies follow in these relationships.

The dyadic relationships were selected based on a quantitative dataset collected in Finland in 2010. A survey was sent to manufacturing firms belonging to standard industrial classification 28 and employing 20 or more employees. The survey was sent to the managers responsible for the firms' most important customer-relationships, and the companies evaluated independently the customer-relationships they considered the most important. In total, 91 respondents out of the total population of 404 replied to the survey, a response rate of 22.5 %. K-means cluster analysis was applied to cluster the supplier-customer relationships as follows: 1) the breadth of the R&D service offering in the relationship and 2) the extent of relational learning in the relationship. The R&D dimension was measured on a Likert scale (0 = not offered; 1 = not significant at all; 7 = very significant), as was relational learning (on a 7-point Likert scale ranging from "fully disagree" to "fully agree"). The constructs were validated by AMOS structural equation modeling, and the procedures are reported elsewhere.

Based on the cluster analysis, we identified 22 relationships in which the R&D service offering and the extension of relational learning were remarkably high. From these, we focused on seven relationships, which had highest values in terms of R&D services and relational learning. Figure

2 describes the three clusters derived from the relational cases (n = 91) and clustered according to R&D services and relational learning. On the upper right are the 22 cases from which we determined to take the seven highest scoring cases for in-depth analysis. On the upper left are cases of high relational learning but low R&D service offerings (n = 33). The cases shown in the lower left corner demonstrated low R&D service offerings and relational learning (n = 36). The number of clusters was determined according to the BIC value.

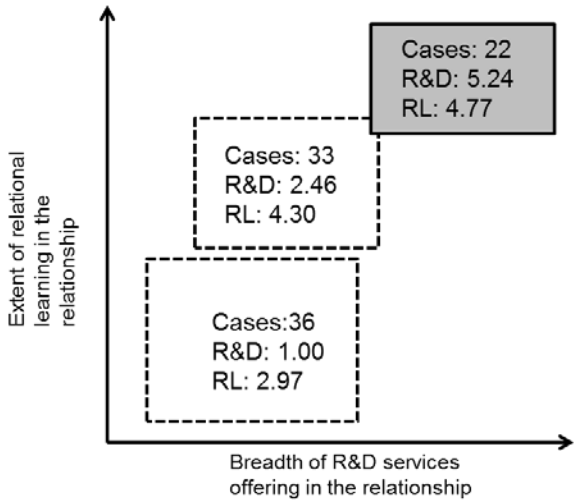

Figure 3. The three clusters found in the quantitative data and the seven selected cases from the upper-right cluster (22 original cases, high R&D services and relational learning) from 91 total cases.

To familiarize ourselves with the topic and to gain insight into the relational capability view in the R&D service context, we conducted a pilot study. The pilot study enabled us to test, develop and validate a semi-structured questionnaire. Additionally, it increased our understanding of the topic and helped the researchers to analyze the content and results. In this stage, we interviewed the senior executives (the customer's director of supply management and the supplier's CEO) in charge of the particular relationship at their headquarters. The interviews were recorded with permission, and we summarized the data of the memorandums and transcripts of a relational case and reviewed the memorandums and transcripts to discern the capabilities and practices in this dyadic R&D service relationship. The telephone and face-to-face interviews resulted in 72 pages of interview data on the particular R&D service relationship. In addition, we produced a table representing relationship-specific information, such as 1) the R&D service portfolio in the relationship, 2) the general R&D cooperation, 3) relationship structures, 4) the strategic cooperation between the parties, 5) the social capital of the parties, 6) practices within the relationship, 7) complementary capabilities, 8) the integration type and 9) the contribution to new product development in the specific context. As a result, the pilot study helped us to systematize data collection and to analyze the processes used in the actual cases.

The first step of the data gathering required developing a comprehensive means to collect and analyze the data. The data collection started with a telephone call to the supplier representatives.

During the first telephone call, the researchers described the general phenomenon and the reason for the case selection. Next, researchers determined an appropriate time for the telephone and face-to-face interviews. The aim of the telephone interview was to collect general information on the products, services and R&D services that the suppliers offer in the identified relationship. The representatives were asked to describe how the relationships had developed. In addition, they were asked to describe their role in the dyadic relationship and list their main responsibilities. The face-to-face interviews were conducted at the supplier headquarters, and the representatives were asked to name the most suitable person from the customer side to participate in the research. Next, the researchers conducted telephone and face-to-face interviews with the customer-side representatives. In one case, the researchers were not allowed to interview a foreigner customer because of the firm's policy of not revealing customer contact information.

In sum, we conducted 26 interviews, including 13 telephone interviews and 13 face-to-face interviews, with key decision-makers from both sides of the relationships in 2011 and 2012. The positions of the supplier interviewees were as follows: 1) sales and marketing director, 2) key account manager, 3) marketing manager, 4) sales manager, 5) area manager, 6) export manager and 7) director of sales support. The positions of the customer interviewees were as follows: 1) CEO (in two cases), 2) business manager, 3) maintenance specialist and 4) business division director (in two cases). The interviews required from 60 to 90 minutes, with the average interview lasting typically 70 minutes. All of the interviews, including the telephone interviews, were recorded with permission and transcribed verbatim shortly after the interview, resulting in approximately 450 pages of interview data. The interviews were conducted by two researchers who used a semi-structured questionnaire to help the interviewees express themselves openly. To protect confidentiality, the quotations are identified only with the respondent's title. Thus, an individual respondent or company cannot be identified based on the text.

The interviews focused on R&D services within the identified dyadic relationships, the development of the relationship and the capabilities possessed and the practices followed by the parties. The interview content was interpretative because the interviewees can be considered to have their own view of their firm's history, capabilities, processes and practices. Therefore, this study's ontology is based on nominalism; its epistemology is based on anti-positivism; human nature is considered to rely on voluntarism; and the methodology is ideographic regarding Burrell and Morgan's (1979) classification. All of the interviewees were senior managers at their companies, which may cause response bias because the interviewees may not have possessed thorough knowledge of operational-level cooperation. Additionally, their interpretations may depend on their previous work history within the firm or industry or their personal views. Moreover, their contracts with their firms or their shares of firm ownership may have affected their interpretations (the interviewees may have believed that their statements could affect their careers or firms). To increase the study's reliability, the supplier responses were compared with the responses of their customers and vice versa.

Tables 1a and 1b represent the selected cases (including a pilot study), general information about the firms such as firms' number of employees, firms' total revenues, their main products or services and partner's evaluated exchange time (evaluated by the firm's representatives). Tables

also show what type of R&D collaboration firms perform in a particular relationship and what different R&D services they provide in a particular relationship.

	Pilot study		Relationship A		Relationship B		Relationship C	
	Pilot customer	Pilot supplier	Customer A	Supplier A	Customer B	Supplier B	Customer C	Supplier C
Total revenue	> 1000 million €	< 20 million €	> 1300 million €	> 15 million €	> 300 million €	> 12 million €	< 100 million €	< 7 million €
Number of employees	> 800	< 20	> 3000	> 100	> 1000	> 30	> 200	> 15
Main products/ services	Plants and delivered turnkey projects.	Metal components.	Product machines and turnkey technological solutions.	Industrial valves, pumps and services.	Pipe systems and delivered turnkey technological solutions.	Specific technology products and subcontracting. Portfolio includes modernization and maintenance services for installed base.	Material-handling systems.	Metal components for material-handling systems.
Provided R&D services in the particular relationship	Product tailoring, product-design services and prototype-building.		Product tailoring, product development, prototyping and testing services.		Product tailoring, product development, prototypes to some extent and modernization.		Product tailoring, consultation in product configuration, product development, prototyping, technical testing of materials, inspections during the lifetime of the product.	
Type of R&D collaboration	White box/gray box.		Gray box/black box.		Gray box/black box.		Gray box.	
Partner's evaluated exchange time (estimated in months)	< Three months.	24-36 months.	6-12 months.	24-48 months.	1-3 months.	36-48 months.	2-4 months.	36-48 months.
Interviewee's title	Director of Supply Management.	CEO.	Business Manager.	Area Manager.	Business Division Director.	Sales Manager.	CEO.	Export Manager.

Table 1a. Case descriptions

	Relationship D		Relationship E		Relationship F		Relationship G	
	Customer D	Supplier D	Customer E	Supplier E	Customer F	Supplier F	Customer G	Supplier G
Total revenue	> 500 million €	> 16 million €	> 20 million €	> 25 million €	< 400 million €	> 60 million €	< 600 million €	> 6 million €
Number of employees	> 1500	> 50	> 60	> 100	< 700	> 150	> 1500	> 30
Main products/ services	Infrastructure maintenance.	Maintenance equipment.	Power transmission equipment.	Spare parts, maintenance services, product tailoring and design services.	Paper products.	Lubrication systems (turnkey solutions).	Investment goods.	Special technology and services related to specific technologies.
Provided R&D services in the particular relationship	Product tailoring, dedicated product development, prototype-building (testing facilities offered by the customer).		Product tailoring, particularly of demanding products.		Mainly process-related services (includes process-analyzing services).		Product development services, product tailoring, product-design services, prototype-building, prototype components, special component manufacturing and modeling services.	
Type of R&D collaboration	Gray box.		Black box/gray box.		Gray box/black box.		Gray box.	
Partner's evaluated exchange time (estimated time in months)	6 months.	> 36 months.	-	-	12-24 months.	3-6 months.	24-36 months.	12-24 months.
Interviewee's title	Business Division Director.	Sales Manager.	Director of Sales Support.	CEO.	Maintenance Specialist.	Key Account Manager.	-	Sales and Marketing Director.

Table 1b. Case descriptions.

The extended-case method was applied to conceptualize and extend the existing theory on relational capabilities and R&D collaboration. The extended-case method is circular because it involves many cycles of data and theory, forcing researchers to focus on gathering complementary data and imagining alternative concepts. In the extended-case method, the data analysis and the examination of the scholarly literature occur in conjunction (Danneels 2010: 4). This study started with an examination of the literature that takes a resource-based view (e.g., Wernerfelt 1984; Barney 1991, 1995; Amit & Schoemaker 1993), including the literature on core competences (e.g., Prahalad & Hamel 1990), core capabilities (e.g., Long & Vickers-Koch 1995) and the relational view of competitive advantage (e.g., Dyer & Singh 1998; Madhok & Tallman 1998; Sivadas & Dwyer 2000; Ritter & Gemünden 2004; Theoharakis et *al.* 2009). The examination of the literature continued with a review of the studies on R&D collaboration (e.g., Takeuchi & Nonaka 1986; Clark 1989; Bonaccorsi & Lipparini, 1994; Petersen, Handfield & Ragatz 2005).

The researchers produced memorandums when analyzing the literature and transcripts. The researchers constantly confronted the collected case data with the literature on relational capabilities and R&D collaboration. To illuminate and organize the data, the researchers made notes, occasionally discussed the cases and compared data between the cases to find similarities and differences. In addition, to discern and structure substantive issues in the histories of the firms, the researchers created timelines of the important events in recent firm history.

FINDINGS

The study's findings show that companies in successful R&D service interactions possess unique and complementary capabilities that they can exploit effectively through their own organizations. The firms deploy their complementary capabilities through shared processes, structures and practices. This cooperation leads to decreased transaction costs and increased trust between the parties, which indicates a relational capability but also requires relationship-specific investments from both parties. The customers focus on creating enabling structures, whereas the suppliers concentrate on developing technological solutions and new ways to use them.

Tables 2a and 2b summarize firms' general capabilities, relationship-specific investments, deployed governance structures in a relationship (deployment of different hierarchic, market and social mechanisms), and relational processes and practices applied in a particular relationship. Tables also represent and verify the scarce outcomes emerged from the relationships.

	Pilot Study		Relationship A		Relationship B		Relationship C	
	Pilot Customer	Pilot Supplier	Customer A	Supplier A	Customer B	Supplier B	Customer C	Supplier C
Firm-specific capabilities	Project management capabilities/ partnering capability.	Welding capabilities + cultural and physical proximity.	Manufacturing and network management capabilities.	Specific technology design, assembly and maintenance.	Project management and network management capabilities.	Technological capabilities.	Project management capabilities. Turnkey solutions delivery.	Welding and manufacturing capabilities.
Relationship-specific investments	Supplier's plant is located next to the customer.		Shared IT system (customer sees supplier's product pictures), supplier's plants are located near the customer's plants to provide spare parts and services in short response times. Supplier's proprietor personally owns high share of customer stock.		Partly shared accounting functions. After years of collaboration, customer acquired the supplier.		Shared IT systems, proximity of plants.	
Relational processes, structures and practices	Strategic discussions occur simultaneously with annual negotiations. There is no profit-sharing arrangement. Information sharing via e-mails, telephone calls, customer's engineering visits at supplier's production facility, development meetings, common supplier days, meetings with technical engineers and strategic and operational purchasers.		Strategic discussion occurs quarterly. Customer knows supplier's costs and gross margin. Both companies occasionally share knowledge of their customers and specific issues related to them.		Open-book practice because the parties have agreed on supplier's marginal profit. Market information sharing and product information sharing on suppliers' competitors through e-mails.		Open-book practice. Supplier and customer have agreed on supplier's gross margin. The supplier's business issues are addressed in customer's board meetings. Partners have access to one another's product pictures. Parties also hold joint product development meetings. Weekly telephone contact.	
Strategic outcome	Reliability and high trust between the actors.		Delivery reliability.		Ensuring the availability of critical components. Reliability of delivery and superior technological solutions.		Delivery reliability and trust among the firms.	
Governance structures	Market/hierarchical mechanism.		Social/hierarchical mechanism.		Market/hierarchical mechanism. Ostensible market mechanism.		Social/hierarchical mechanism.	

Table 2a. Case analyses.

	Relationship D		Relationship E		Relationship F		Relationship G	
	Customer D	Supplier D	Customer E	Supplier E	Customer F	Supplier F	Customer G	Supplier G
Firm-specific capabilities	Network management.	Product-design capabilities.	Marketing and sales capabilities related to the end products and managing the total product portfolio.	Manufacturing and logistics capabilities.	Manufacturing capability.	Capabilities in providing total solutions.	Supply-chain management capability.	Special technology design capabilities.
Relationship-specific investments	Support and field testing offered by the customer.		Shared IT systems. Proximity of plants. Common ownership.		Appointed key account manager responsible for developing the customer relationship.		Partly shared IT systems (intranet). After collaboration, customer acquired the supplier.	
Relational processes, structures and practices	Relatively equal strategic R&D discussions twice a year. Separate purchasing discussions. List of ideas under development as a result of strategic R&D discussions. Contacts from customer side when relevant ideas evolve.		Mutual profit sharing, common tax planning. Frequent steering group and development team meetings. Intimate social relationships, operative personnel meet daily.		Development meetings quarterly. Mainly supplier-driven development. Relationship has long history. Close coordinating communication between companies.		R&D manager and technology manager communicate weekly and actively. Weekly videoconferences about technological issues. Weekly project meeting. Joint sense-making is essential because both companies are dependent on each other.	
Strategic outcome	Improved customer end-process.		Technological and marketing complementarities.		Process reliability, decreased downtime, high trust between actors.		Technological and marketing complementarities.	
Governance structures	Social/market mechanism.		Hierarchical/social mechanism.		Social/market mechanism.		Hierarchical/social mechanism.	

Table 2b. Case analyses.

Supplier capabilities

Supplier capabilities were typically related to technological know-how, such as technology development or technology infusion. However, the suppliers also could identify key decision-makers or persons with a large influence on many individuals in the customer's organization. The supplier marketing director described his company's core competences as follows: "*We discovered that we needed to develop these components by ourselves. And particularly, developing these components became our core competence."* He continued, "*controlling the manufacturing process because it is a manufacturing process that really requires know-how, the technology possessing itself, but also controlling and developing the manufacturing process. That is our core competence."* The supplier sales manager described his company's ability to tailor and manufacture products. Additionally, he highlighted the issues the customer respects: "*the process knowledge has to be occupied by us. There are different technologies* [networks, remote diagnostics] *and only the software is our own. It creates safety for the customer if one component breaks and the customer can buy the component from almost any of the manufacturers and replace it"*. A customer's business division director described the competences of his company's supplier as follows: "*Their capabilities are related to a certain product that is the heart of the entire system. The products need to be good and competitive"*. A customer CEO described the competences of his company's supplier in the following manner: "*The technical and technological competence is definitely stronger there* [at the supplier]. *They are valuable to us in that we can take advantage of their know-how… they are much deeper into gear-technology and manufacturing and so forth, so we can utilize it*". The director of the relevant supplier confirmed this statement: "*Our location is based on our historical product competence but also manufacturing competence"*. The marketing director declared the reason why they were acquired and the capabilities behind his company's products and services: *"We were acquired because we brought certain technology in- house. They* [the customer] *didn't possess the technology before, so we were the first one in a way who brought it* [the technology] *into the group. So it was the expertis*e." Additionally, the customers highlighted the role of the suppliers' procedures and attitudes: *"Well, they* [the supplier] *have responded quite well to the need for changes or need for adaptations"* (director of business unit). The supplier sales manager emphasized the significance of a supplier's attitude: "*It is very clear that it sounds a bit cliché, but it's not like that in the eyes of the customer. If we say at the beginning that we don't change this and we don't change that, we have a very bad starting point."* A customer CEO evaluated the outcomes of his supplier's capabilities: "*They are distinctive within the markets because their quality is good and they have reliable delivery."*

In addition, the suppliers identified a customer's key decision-makers and personnel with substantial influence on other individuals. The supplier sales manager stated his company's competences in collecting information: "*They* [the customer] *have these machine representatives, and we get a lot of feedback from them, but without exception, we need to check the information because it changes during that time, especially the negative feedback"*. A customer director of the business unit illustrated commitment of his company's employees to the supplier as follows*: "Their* [the supplier's] *products are slightly more expensive, but our own employees, our own drivers, are more or less fanatical about and enchanted by this supplier"*. He added how certain employees responded to the products of this supplier's competitors "*A few of them* [the customer's machine operators] *even broke them* [the supplier's competitor's product] *on purpose"*.

Customer capabilities

Customers' capabilities included partnering capabilities, such as relationship steering and project management capabilities. The companies were typically closer to the end-user, and their core businesses often included selling investment goods, end products and total solutions. Therefore, their overall capabilities were related to applying market knowledge and analyzing the usability of the investment goods. The partnering capability consisted of supply-chain management, project management and leveraging the entire network. Thus, the customers required the capabilities of controlling the network, ensuring shipment reliability and leveraging supplier know-how. A business division director described his company's core competences: "*Well, on the other hand, it's* [core competence] *turnkey project management for us. It's essential that we have the right attitude when we are working with our customers and when we are doing this kind of process-level turnkey project. It's like this kind of designing, controlling, etc. and also the purchasing and refining and so on*". The marketing director described his company's capability as follows: "*Well, the customer kind of coordinates the entirety because they are responsible for the whole system. In a sense, they give us the customer input*". The business division director represented the consequences of his company's capabilities for the end customer: "*We can deliver you the whole product portfolio, everything you need there and help with other things that you can manufacture* [end products]. *If needed, we can add additional outlines where the most extensive one* [franchising concept] *covers brand, logistics and training but also purchasing all the materials as well as selling them.*" The sales manager emphasized the role of complementary resources: "*They* [the customer] *have given us other goods than just a logo. So we can enter new markets, plus we don't necessarily have to find funding. We're gaining funding and bigger muscles in general."* When the supplier's sales manager was asked to describe his customer's capabilities, he mentioned that they were related to the use of the end-product and their experience: "*They* [customer's company] *have a ridiculous amount of experience in the industry, and they have been operating longest"*. The customer CEO described his company's core competence as follows: "*We feel that we possess competences in gears. Hence, we can provide these services to OEM's as their subcontractors because it's not reasonable for them to do that* [service]. *It is our core competence and we know it."* The CEO continued by describing the distinct and complementary capabilities that the firms in the relationship possessed: "*We have stronger sales competence and customer-relationship management and these kinds of competences. We are more like salesmen here, and they* [supplier] *are more like engineers."* This supplier's business division director evaluated the same customer's competences and benefits from his company's perspective: "*The firm has built a comprehensive sales network and global presence. Having the largest and best sales network within the industry ensures contacts for us too*".

Relationship-specific processes

Relational processes, procedures and practices are mechanisms of deploying complementary capabilities and exploiting them through organizations. Long and Vickers-Koch (1995: 13) coined the term strategic processes to express the same phenomenon. These processes consist of social interactions, such as meetings and cooperation between different organization layers, as well as common procedures and unique modes of operation between the parties. These processes are described as the so-called glue uniting relationship-specific investments and complementary capabilities (Day 1994: 38). The suppliers reported the value of their products to the customer's core processes as follows: "*The aim on both sides has been that our products can be linked to their* [the customer's] *processes. The common objective has been that our products benefit customers in their core processes. Our product supports the*

customer's product efficiency." (Area Manager). The parties discussed their common meetings: "*All of the levels* [senior managers, middle managers and operational personnel] *have meetings occasionally and they discuss different issues"* (a supplier's area manager). In addition, the parties emphasized multi-level activities: "*In this kind of cooperation we have multilevel activities: Senior-management level, middle-management level and an operational level."* A supplier's area manager emphasized a means of collecting information: "*Our main industry is the same as the customer's industry. Because of this, we get the newest process information and we can expand our knowledge. We can get the information straight from the front line"*. Additionally, the companies reported various knowledge-sharing practices: "*Well, if somebody gets some interesting information about competitors, usually it will be shared with all of them.…. They* [the supplier] *can look to see if they* [a supplier's competitor's products] *have some new ideas. And of course customer information is what our customers want to hear. That information goes immediately to the supplier. For example, if there is this kind of product line case coming, you could go to look at that or put men to work there"* (Business Division Director). A customer CEO discussed sharing information about competitors: "*If some new market knowledge is available on competitors, the information sharing is very active"*. A business division director discussed the different ways of sharing information: "*Well, basically via phone or e-mail. Often e-mail if the information is in some format. Competitors' presentations or customers' reports or market knowledge will be shared physically."* However, the export manager stressed the role of informal knowledge sharing: "*Very little would be documented. It's more like spoken, intimate dealings."* A customer CEO delineated who participated in operational discussions: "*Practical discussions take place between our project managers and their* [the supplier's] *sales managers and CEO*". He continued by expressing how the parties have decreased the information asymmetry: "*It's the kind of practice that if we are having a problem related to components, we'll contact the supplier, and if the supplier has a problem related to conveyors, they will contact us.*"

Governance structures, i.e., how the relationship is managed, include a price-based market mechanism, an authority-based hierarchy mechanism and a trust-based social mechanism (Adler 2001: 215; Kohtamäki et al. 2006). A supplier sales manager complained about the use of a price mechanism by the customer: "*The competition is very bloody in our own plants compared to other customers"*. However, a customer CEO underlined the reciprocal benefit of using a price-based market mechanism: "*We have certain percent-based marginal profit. If they* [the supplier] *can decrease the cost price whether we have given them a hint or they have discovered it by themselves, it will benefit us too, and as a consequence, the price of the end product is lower. They* [the supplier] *profit from the increased price of the product or higher volumes with the same marginal profit they previously applied*". This supplier's sales manager underlined the benefits of decreased transaction costs: "*We are having a certain marginal profit we apply for this customer, and to some extent, it benefits both of us. Business is easier in a way because there is hardly any marketing cost."* The supplier's sales manager emphasized the role of the social mechanism: "*Well, it is formal if needed, but I consider that we are mainly friends because we have cooperated with them for so long. We know a lot of people from their plants on a personal level, so it's very nice to operate with them"*. A customer CEO emphasized the importance of trust: "*We don't really have any contracts. We have a contract only about the price of the component, and I think it's two-sided trust. Thus, the pricing is very open."* However, the customers often applied an authority-based hierarchy mechanism. A business division director stated, "*On a business division's management group level, we decide the strategic directions of the product repertoire and which of them we don't touch and what goes through the supplier and what are the different price politics.*

These background strategies are agreed upon on a management group level." Some of the companies had taken advantage of the benefits derived from the collaboration: *"It has benefited us because the supplier doesn't deliver this component to anyone else, so it's our competitive advantage"* (a CEO). This supplier's export manager corroborated this CEO's statement: *"We won't tell them* [the customer's main competitor] *that the customer has invented this kind of thing that we could do for you too. No way, it's like a gentleman's agreement that we won't do that"*. A CEO stressed the significance of hierarchy when asked about the factors enabling benefits: *"Well, this makes it possible, that this is this kind of a company where we have authority over them. The yield benefit that we can tell we have our own manufacturing and they* [the supplier] *are doing exactly those components that we consider to be good. Our representative is in supplier's board, and through that, we discuss these issues. Also, CEO meetings are held occasionally*". He continued, *"And I believe there must be common work at the board of directors and hopefully this kind of common ownership also."*

Relationship-specific investments

Relationship-specific investments such as shared IT systems, common test plants or the proximity of manufacturing sites are similar to Long and Vickers-Koch's (1995: 14) description of the *threshold capabilities*. Consequently, relationship-specific investments are assets that cannot substantially affect a firm's success but enable the firm to remain competitive in its industry. As the relationships change, the relational assets change. Relationship-specific investments include common infrastructure and partnership-specific resources, such as steering groups or contact persons in the relationship. Thus, such investments are considered enabling assets rather than a critical source of a relational competitive advantage. A supplier's area manager described relationship-specific investments as follows: *"We have tailored products with this manufacturer* [the customer] *so that we do not sell these products, including spare parts, to anyone else. So we go to the partnership-level with the customer"***.** Additionally, the firms reported having dedicated contact persons for the relationship, as the area manager notes: *"We have appointed main contacts in the top-management level, and then in the middle-management level, we have dedicated persons who are responsible for the relationship. In addition, we have a team in the factory that is only doing these tasks* [for the customer]." The suppliers also appreciated the resources provided by the customer, as the statements of the area manager show: *"Our customer currently has a really good development center in Finland"* and "*another thing that this collaboration gives us is a valuable testing environment*" (the supplier's sales manager). Regarding the supplier selection stage, the customer's business division director emphasized the importance of physical and cultural proximity: *"Plenty of suppliers of similar products were eager to start collaborating with us. However, we chose this physically and culturally proximate supplier for this development project, as we were sure that the supplier will not start to compete with us after two or three years of collaboration."* The supplier's area manager highlighted the role of culture: *"The geographical location is important. Good thing that our customer is Finnish, so the main activities are close."* Additionally, the parties reported their investments in common data systems that enable closer cooperation: *"We are applying a global Internet-based customer database where we save the data we think we may need in the future. Electronic order-delivery system is in use. Otherwise, we do not have access to their* [the customer's] *data systems but they have access to our data systems where they can seek information about our products"* (the supplier's area manager). The supplier's marketing director had the following to say about the data systems: *"Actual data systems, Enterprise Planning Systems, are not the same but we have a common intranet where we have access by*

the group". The supplier's export manager reported sharing IT systems with a customer: *"We have a shared ADP system with a customer. We have this common program that is in use by both of us. The customer's IT department maintains it, and they come here if some problems arise. Of course, there are parts where we don't have access or they don't have access but basically it's a shared system."* The business division director also mentioned common IT systems: *"In these documentation systems, we have access to each other's folders and the desired information may exist."*

Furthermore, customers could help suppliers with financial matters, as the supplier's export manager explained: *"There is a point occasionally when, because we are quite smaller player within the industry, we have temporary liquidity troubles. Sometimes, the customer pays their invoices ahead of time to help us. For example, if we have to buy thousands of tons of steel at once, it's damn expensive, and if there is a situation at the same time in which inbound payment transactions are not coming immediately, it will lead to liquidity problems. Sometimes the customer can even pay a week before the due date if we ask and tell them that we are having this kind of temporary liquidity trouble."*

Relational capabilities

Increased reliability, lower transaction costs, elongated exchange-time of a partner and increased trust among the partners indicate a *relational capability* that leads to relational rents. Thus, relational rents are evidence for the existence of a relational capability. Compared with market-based relationships, partnership capability creates an exceptional value for both parties, one that is rare in the industry, costly to imitate and un-substitutable. Additionally, the parties to the relationship can exploit their distinct capabilities through their organizations to take advantage of the partnership.

A supplier identified the significance of his company's product to his customer's main product as follows: *"Our customer has seen that our product enables them to gain a competitive advantage in their core business"* (a supplier area manager). Additionally, he considered that his company's activities support the customer in the pursuit of strategic targets: *"We have discussions about reserving products for our subsidiaries, and their maintenance units deploy them there…Today we can operate globally with them* [the customer]. *If they require any education support whatsoever, we have a person next to them and we take him with them. It is very important today, in relation to the increased importance of their* [the customer's] *service business."* When discussing created value among the partners, a customer CEO confessed, *"We are some kind of a pilot market for them* [the supplier], *and they can get straight customer feedback from us. That is the value."* The benefits were related to strategic, economic or operations matters. The marketing director underlined the importance of being proactive: *"When we know that there is pressure in the markets, we are actively creating a number of initiatives related to how the product could be developed so that it will better respond to the requirements or the pressures caused by the rivals."* Additionally, the parties could gain economic rents because of the partnership: *"It benefits them* [the customer] *in a way because they will get what they want and get improvements over previous problems, which will lead to some kind of a competitive advantage. Usually the target is to fulfill the need cheaper, if the old solution has been expensive, and they* [the customer] *have lost some deals because of that. And we have found a solution together that has decreased the price or enhanced the end product and enabled customer to get new deals"* (an export manager). This customer notes that the supplier also benefits: *"When the guarantee time is over, the supplier also benefits because they can sell it*

to the end-customer as well and customers can't buy it from anyone else. And we benefit during the sales process because we can deliver the components our rivals cannot afford." The business division director outlined the total benefit obtained through the cooperation: *"Often, we could get the similar product from the supplier's rival at the same price, but through cooperation, we can increase our reliability in the eyes of the customer. On the other hand, it's a good back-up and we get opportunities to perform modifications. We may also need their support in the after-market business as well."* A supplier described how the industry developed historically: *"In the beginning, the normal delivery time for the component was six months and it was good. Today, this is short-term business. The reason why the customer decides to use us is the delivery time. They felt that suppliers at that time delivered components any which way."* A customer CEO emphasized also the importance of stock quantity: *"We can affect how the product looks, what kind it is and the delivery time. We can also decrease the size of our stocks because the supplier can store certain components."*

DISCUSSION

This study extends the relational capability literature in the R&D service interactions by providing insight into the following four questions: 1) What are the relational capabilities in a complex R&D collaboration? 2) What complementary capabilities firms hold in these partnerships? 3) What relational processes, procedures and government structures firms apply in these relationships? 4) What relationship-specific investments firms do to develop certain relationship?

The results indicate that firms invest in common data systems, appoint steering groups, designate individuals responsible for the development of a relationship on different organizational layers and provide test facilities to develop products and services. Companies hold complementary resources and capabilities and take advantage of them through different strategic, structural and social structures. The complementary capabilities of the firms were related to applying market-based knowledge, supply-chain management or technological capabilities. However, despite these differences, the capabilities were constructed to complement the partners' competences and to facilitate success in a relationship-specific context. Common meetings, information sharing and the deployment of relationship-specific memory all function as practices for relational knowledge creation. However, increased reliability and trust between the partners, increased mutual dependency (high partner switching times) and decreased transaction costs (decreased information asymmetries) indicate relational capabilities indicating the existence of relational rents.

Figure 4 illustrates suppliers and customers possessed general resources and capabilities, relationship-specific investments and shared processes and practices between the firms. It also defines the outcomes emerged from the relational capabilities such as decreased transaction costs and process downtimes, increased trust between the organizational actors, enhanced processes and improved delivery times. These outcomes lead to various economic rents or strategic and operative benefits firms can utilize in their core businesses.

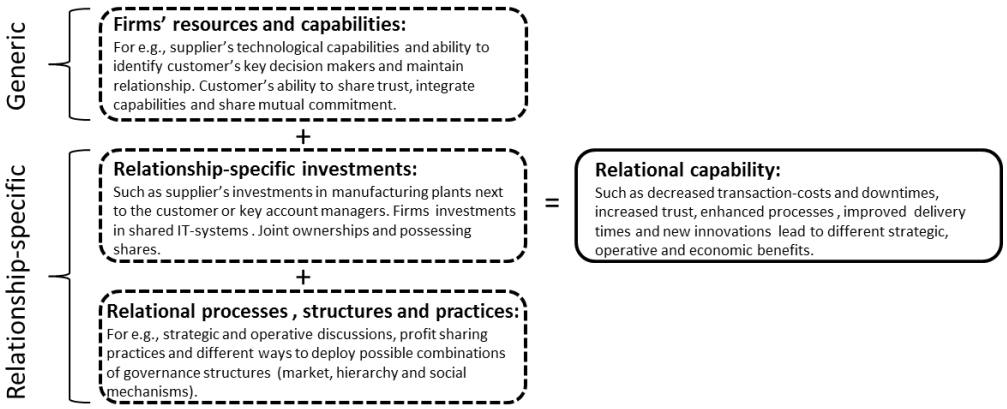

Figure 4. Illustrations of relational capabilities in R&D collaboration.

MANAGERIAL IMPLICATIONS

The managers from both sides of the relationship should improve case-specific formal and informal vis-à-vis relations between the employees involved in the relationship and consider different methods of engaging themselves in advancing the relationship. Additionally, they should ameliorate relationship-specific memory by developing shared IT systems and encourage employees to use and improve the systems. Strategically, the managers should consider whether it is more beneficial to attempt to maximize the benefits of vertical integration or to minimize the disadvantages of vertical integration. Therefore, the managers must consider various expedients, such as R&D unit divestments or altered ownership arrangements to organize R&D cooperation with suppliers. In addition, the managers should consider different pair-work practices (e.g., those of the Nokia and Microsoft alliance), in which different individuals from different organizational layers are responsible for developing the relationship and who work in close cooperation with the partner's key person. The managers should also identify their governance structures and consider changing them when the environment or circumstances change. Additionally, suppliers should reevaluate the matters that their customers value. For instance, they could consider how they could turn their customer's balance sheets as the customer's profit opportunity.

RESEARCH LIMITATIONS AND FUTURE RESEARCH

As with any empirical research, this study has several limitations that result from the study's qualitative nature. All of the data for the study were collected from individuals who were directly involved in the development of the collaborations. Involving managers with extensive experience with the relationship was considered essential to collecting the in-depth qualitative data basic to the study. Future research would benefit from the insights of other individuals involved in the relationships, including work supervisors, planning engineers involved with development projects or purchasing department staff. Finally, although the cases were selected from a generalizable quantitative dataset, the study does not provide statistical generalization to a larger population regarding the relational capabilities and structures of R&D collaboration.

ACKNOWLEDGEMENTS

This paper emerges from the *Future of Industrial Services* research program. The financial support of the Finnish Funding Agency for Technology and Innovation and the companies involved in this project is gratefully acknowledged.

REFERENCES

Adler, P.S. (2001), "Market, hierarchy, and trust: the knowledge economy and the future of capitalism", *Organization Science*, Vol. 1, (2), 215-34.

Amit, R. & P. Schoemaker (1993). Strategic Assets and Organizational Rent. *Strategic Management Journal* Vol. 14, (1), 33-46.

Barney, J.B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, Vol. 17, 99-120.

Barney, J.B. (1995). Looking Inside for Competitive Advantage. *Academy of Management Executive* Vol. 9, (4), 49-61.

Bonaccorsi, A. & A. Lipparini 1994. Strategic partnerships in new product development: an Italian case study. Journal of Product Innovation Management Vol. 11, (2), 134–145.

Burrell, G. & G. Morgan (1979). *Sociological Paradigms and Organizational Analysis*. Aldershot: Gower Publishing.

Clark, K.B. (1989). Project scope and project performance: the effects of parts strategy and supplier involvement on product development. *Management Science* Vol. 35, (10), 1247–1263.

Danneels, E. (2010). Trying to become a different kind of company: Dynamic Capability at Smith Corona. *Strategic Management Journal* Vol. 31, 1-31

Day, G.S. (1994). The Capabilities of Market-Driven Organizations. *Journal of Marketing* Vol. 58, (October), 37-52

Dyer, J.H & H. Singh (1998). The Relational View: Cooperative Strategy and Sources of Inter-Organizational Competitive Advantage. *Academy of Management Review* Vol. 23, (4), 660-679.

Grönroos, C. (2011). Value Co-Creation in Service-Logic: a Critical Analysis. *Marketing Theory* Vol. 11, (3), 279-301.

Hansen, G.S & B. Wernerfelt (1989). Determinants of Firm Performance: The Relative Importance of Economic and Organizational Factors. *Strategic Management Journal*, Vol. 19, (5), 399-411.

Kohtamäki M. (2010). Relationship governance and learning in partnerships. *The Learning Organization.* Vol. 17, (1), 41-57.

Kohtamäki, M., J. Vesalainen, E. Varamäki & T. Vuorinen (2006). The governance of partnerships and a strategic network: Supplier actors' experiences in the governance by the customers. *Management Decision*, Vol. 44, (8), 1031-1051.

Leonard-Barton, D. (1992). Core Capabilities and Core Rigidities: a Paradox in Managing New Product Development. *Strategic Management Journal* Vol. 13, 111-125.

Liker, J.K & J.M. Morgan (2006). The Toyota Way in Services: The Case of Lean Product Development. *Academy of Management Perspectives*, Vol. 20, (2), 5-20.

Long, C. & M. Vickers-Koch (1995). Using Core Capabilities to Create Competitive Advantage. *Organizational Dynamics*, Vol. 24, (1), 7-22.

Madhok, A. & S.B. Tallman (1998). Resources, Transactions and Rents: Managing Value Through Interfirm Collaborative Relationships. *Organization Science* Vol. 9, (3), 326-339.

Normann, R. & R. Ramirez (1993). From Value Chain to Value Constellation: Designing Interactive Strategy. *Harvard Business Review* Vol. 71, (4), 65-77.

Petersen, K.J., R.B. Handfield & G.L. Ragatz (2005). Supplier integration into new product development: coordinating product, process and supply chain design. *Journal of Operations Management* Vol. 23 (3–4), 371–388.

Porter, M.E. (1980). *Competitive strategy*. 1st Edition.. New York: The Free Press. 396 p.

Porter, M.E (1985). *Competitive Advantage: Creating and sustaining superior performance*. 1st Edition. New York: The Free Press. 557 p.

Porter, Michael E. (1991). Towards a Dynamic Theory of Strategy. *Strategic Management Journal* Vol. 12, 95-117.

Prahalad, C.K. & G. Hamel (1990). The Core Competence of the Corporation. *Harvard Business Review* Vol. 68, (3), 79-91.

Prahalad, C.K & M.S Krishnan (2008). *The New Age of Innovation: Driving Co-Created Value through Global Networks*. 1st Edition. McGraw-Hill.

Ramirez, R. (1999). Value co-production: Intellectual origins and implications for practice and research. *Strategic Management Journal*, Vol. 20, (1), 49-65.

Ritter, T., & H.G. Gemünden (2004). The impact of a company's business strategy on its technological competence, network competence and innovation success. *Journal of Business Research, 57*, (5), 548-556.

Schmalensee, R. (1985). Do Markets Differ Much? American Economic View Vol. 75, (3), 341-352.

Sivadas, E., & F.R. Dwyer (2000). An Examination of Organizational Factors Influencing New Product Success in Internal and Alliance-Based Processes. *Journal of Marketing*, 64, (1), 31-49.

Stump, R. L., Athaide, G. A., & Joshi, A. W. (2002). Managing seller-buyer new product development relationships for customized products: a contingency model based on transaction cost analysis and empirical test. *The journal of product innovation management*, Vol. 19, (6), 439-454.

Takeuchi, H. & I. Nonaka (1986). The new product development game. *Harvard Business Review*, 137–146 (January/February).

Theorarakis, V., L. Sajtos & G. Hooley (2009). The strategic role of relational capabilities in the business-to-business service profit chain. Industrial Marketing Management Vol. 38, 914-924.

Vargo S.L & R.F. Lusch (2004). Evolving to a New Dominant Logic for Marketing. *Journal of Marketing* Vol. 68, (January), 1-17.

Wernerfelt, B. (1984). A Resource-Based View of the Firm. *Strategic Management Journal*, Vol. 5, 171-180.

Wernerfelt, B. (1995). The Resource-Based View of the Firm: Ten Years After. *Strategic Management Journal*, Vol. 16, (3), 171-174.

Williamson, O. E. (1985). *The Economic Institutions of Capitalism*. New York: The Free Press.