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The purpose of this study is to identify key capabilities in knowledge-intensive service business. Current service research lacks evidence on this topic, since knowledge-intensive services constitute a very heterogeneous group, making the identification of key capabilities challenging. To bridge this gap, a conceptual framework is developed, integrating discussion on knowledge-intensity with the classical service features. Empirical data is collected from two case firms with the help of focus groups, theme interviews and a survey. Based on the developed framework and analyzed data, we identify four specific capability categories of knowledge management, service productization, project management, and relationship orchestration.

Keywords: services; knowledge; co-creation; capabilities; KIBS

Introduction

Services have been identified as an increasingly important sector in developed economies. They are replacing physical products as a competitive basis in a growing number of firms (Grönroos, 2000), which are focusing their activities on producing services or service conditions (Edvardsson, Gustafsson, & Roos 2005). The significant and sustained growth of the sector has raised an array of questions related to the nature of services (Ostrom et al., 2010) and to the complex interactions required to co-create value (Bettencourt, Ostrom, Brown, & Roundtree, 2002; Vargo & Lusch, 2008).

In particular, it has been suggested that knowledge-intensive services are driving the growth potential and innovativeness residing in the service sector as a whole (Andersen, Howells, Hull, Miles, & Roberts, 2000; Chen, 2009; Freel, 2006; Hotho & Champion, 2011; Martinez-Fernandez, 2010; Muller & Zenker, 2001; Tether & Hipp, 2002). Such development has taken place due to the increasing role of knowledge in modern service production (e.g. Tether & Hipp, 2002) and due to the enabling role of information and communication technologies in producing such services (e.g., van Riel, Semeijn, Hammedi, & Henseler, 2011). Even though the importance and special nature of knowledge-intensive services (and especially 'knowledge-intensive business services' / KIBS) has been recognized in general (see e.g. Martinez-Fernandez, 2010; Muller & Doloreux, 2009; von Nordenflycht, 2010), the extant research lacks investigation and categorization of the key capabilities that would facilitate sustainable competitive advantage in such businesses. This is understandable in that services are typically extremely heterogeneous and thus difficult to analyze.

Capabilities, in general, can be described as bundles of organizational processes, rooted in the company's path-dependent history, and constitute the basis of inter-organizational differences eventually determining how successful a particular firm is in its activities (Amit & Shoemaker, 1993; Barney, 1991). Thus, capabilities eventually determine the heterogeneity between different firms' ways of operating. Furthermore, *key capabilities* are those that contribute most for the relative competitiveness of a firm or for firms operating in a certain industry (see e.g. Hafeez, Zhang, & Malak, 2002). Hence, understanding the very nature of such firm-specific capabilities in knowledge-intensive service business is of essence for both researchers and practicing managers in this field. In fact, in a recent study Chen (2009) suggests that firm-specific differences should be better taken into account when examining firms' competitiveness in knowledge-intensive service industries.

Even though the heterogeneity of services is challenging in terms of identifying firm-level key capabilities in knowledge-intensive service business, there are several common features that are helpful. Once identified, these features could form a basis for empirical search that would further facilitate the categorization of the most important capabilities. With this in mind, we set out to identify *the distinctive capabilities that differentiate firms in terms of competitiveness in knowledge-intensive service business*. To reach this aim, we first develop a conceptual framework to gain insights of the common features of knowledge-intensive service business. After that we focus on two case firms in order to gather empirical evidence on the issue. In particular, we utilize focus groups, theme interviews and a survey to empirically explore the applicability of the suggested framework and to identify the key capabilities.

Our study contributes to the existing literature on service management in several ways. First, we develop a conceptual framework in order to analyze the distinctive characteristics of knowledge-intensive service business. Having gathered empirical evidence based on these characteristics, we then suggest four focal capability categories that are especially relevant in such industries. In identifying these capabilities we contribute to service research, which lacks focused studies on this managerially relevant issue. Secondly, our work advances service research by empirically combining providers' and customers' insights in identifying the key capability categories. As Edvardsson et al. (2005) note, the extant research on services is typically biased towards service providers and largely neglects the co-production and consumption of services from the customer's viewpoint.

Distinctive features of knowledge-intensive services

The concept of *knowledge intensity*, which is the defining feature of knowledge-intensive services, implies that output relies on a substantial body of complex knowledge (e.g., Starbuck, 1992). Knowledge intensity can be approached on the individual (Alvesson, 2000) or organizational level (Starbuck, 1992), the latter referring to knowledge embedded in organizational routines and equipment. As von Nordenflycht (2010) notes, the individual-level interpretation seems more appropriate to determine knowledge-intensive service firms: if routines and the knowledge embedded in them were considered on the organizational level, in practice a very broad range (if not all) of firms would be labeled knowledge-intensive. We thus see knowledge intensity as the reliance in firms on an intellectually skilled workforce across all levels.

With regard to the distinctive nature of services in general, it is suggested in the literature that the so-called IHIP attributes (intangibility, heterogeneity, inseparability of production and consumption, and perishability, see e.g., Fitzimmons & Fitzimmons, 2000; Lovelock & Gummesson, 2004; Zeithaml, Parasuraman, & Berry, 1985) are the defining features of services as a contrast to products. We therefore use these attributes in our task of identifying the distinctive features of knowledge-intensive services as a platform on which to build a more detailed framework.

Intangibility refers to the fact that the service may not have a physical existence (Grönroos, 2000): a service as an act is intrinsically intangible (Flipo, 1988). Indeed, it has been argued that the single most important factor differentiating service offerings from product offerings is the characteristic of intangibility (Bebko, 2000; Zeithaml & Bitner, 1996). The service-delivery process may also involve a varying degree of material or tangible elements, such as in the case of airlines and hotels, whereas the level of tangibility is almost nil in other types of services such as consulting and teaching (Flipo, 1988). In addition, decision making in service firms is based more on the diverse knowledge among different people than in manufacturing firms (Jansen, Curseu, Vermeulen, Geurts, & Gibcus, 2011). Indeed, recent research shows that service-oriented firms are much more reliant on intangible, knowledge-based resources than product-oriented firms (Kianto, Hurmelinna-Laukkanen, & Ritala, 2010). This characteristic is especially pronounced in knowledge-intensive services, which involve the provision of knowledge-intensive inputs into business processes, and where the transaction conditions are characterized by the accumulation, creation and dissemination

of knowledge (Bettencourt et al., 2002). Thus, both the input and output of such service processes are largely intangible or tacit in nature (Muller & Doloreux, 2009).

As Edvardsson et al. (2005) note, there are two ways of looking at *heterogeneity*. Firstly, service providers and service processes tend to be heterogeneous. The traditional view thus posits that little learning or communication can take place between different service industries as each of them operates in a different field (Lovelock, 1983; Silvestro, Fitzgerald, Johnston, & Voss, 1992). Secondly, the service production within a given company is considered heterogeneous due to variation in its employees, and in its customers in terms of needs and expectations. This illustrates the fact that services do not have a standard outcome, and that the outcomes and their quality vary depending on the customer and the context. In our view, heterogeneity is accentuated in knowledge-intensive services in that the input of the process consists of context-specific and often unique knowledge embedded in key individuals and organizational practices, whereas the output is dependent on knowledge exchange between different parties engaged in the service provision (e.g., Bettencourt et al., 2002; Jaakkola & Halinen, 2006; Muller & Doloreux, 2009).

Perishability refers to the fact that services cannot be saved or stored in inventories (Zeithaml et al., 1985; Grönroos, 2000), but are time-dependent (Onkvisit & Shaw, 1991), situated at certain points of time. Yet, as Edvardsson et al. (2005) point out, the notion of perishability strongly reflects the service provider's point of view: from the customer's perspective, service outputs may turn out as memorable customer experiences, for example. This feature highlights both the criticality of time and the skillful action required in value creation. From the perspective of knowledge-intensive services, much of the knowledge required is deeply rooted in individual experts and their interactions (e.g., Alvesson, 1995). Therefore, the knowledge processes required to create valuable services are subject to a wide set of situational and contextual factors, which might be difficult to re-create over time.

Emphasis on the need for collaboration between the provider and the customer is common to all services (Tether & Hipp, 2002), given that consumption and production are *inseparable*. This *co-creation* logic (see e.g., Bettencourt et al., 2002; Grönroos & Ravald, 2011), which is especially pronounced in knowledge-intensive services, also emphasizes the interaction between the value producer(s) and the value consumer(s), and the need to focus on the joint creation of value. Indeed, Edvardsson et al. (2005) note how characterizing services as 'inseparable' in terms of separating production from consumption seems to derive from the

former product-focused and production-oriented research paradigm. They suggest that it is rather in the very nature of services to focus on their dynamic nature as activities, deeds and experiences, involving different parties in the co-creation process.

Summing up the discussion so far, we suggest that the key capabilities of knowledge-intensive services are connected to the characteristics present in all phases of the delivery process, but that they involve specific peculiarities concerning the inputs (key resources), the service process itself, and the outputs. Table 1 summarizes the conceptual framework of this study in terms of the distinctive features of knowledge-intensive services, and their roles in terms of key resources, service processes, and outputs.

Table 1. Distinctive features of knowledge-intensive services

	<i>Intangibility</i>	<i>Heterogeneity</i>	<i>Perishability</i>	<i>Co-creation</i>
Key resources (inputs)	Skills, talent, knowledge	Idiosyncratic features dominate key resources	Certain utilized resources might be unique to a certain service offering and not known beforehand	Embedded within and between customers, producers and networks
Service process	Resources are utilized through knowledge-intensive processes	Each service-provisioning process is more or less idiosyncratic	The service does not exist beforehand, but is provided through a unique, context- and customer-dependent process	Both the customer and the producer are present at the time of producing the service The nature of the process depends on the interaction between the customer and the service provider
Outputs	The value of the output is connected to added or developed information or knowledge for the customer	The value of the output is connected to the customer's perceptions and the context	The output often involves one-time, unique elements	The output is dependent on the interaction process

In order to explore the empirical applicability of the suggested framework, we collected data from two case firms operating in the field knowledge-intensive services. Our aim was to find emerging patterns of key capabilities by using multiple sources of data. The research methodology, data collection and analysis are discussed in the following sections.

Methodology and data collection

Research design

The choice of the research design was based on our overall objective to identify the key capabilities in knowledge-intensive services, bearing in mind that current research seems to lack explicit investigations and categorizations on this context. We thus chose an exploratory case study approach (Eisenhardt, 1989). As noted by Siggelkow (2007), case studies may serve as inspiration for new ideas and thus advance theory generation, when only limited theoretical knowledge exists concerning a particular phenomenon. More specifically, we conducted an instrumental case study (Stake, 2000), aiming at providing insight into the issue and supporting the identification of the capability categories.

The logic of an intensity sample was applied in this study, referring to real-life and information-rich cases that provide useful manifestations of the phenomenon of interest (Patton, 2002). We collected data from two Finnish knowledge-intensive service firms. The two firms were selected based on their applicability to the knowledge-intensive context, as well as on the basis of polarization (Eisenhardt, 1989) in that they represent different types of knowledge-intensive services.

Typically to case studies, triangulation was applied both in the form of researcher and data triangulation. We believe this type of triangulated approach to data collection and analysis was warranted due to the ambiguity of the topic, in order to gain a more in-depth understanding of the complex phenomenon (Denzin & Lincoln, 2000). We used triangulated data from various sources, drawing on focus-group discussions, theme interviews, and a web-based mini-survey. Other sources of data were also applied, such as preliminary background interviews, catalogues, web pages, and annual reports, in order to better understand the nature of the case firms' businesses. In the following sections, the case firms are shortly described, followed by discussion of data collection and analysis.

Case firms

Case Firm Alpha is a large, globally operating firm providing Information Technology (IT), Research and Development (R&D) and consulting services to business customers in several business areas. The focus in this study was on project-type services entailing high customer involvement and knowledge intensity in the service production. Case Firm Beta is a small, globally operating firm providing software consultancy and supply services. The main business is based on the web-based software service solution (software as a service, SaaS), and the level of co-creation of the service with the customer is relatively lower than in Firm Alpha. Beta's customers mainly comprise other knowledge-intensive business services.

Firm Alpha provides highly customized services to specific customers, whereas Firm Beta seeks to standardize its service offering as much as possible. It is reasonable to select such polar cases where the process of interest is 'transparently observable' and may thus assist in extending prior theory (Eisenhardt, 1989). Further, our choice of including two polar cases enabled us to capture a broader spectrum of facets of the key capabilities in knowledge-intensive services than would have been possible with two similar types.

Data collection

Data was collected from multiple sources. Preliminary interviews were conducted in both firms to give us an understanding of the distinctive features of their services and allow us to concentrate on the most appropriate types. The actual data collection took place in three phases (see Table 2).

Table 2. The number of participants in the different data-collection phases

	<i>Alpha</i>	<i>Beta</i>
Focus groups	4	4
Theme interviews	5	4
A web-based mini-survey	18	6

First, the purpose of the focus groups was to gain a ‘first sight’ into the studied issue. Focus groups are well suited into situations where the primary goal is to gain insight of advance understanding on a certain topic (e.g. Morgan, 1997). Two focus groups were set up for the first phase, one from each case firm and both comprising four key informants (e.g., Houston & Sudman, 1975; Kumar, Stern & Anderson, 1993) from variety of organizational positions with extensive experience of the type of service business in question. Preliminary interviews were used in identifying the most knowledgeable informants, and to ensure that all relevant views would be represented. Of the four experts in Firm Alpha, two were from sales, one from consulting and one from human resources management. The participants in Firm Beta were the Chief Executive Officer, the Sales Director, a representative of customer service and a representative of marketing. The data was collected with the help of a computer-supported brainstorming platform. The participants were first asked to list the most relevant capabilities that were needed in providing the service. In that phase, there was no mention about whether they should think about individual skills or organizational-level capabilities. Secondly, they assessed the listed capability manifestations in order of importance as an individual skill or an organizational (institutionalized) capability. At this stage, the respondents were informed about the conceptual and practical difference between a skill (individual-level ability, dependent on a certain person) and a capability (firm-level, not dependent on a certain individual).

The second phase comprised nine (9) theme interviews (e.g. Shank, 2006), the purpose being to further deepen the knowledge gained from focus group stage. The interviews were conducted with key informants, chosen on basis of their focal positions in the business relationship. From the service providers’ side, informants representing sales (Alpha and Beta), project management (Alpha) and customer service (Beta) were interviewed. The informants from the customer side were the employees personally involved in managing the customer-provider interface. Four different cases of service provision were in focus, two in Alpha and two in Beta. The interviewees were asked first to describe the most important skills a service provider’s representative involved in the project should have, secondly to explain why these skills were essential, and thirdly to describe how they had been acquired, or could be learned in their organization (representing capability-perspective). As the interviewees from the customer’s side typically had a broader perspective on the whole service process, these

respondents were also asked to further discuss the organizational-level capabilities required from the service provider in the different phases of customer relationship (forming the relationship / early stages / mature relationship). Specific organizational-level capabilities were covered as they arose during the interviews, and also through the questions on the individual-level skills required in the organizational environment. The customer interviewees were asked more direct questions concerning key organizational capabilities of the service provider.

Finally, an electronic survey was compiled based on the results of the focus groups and interviews, including a complete list of different capabilities that were mentioned by the informants (a total of 51). The capabilities were grouped under common themes of customer relationship, customer needs, management or service provision, management of customer's knowledge & resources. The survey was sent to fifty (50) employees working at the customer interface in Firm Alpha and Firm Beta, and their customers. This sample represented all the people who were involved in the chosen case firms' projects. A total of 24 responses were received, representing a response rate of 48 percent. The respondents held different positions, including sales and project-management personnel, as well as technical and other service experts. The target of the survey was to consult a broader sample of respondents in order to support the validity of the focus-group results. In addition, the survey instrument provided further information into the relative importance of different capabilities in the organizational-level, since the respondents were asked to rate the importance (in a scale of 1-7) of each listed capability firm-specific capability in the context of the service provider's knowledge-intensive service offering.

Data analysis

The data analysis was conducted through a two-stage analytical process. The first stage was grounded on the empirical data collected, as described in previous section. In conducting this stage of the analysis, we identified the capabilities in a preliminary, firm-specific form. The most pronounced capabilities (i.e. key capabilities) were identified with the help of focus groups, interviews, and survey. Focus groups provided a preliminary list of important capabilities and themes, theme interviews helped to identify more distinctive capabilities and the reasoning behind them, while the survey was used to analyse which capabilities are seen as relatively more important than others.

The second stage of the analysis was to conduct a pattern matching (e.g. Saunders, Lewis & Thornhill, 2009), where the conceptual framework developed in the beginning of the research process was used to analyze the explorative results gained in the first stage of data analysis. The aim was to provide an applicable view of the focal key capabilities in knowledge-intensive services by integrating both theory and empirical data. Furthermore, in this part of the analysis process we synthesized the findings across the two case studies and multiple data sources.

The results of both analysis stages are presented in the following section, where the generic patterns of Alpha's and Beta's capability categories are first discussed, followed by the identification of the more specific capabilities based on the second stage of the analysis.

Results

For Alpha, capabilities that were most pronounced included effective knowledge management and networking, customer expectations management, renewal and flexibility, as well as expertise on customer's business field. First, managing the internal knowledge resources and locating the necessary, often dispersed, knowledge and skills via internal and external networks were seen essential. Engaging the relevant parties from customer's side to the targets of the service was emphasized here. In Alpha's case, the relevant parties concerned stakeholders especially from business and IT units. Gathering the cross-departmental and cross-boundary expertise around the same table in planning the service was seen as the most important capability in understanding the customer needs. Second, the service cases in Alpha were typically built from the very beginning. This meant that rich communication was essential for service provider to understand customer's needs, and for customer, to be able to understand the intangible and emerging nature of developed services. Thirdly, flexibility in solving customer's problems was stressed, as well as provider's renewal and adaptability throughout the whole service process. Finally, it was seen important to know customer's business area including markets, competitors and customers. This involved understanding terms, concepts and processes that took place in customer's environment. This capability was seen as one of the most important criteria why Alpha was chosen to be the service provider in both of the two service providing cases that were discussed.

For Beta, most pronounced capabilities were connected to effective communication, processing of customer's knowledge, and the expertise on customer's business field. First, unified communication procedures in customer interface were important – for instance, web-

based channels in demonstrating the service offering. Effective communication also included locating the right informants, and understanding the decision making processes of the customer. Also, it included identifying the needs for context specific communication. Second, the service was developed constantly on the basis of integrating customer and employee feedback. This required effective processes in collecting the customer's development ideas, for instance. Finally, the importance of provider's multi-industrial expertise on customers' business areas, as well as general business expertise was seen important to be really able to understand customer's needs.

Overall, the aforementioned results provide information about the key capabilities that are distinctive to the businesses of Alpha and Beta. While the services they provide are somewhat different in nature – ranging from highly customized services of Alpha to the more standardized approach of Beta – there are many emerging patterns of key capabilities that can be identified. Thus, in order to take the analysis a step further, we took a cross-case view based on the conceptual framework on distinctive features of knowledge-intensive services. Through this process, the identified generic capability categories are related to knowledge management (referring to knowledge intensity and the critical role of intangible resources) service productization (referring to heterogeneity), process management (referring to perishability), and relationship orchestration (referring to provider-customer co-creation). These categories and the specific capabilities within them are discussed below.

Knowledge management

In general, two-fold capabilities were emphasized, related to knowledge management: managing the internal and the partners' knowledge resources, and managing the customers' knowledge resources. In Firm Alpha in particular it was considered essential to locate the necessary, often dispersed, knowledge and skills via internal and external networks. The service situations were built from scratch, thus it was not possible to know in detail what knowledge and skills would be needed without rich communication through active interaction between the parties. Firm Beta did not consider this as critical, possibly because of its less complex service offering.

Customer-knowledge acquisition

The intangible nature of the input, process and output of knowledge-intensive services was found challenging in both firms, and especially in Alpha. The customers held the vital knowledge on which the service was built. Alpha thus needed to acquire knowledge from customers in order to generate it further. From the service provider's perspective, it was suggested that employees at the customer interface must convince the customers to engage all the necessary employees and teams in the service project, since the customers do not always understand the need to involve experts from departments other than IT.

Active and relevant communication was seen to facilitate knowledge acquisition. The Firm Alpha focus group listed '*asking the right questions*' as an important employee skill. This manifestation implies the combination of situational sensitivity and a deep understanding of what is relevant, as the knowledge is collected in intensive interaction with the customer. Firm Beta's corresponding manifestation was '*consultative listening*', referring to the skill first to encourage the customer to enter into dialogue and knowledge sharing, and then to iteratively dig out the required knowledge by making proposals and guiding the customer's choices. Some of the necessary knowledge is codified and easy to receive, but that related to complex linkages in the customer's business or decision-making is more difficult to acquire. It was also considered important to systematically collect and store the acquired customer knowledge in order to ensure efficient retrieval and utilization.

Customer business development and renewal

Capabilities related to understanding customer needs and the business environment concentrated in Firm Alpha on building up expertise on the specific business environment, and not only the branch but also the market, clientele and competitors. Creativity in terms of coming up with new ideas and seeing new opportunities was highlighted, as were multi-industrial expertise covering customers' business areas, and general business expertise. It was suggested that general business expertise supported the development of a broader perspective on the challenges in the company's own business field related to developing the service provision. Multi-industrial expertise, on the other hand, broadens understanding of the industry-specific characteristics and customer-related challenges. Straight and honest behavior was mentioned again in this context, meaning considering customers' best interests beyond

the distinct wishes they might have. All the respondents placed importance on the ability to utilize earlier customer experiences and accumulated knowledge.

From the customer's perspective, both firms, and particularly Firm Beta, stressed the service provider's capability to keep its customers informed about the latest news and trends concerning the service offering. This involves the constant updating and acquisition of knowledge in order to serve customers better. It is essential in service provision that the contact person at the customer interface has '*something to give*', of real advantage to the customer's business. Employees in strategic positions and customers placed most emphasis on these skills.

Service productization

Service-offering visualization

Visualization was considered essential in order to build a common understanding of the service offering and make the decision-making easier for the customer. As one interviewee stated, both sides need to have a common vision, a shared dream and trust, as there is nothing concrete to point to in the coming service output. The capability to visualize the service at the beginning of the development and provisioning phases was also seen to support the knowledge acquisition in that it is easier to make decisions based on proposals. This was obviously more challenging in Alpha than in Beta, in which visualization was considered equally important, but it was simpler to realize because there was a finalized product at the core. In fact, Beta had a web-based demo-version that was freely available. Visualizing the service in Alpha seemed to be more context-specific and dependent on individuals' skills, whereas in Beta its standardized nature facilitated codification and institutionalization.

Service-offering modeling and modularization

It was considered essential to be able to model the customer's business processes in advance in order to understand the interfaces and linkages the service provision would entail. The capability of visualizing the upcoming output *to the customer was discussed above*, whereas modeling the process could be considered more relevant to the *service provider*. Beta placed stronger emphasis on customer-process modeling and on the systematic collection and storage of customer knowledge. This may well relate to the fact that Beta considered its customers the

most important source of product/service development, and had created well-functioning procedures to utilize potential development ideas. In the case of Alpha, the approach was less systematic, and it was not completely clear whether the customer ideas may or may not be utilized in the future.

The capability to productize services was considered desirable in both of the case firms. Beta's offering can, for good reason, be classified as a well-productized service, although the representatives thought that an optimal service should sell itself better. The consultative role is still needed in the selling process, and is quite important. Beta makes constant efforts to standardize not only its service output, but also the processes leading to it. The capability to modularize the service process was stressed as a prerequisite for further productization. Uniform sales procedures modeled on service processes were considered essential in service provision. Modularity also facilitates customer access, as Beta can offer a solution to a precise problem without having to back it up with a large set of qualities and functions.

Process management

Coordination

The process nature of services was particularly evident in Firm Alpha. There was a strong demand for strict project management, especially from customers. As the service provision was integrated into the customer's daily operations, the value of prompt decision-making and accurate scheduling was highly appreciated. The higher the involvement of the strategic functions, the lower is the tolerance for mistakes. Probably due to the simpler nature of its service provision, Beta particularly emphasized sales-process capability, referring to the above-mentioned ambition to standardize service processes in the interests of effectiveness.

Adaptation and problem solving

Both the provider and the customers mentioned constant preparedness for potential changes and related problem solving as crucial in Alpha's service provision. The strong role of organizational procedures and culture in this would ensure that the individuals concerned could tackle the arising problems effectively. Time was also important in that prompt response to customer requests was considered essential. It became evident in the interviews

that unexpected issues and problems arose in every service-provision case, and that it was a matter of handling rather than avoiding them. Again, Alpha's employees and customers felt that problems had to be openly shared and discussed, and to be handled on a non-personalized level. Problem management also arose in the Beta interviews. Placing a high value on this could reflect the potentially critical importance and level of dependency of business services on customers' everyday operations.

Relationship orchestration

Customer relationship management

Customer relationship building and management were identified as the key capability in both firms. Two specific aspects arose: communication and a customer-orientated culture.

In the former case, capabilities on the organizational level focused on facilitating active communication and having proper, context-dependent channels. Furthermore, having a limited number of named contact persons responsible for customer contacts during the service provision was considered an effective way of running the customer relationship. This was also stressed on the customer's side: easy communication, which included having one named contact person, was emphasized. Effective communication also required a common language and mutual understanding, as well as prompt responding to questions and problems.

Customer-orientation was mentioned in several contexts during the focus-group sessions and interviews, mainly by sales and management personnel. It seems that inherent in a customer-orientation culture are the following components: the desire to benefit the customer's business, putting the customer's interests first, building a common vision with the customer, aligning the giving and keeping of promises and encouraging the free sharing of knowledge and ideas, and finally, having documented and measurable indicators.

Identifying and connecting with the customer's knowledge network

Given the complexity of building the service from the very beginning, expertise on both sides was considered vital. Gathering all the relevant knowledge holders around the same table would facilitate a common understanding and the building of a common vision, and would open up the different perspectives of the heterogeneous stakeholders. There was often a gap

between IT and the business units, and bringing about a mutual understanding between these departments was therefore particularly important.

The need to manage customers' internal networks of knowledgeable and responsible personnel was mentioned in the Alpha interviews by employees and on the customer's side. Both parties identified the sharing of responsibilities and the need for mutual understanding, and emphasized skills related to the acquisition and documentation of the necessary information and resources, the sharing of responsibilities, and the naming of responsible employees. Customers have diverse business environments and procedures. Integrating a new service means proceeding in new ways, and customers need to be aware of the roles and responsibilities involved. Both firms emphasized the need to engage relevant customer representatives in setting the service targets. In the Alpha case these related strongly to the connection between the Business department and IT, and in the Beta case to the relationship between the decision makers and the final users.

The capability to connect the customer to other relevant networks and act as a catalyst for knowledge sharing was considered crucial in the service provision of Firm Alpha. One of its strengths as a service provider was identified as its knowledge of and connections to its customer's customers. This kind of knowledge about the specific business environment was seen sometimes stronger within Alpha than in its customers. Large customers with long value chains may not know who their end users are, for example, and it is sometimes up to the service provider to utilize this knowledge in specifying the service. As the focus-group participants saw it, Alpha needs to have the capability to *'get the customer out of the box to see the end customer's needs'*.

Discussion and implications

Table 3 summarizes the capabilities identified in the empirical part of the study. The different categories are briefly discussed in the remainder of the section in terms of their implications for service research. As identified and classified on the basis of the initially developed conceptual framework (Table 1), the key capabilities represent distinctive features of knowledge-intensive services.

Table 3. The identified capability categories and specific capabilities

<i>Knowledge management</i>	<i>Service productization</i>	<i>Process management</i>	<i>Relationship orchestration</i>
Customer-knowledge acquisition	Service-offering visualization	Process coordination	Customer-relationship management
Customer-business development and renewal	Service-offering modeling and modularization	Adaptation and problem solving	Identifying and connecting the customer's knowledge network

First, capabilities related to knowledge management are especially relevant given the knowledge intensity and the critical role of intangible resources in such services. Acquiring knowledge about customers and their needs, as well as creating new knowledge to support customers' business, were considered highly valuable. Second, service productization is especially relevant in knowledge-intensive services given the high levels of heterogeneity, making it easier to visualize and model the service offerings both for the customer and within the provider organization. Third, process management is needed, particularly when the whole service does not exist beforehand. It has to be provided through a well-planned process of customer-value creation that incorporates the required flexibility in the face of various problems that might emerge. Fourth, relationship orchestration is a key capability category in knowledge-intensive services, which are typically defined and executed in close collaboration between the provider, the provider's networks, and the customer. Capabilities related to relationship orchestration involve both managing the interaction in the customer relationship and tapping into the customers' internal and relational networks. According to Ostrom et al. (2010), the co-creation of service experience remains a focal research priority for service science because of its central role in creating value for customers and capturing value for the service organization. Our findings concerning relationship-orchestration capabilities are in line with this accumulating stream of thought.

In terms of firm-level competitiveness in knowledge-intensive service business, the identified capability categories have various implications. Knowledge management and relationship orchestration are required given the dispersed and specialized nature of

knowledge, as well as the actor interdependence embedded in the knowledge-intensive-service co-creation process. However, it should be noted that these capabilities are not sufficient in themselves for knowledge-intensive service businesses that are pursuing above-average performance and growth in their fields. Such firms should develop capabilities related to service productization and process management in order to scale up their services to reach wider markets while retaining sufficient quality. Overall, these implications highlight the need to develop these identified key capabilities in order to achieve both efficient operative performance and sustainable competitiveness.

Conclusions

This paper examined key capabilities in knowledge-intensive services conceptually and empirically. The first step was to draft a conceptual framework within which to analyze knowledge-intensive services through classic IHIP categorization: four particular dimensions were used; 1) intangibility, 2) heterogeneity, 3) perishability and 4) co-creation. The key resources, processes, and outputs of knowledge-intensive services were identified in terms of these dimensions. The next stage was to collect empirical data on two polar case companies. The result was the identification of four capability categories, namely knowledge management, service productization, process management, and relationship orchestration. By doing this, our study contributes to the service research in enhancing understanding of the firm-specific key capabilities required in knowledge-intensive service business – a topic recently suggested as an important avenue for service research in addition to understanding country, industry and regional differences (Chen, 2009).

Our study has limitations, especially related to the generalizability of the results. By conducting two case studies, we were able to gain in-depth insights of a complex phenomenon. The obvious tradeoff is that we the results are cannot necessarily be generalized across very different contexts. Thus, the results should be interpreted with these limitations in mind, and thus further empirical research (e.g., a quantitative survey on the relative importance of the identified capabilities, as well as more qualitative studies of different firms and contexts) is required to further examine the applicability of our results. For instance, some capabilities might be more critical to firm-level competitiveness and customer-value creation than others. While we believe that the capabilities we identified are important determinants of firm competitiveness in knowledge-intensive services as such, differences in their relative

effect on e.g. firm profitability and growth should naturally be found in different industries and national contexts. There may also be differences between the capabilities in terms of their dynamism and level in the ‘capability hierarchy’ (see e.g., Winter, 2003). It would also be valuable to further examine key capabilities in the context of different types of services, including those that involve more and less knowledge intensity, firms of different size, local vs. international operations, and different levels of customer involvement.

References

- Alvesson, M. (2000). Social identity and the problem of loyalty in knowledge-intensive companies. *Journal of Management Studies*, 37(8), 1101-23.
- Alvesson, M. (1995). *Management of knowledge-intensive companies*. Berlin: Walter de Gruyter.
- Amit, R., & Schoemaker, P.J.H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33–46.
- Andersen, B., Howells, J., Hull, R., Miles, I., & Roberts, J. (2000). *Knowledge and innovation in the new service economy*. Cheltenham: Edward Elgar.
- Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Bebko, C.P. (2000). Service intangibility and its impact on consumer expectations of service quality. *Journal of Services Marketing*, 14(1), 9-26.
- Bettencourt, L.A., Ostrom, A.L., Brown, S.W., & Roundtree, R.I. (2002). Client co-production in knowledge-intensive business services. *California Management Review*, 44(4), 100-128.
- Chen, Y-M. (2009). Determinants of industry performance: region vs. country effects in knowledge-intensive service industries. *Service Industries Journal*, 29(3), 297-316.
- Denzin, N.K., & Lincoln, Y.S. (2000). Introduction. The discipline and practice of qualitative research. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of qualitative research* (2nd Ed), (pp. 1-28). London: Sage Publications.
- Eisenhardt, K.M. (1989). Building theories from case study research. *Academy of Management Journal*, 14(4), 532-550.

- Edvardsson, B., Gustafsson, A., & Roos, I. (2005). Service portraits in service research: A critical review. *International Journal of Service Industry Management*, 16(1), 107-121.
- Fitzsimmons, J.A., & Fitzsimmons, M.J. (2000). *New service development: Creating memorable experiences*. Thousand Oaks: Sage.
- Flipo, J.P. (1988). On the intangibility of services. *Service Industries Journal*, 8(3), 286-298.
- Freel, M. (2006). Patterns of technological innovation in knowledge-intensive business services. *Industry and Innovation*, 13(3), 335-358.
- Grönroos, C. (2000). *Service management and marketing: A customer relationship management approach*, New York: John Wiley & Sons.
- Grönroos, C., & Ravald, A. (2011). Service as business logic: Implications for value creation and marketing, *Journal of Service Management*. 22(1), 5-22.
- Hafeez, K., Zhang, Y., & Malak, N. (2002). Determining key capabilities of a firm using analytic hierarchy process. *International Journal of Production Economics*, 76(1), 39-51.
- Houston, M., & Sudman, S. (1975). A methodological assessment of the use of key informants. *Social Science Research*, 4(2), 151-164.
- Hotho, S., & Champion, K. (2011). Small businesses in the new creative industries: innovation as a people management challenge. *Management Decision*, 49(1), 29-54.
- Kianto, A., Hurmelinna-Laukkanen, P., & Ritala, P. (2010). Intellectual capital in service- and product-oriented companies. *Journal of Intellectual Capital*, 11(3), 305-325.
- Jaakkola, E., & Halinen, A. (2006). Problem solving within professional services: evidence from the medical field. *International Journal of Service Industry Management*, 17(5), 409-429.
- Jansen, R., Curseu, P., Vermeulen, P., Geurts, J., & Gibcus, P. (2011). Social capital as a decision aid in strategic decision-making in service organizations. *Management Decision*, 49(5), 734-747.
- Kumar, N., Stern, L., & Anderson, J. (1993). Conducting interorganizational research using key informants. *Academy of Management Journal*, 36(6), 1633-1651.
- Lovelock, C. (1983). Classifying services to gain strategic marketing insights, *Journal of Marketing*. 47(3), 9-20.
- Lovelock, C., & Gummesson, E. (2004). Whither services marketing? In search of a new paradigm and fresh perspectives. *Journal of Service Research*, 7(1), 20-41.

- Martinez-Fernandez, C. (2010). Knowledge-intensive service activities in the success of the Australian mining industry. *Service Industries Journal*, 30(1), 55-70.
- Morgan, D. (1997). *Focus groups as qualitative research*. Thousand Oaks: Sage Publications.
- Muller, E., & Doloreux, D. (2009). What we should know about knowledge-intensive business services. *Technology in Society*, 31(1), 64-72.
- Muller, E., & Zenker, A. (2001). Business services as actors of knowledge transformation: The role of KIBS in regional and national innovation systems. *Research Policy*, 30(9), 1501-1516.
- Onkvisit, S., & Shaw, J.J. (1991). Is services marketing 'really' different? *Journal of Professional Services Marketing*, 7(2), 3-17.
- Ostrom, A., Bitner, M., Brown, S., Burkhard, K., Goul, M., Smith-Daniels, V., Demirkan, H., & Rabinovich, E. (2010). Moving forward and making a difference: Research priorities for the science of service. *Journal of Service Research*, 13(1), 4-36.
- Patton, M.Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks: Sage Publications.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th Ed.), Harlow: FT/Prentice Hall.
- Silvestro, R., Fitzgerald, L., Johnston, R., & Voss, C. (1992). Towards a Classification of Service Processes. *International Journal of Service Industry Management*, 3(3), 62-75.
- Shank, G.D. (2006). *Qualitative research. A personal skills approach* (2nd Ed) Upper Saddle River NJ: Pearson Education.
- Siggelkow, N. (2007). Persuasion with case studies. *Academy of Management Journal*, 50(1), 20-24.
- Stake, R.E. (2000). *The art of case study research*. Thousand Oaks: Sage Publications.
- Starbuck, W. (1992). Learning by knowledge-intensive firms. *Journal of Management Studies*, 29(6), 713-740.
- Tether, B.S., & Hipp, C. (2002). Knowledge intensive, technical and other services: Patterns of competitiveness and innovation compared. *Technology Analysis and Strategic Management*, 14(2), 163-182.

- Van Riel, A., Semeijn, J., Hammedi, W., & Henseler, J. (2011). Technology-based service proposal screening and decision-making effectiveness. *Management Decision*, 49(5), 762-783.
- Vargo S.L., & Lusch R.F. (2008). From goods to service(s): Divergences and convergences of logics. *Industrial Marketing Management*, 37(3), 254-259.
- Von Nordenflycht, A. (2010). What is a professional service firm? Toward a theory and taxonomy of knowledge-intensive firms. *Academy of Management Review*, 35(1), 155-174.
- Winter, S. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991-995.
- Zeithaml, V.A., & Bitner, M.J. (1996). *Services marketing*. New York: The McGraw-Hill.
- Zeithaml, V.A., Parasuraman, A., & Berry, L.L. (1985). Problems and strategies in services marketing strategies. *Journal of Marketing*, 49(Spring), 33-46.