

Viewing Knowledge-Intensive Business Services as Systems

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Abstract

This paper proposes that a general systems perspective may be used as a framework for viewing the KIBS offering. It is proposed that a system view to KIBS should recognize the main dimensions of service concept, service process, and service resources and infrastructure. In this light initial findings of a case research project are reported. Key findings are that in the KIBS service concept the main value proposition is based on the continuous development achieved by increasing both customer's and provider's knowledge. Among the most important resources for KIBS firms are the knowledge competences and the employees' motivation to continuously learn and increase their know-how even beyond their traditional professional fields.

Keywords

knowledge-intensive business services, services, systems, case study

Introduction

Among the fastest growing sectors lies *knowledge intensive business services* (KIBS). KIBS can be viewed as a key phenomenon in terms the changing structures of today's economy (Miles 2003, 11). As the role of services in the economy continues to expand, increasing competition sets new demands for service business models, making them more complex and consequently more challenging to manage. Complexity in service provision is partially due to the advancement of service technologies, but perhaps even more challenging are the immaterial and intangible elements that constitute major parts of any service offering. Many of these elements are highly dependent on knowledge and information, especially in KIBS where the value proposition of the offering is based on the creation of knowledge. Moreover, the process nature of service offerings adds to the difficulty of service management. More theoretical and practical knowledge is needed to grasp the complex phenomena of developing and managing service offerings.

This paper proposes that a general systems perspective may be used as a framework for viewing the KIBS offering; in this light initial findings of a case research project are reported here.

General systems perspective on KIBS

Simplified systems thinking

Systems perspectives include a large variety of different theories and approaches, but they tend to share some ideas rooted in General Systems Theory that connect them and justify the use of the term 'systems theories'. Systems theories view the phenomena holistically as entities and argue that the whole is more than the sum of its parts; the approach to knowing is teleological i.e. the system is viewed as having a purpose or a direction; there is some kind of an order in the world that can be viewed as creating a hierarchical system of systems and subsystems; the relationships between systems and their environment are important in order to understand the system; and the complexity of the world may be better understood by some way of systemic modelling (Ackoff 1971; von Bertalanffy 1972; Boulding 1956; Gharajedaghi 1999; Ackoff 1971).

A system consists of interrelated parts which cannot be detached without disabling it. Therefore, systems can be understood on the basis of their relationships between system components, subsystems, the system, and its environment. Systems may be viewed as being closed or open; social systems are always open as they continuously interact with their environment. Deciding upon the boundaries of open systems is a matter of judgement and perspective instead of a rule. In this framework, the boundary between the system and its environment is the service offering's boundaries. This can be practically approached by distinguishing what will be included in the value proposition and what is not offered. However, due to complexity and continuous change it is often difficult to say whether some rather intangible resource (such as the psychological trait of an individual worker) is required for the service or is rather a characteristic of the external world interfering in the system. The difference of closed and open system models may be viewed as the precision in which the boundaries between systems can be defined; in open systems a more blurred view is taken.

The interconnectedness of the system parts indicates that the system includes a factor which prevents it from disintegrating. Therefore, it follows that the relationships between system parts are meaningful. As the system is viewed as a teleological unit, it has been suggested that its ultimate goal is survival and/or growth. Social systems may also have other goals than survival, i.e. they are purposeful open systems. Due that the system aims to survive and grow it needs to adapt based on the changes in its environment, and consequently the relationship between the system and its environment is crucial in order to understand the system's behaviour.

Services as systems

The perspective provided here aims to support current research as a brief framework that combines both the systems theoretical thought and the KIBS and service research thought. Service research is dominated by the marketing view (see e.g. Grönroos 1990 and 1998) and complemented by other views, e.g. the operations management view (see Johnston 1999) and new service development research (see Johnne & Storey 1998). Based on the existing body of research, it is reasonable to argue that services, in contrast to material products, possess open systemic characteristic. So far, little has been written on systems perspectives in the field of service studies. On the other hand, services have been studied in the systems theoretical fields but not in connection to the above mentioned domains of services theory.

Yet we find traces of systems-oriented views in current service literature. For instance, Edvardsson and Olsson (1996) and Edvardsson (1997) provide a system model which proposes that a service consists of a *concept*, *resources* and *processes*. This approach provides a useful starting point for developing the framework for services as systems, but it was originally designed to be a thinking tool for service management rather than a consistent and conceptually coherent systems theory. Many other publications also have recognized the abovementioned three elements of services in one form or another (e.g. Bullinger et al. 2003; Homburg & Garbe 1999), which suggests that a similar threefold division is widely used in current research, and has potential for further KIBS analysis.

Another note-worthy contribution is the idea of reproduction formula suggested by Normann (1991); the service business is viewed as a dynamic system in which both tangible and intangible aspects are designed, and the awareness of the design enables the service provider to reproduce the business concept. This idea clearly illustrates the practical importance of creating system models. In the KIBS context we assume that an effective reproduction formula should focus on ensuring the continuous creation of knowledge.

KIBS offerings

Knowledge intensity as a defining characteristic should be applied to settings in which the core service offering requires continuous learning or creation of new knowledge, instead of merely implementing existing knowledge (Miles et al. 1995; Toivonen 2004). Thus, knowledge intensive business services may be defined as professional services that increase the level of knowledge for both parties; customer and provider. From this definition it follows that the KIBS offerings are continuously changing in their nature.

This view suggests that KIBS are not merely a matter of using professional expertise to cure customer problems. Rather we see them as a specific subgroup of professional services. KIBS take place in a continuously changing business environment, which makes them different from professional services which tend to operate in a less changing environment. For example, in healthcare the treatments improve, but the illnesses, or the problems in need of a solution, tend to change at a less fast pace. Moreover, our focus on learning at both sides of the service relationship clearly distinguishes between knowledge intensive and information intensive services.

The term *service offering* denotes the service as a product provided by an organization to a customer. Service offerings are different from physical products in that their existence depends on the system producing the service, whereas material products usually continue their existence apart from their production systems. It has been argued that all physical products have a service component as purchasing requires customer service. For physical products, the division of core and peripheral elements commonly used in service studies can be implemented by arguing that the physical product is the core offering and customer service element is peripheral to the physical good. Service offerings are thus combinations of core and supportive elements that constitute an entity that can be viewed as a service product. In this paper, therefore, service offerings are those combinations in which the core element is seen rather as a service than a physical product.

Service offerings have a systemic nature, because the three elements, or dimensions as we call them, of the model are required for any service – none of the elements alone yields to deliver the value to the customer, and also the service is not systematically designed if one of the aspects has not been paid attention to (see Figure x). In the service system framework of this paper, the main elements of the service system are the concept, the resource- and infrastructure and the process because these are conceptually and ontologically different phenomena.

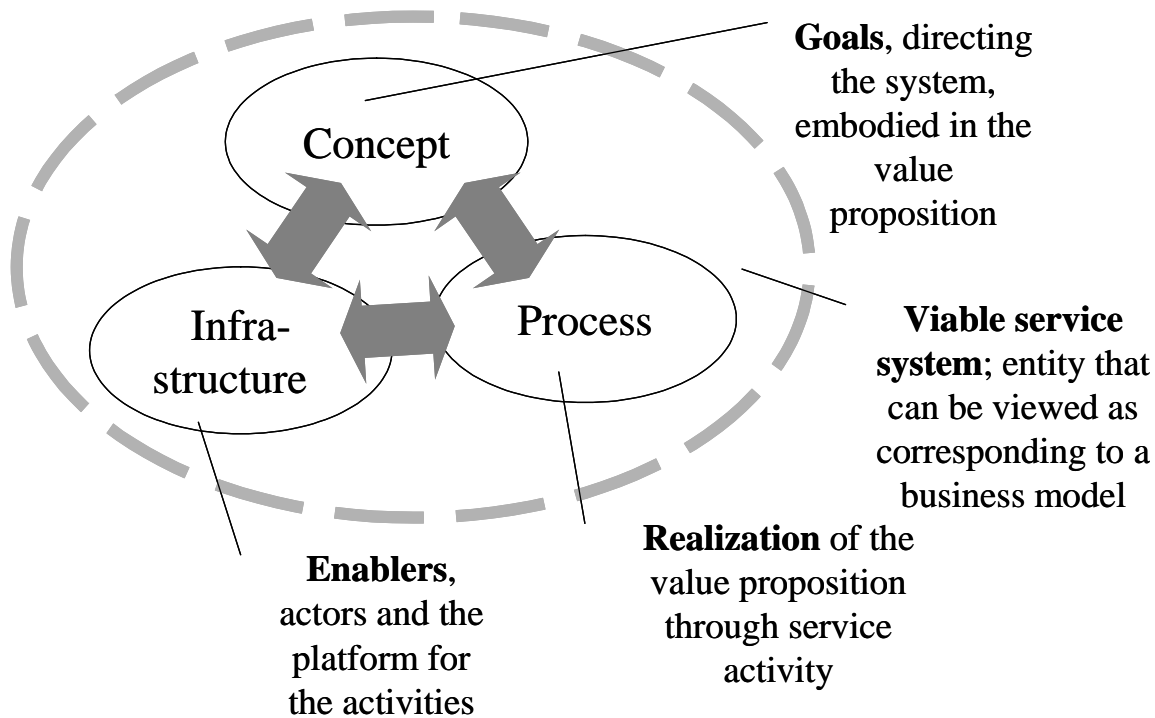


Figure 1. Service offering as a system

This kind of conceptualization of service offerings is common, yet most often implicit, in the service literature, although no other model which focuses on the analysis of the conceptual issues has been found. However, it is argued here that all services have these dimensions that are ontologically different.

The *service concept* refers to the product-market idea, the value proposition, objectives and strategy, economic or financial aspects, etc. It thus consists of the information that directs the system. Social systems are purposeful; and the service concept should represent the purpose of the service as a system.

The *resources and infrastructure* denote the aspect of all material and immaterial enablers required to realize the service concept. These include for instance employees, technology, tools, knowledge and competences possessed by the work force, existing customer relationships and customer knowledge, organizational structures and partnering networks. It also includes the customers, because of the simultaneous nature of services; the customer is often a collaborative producer in the service process, or perhaps the customers provide their possessions for service.

Through the *service process* the service concept is realized. It thus has a dynamic nature *per se*: it is the actual making of the service, and it can be viewed through functions, i.e. what is the purpose of the specific activity, or through the actors involved in the process. The approach taken here is to view it through functions, as the processes of production, consumption, management, integration, marketing and system maintenance, but the categorization obviously points to some key actors as well.

The service offering is a system, as each dimension is present in any service. If the dimensions are not properly coordinated, the system will not perform optimally, which may eventually propose a threat to its existence. Evolution is a continuous process, and unless actively maintained, the system will be subjected to erosion.

The study

This study has been conducted as part of the KIBSINET project (Knowledge-intensive Service Innovations and Innovation Networks) at BIT Research Centre, Helsinki University of Technology. The project aims to build insight on KIBS innovation in the real-estate and construction and connected sectors, especially in networked settings. This study represents only a fraction of the research interests pursued in the project, as the aim now is to discuss KIBS as offerings possessing systemic characteristics.

During the year 2005, nine different KIBS offerings in three case companies were studied in order to gain an understanding on the structure and elements of KIBS offerings as systems. The studied offering cases were selected by the case companies: they were asked to identify 2-3 services which involve knowledge work and which have been viewed as innovative or unique by the firms. As a purposeful sampling this approach is flexible, and there was a risk of some of the services not conforming to the KIBS definition but rather representing traditional professional services in which professional knowledge is always utilized but not necessarily continuously created.

The data consists of 22 interviews which are analyzed following comparative multiple case methodology (see Eisenhardt 1986). The analysis procedure has followed the basic principles of the Grounded Theory approach. However, as the analysis has not been finished yet, these results should be viewed as initial findings and grouped observations rather than empirically-based theory.

Findings

The KIBS dynamics

The interview data indicates that all selected cases confirmed to the KIBS criteria of continuous increase of knowledge for both customer and provider. Many respondents literally described this learning. The customer and provider are likely to learn from each others or from the new problem they tackle together:

“When it goes right, it opens new ways for the client to look at the work environment. When it succeeds the process is a learning process for both participants [the client and the KIBS provider].” (R3)

”I am tempted to say that every project is an innovation. ...each process is a creative process in which we face new problems.” (R8)

Or, the provider continuously develops its competences in order to trigger learning in the client organization. Surprisingly, in addition to viewing learning as increasing the professional expertise, the respondents often emphasized attitude-related learning:

“I don’t like to say this like that, but I’ll say it anyway. Architects should get rid of the architecture, not to create space just because of architecture, but for the activity [in that space] and those visiting the space... About the competence, it should include understanding about what will work out in that specific space.” (R8)

Due to the continuous learning, KIBS offerings continuously evolve and thus cannot be fixed standardized products. The following quotation accurately illustrates the dynamic nature of KIBS offerings:

“I’m thinking about the material we produce to sell our offering, we have at the beginning thought who will make these brochures and things like that, and now we’ve decided that we don’t make those because our thoughts change, evolve all the time, really, it’s definitely not something static, we have to rethink about what we’re doing all the time. It helps us to grow, to feel more assertive, but also we try to keep in touch with the criticism and the responses ... all the time improving in a way, we’re never satisfied with what we’ve got, so even the material that we have, we’ll change it along and we make PDF’s and we send PDF’s and that kind of thing, so that it’s easy to modify. We don’t anymore print these brochures... because we change so often. And the people change too, it’s very important also that the CV’s change and then the offers of services change also... There’s nothing fixed in this world really.” (R7)

Based on these observations, we suggest that in KIBS *the continuous strengthening and redefining the offering is built into the value creation logic of the core service offering*. A successful KIBS could thus be seen as a virtuous cycle as illustrated in Figure 2. Because the KIBS firm has distinguished professional competence in its domain, it is encouraged to participate in solving a customer challenge. As the solution to this challenge develops, new knowledge is created. The KIBS firm utilizes the new knowledge to develop new offerings, i.e. the solution is developed into a product concept that can be actively marketed to new customers. Through this process, the KIBS firm’s professional competence accumulates and pre-existing professional competence is elevated, allowing the firm to access new and more challenging customer challenges. Ideally, KIBS should therefore create a virtuous cycle of continuously developing service competence for the providing firm. This virtuous circle was traced in each studied case.

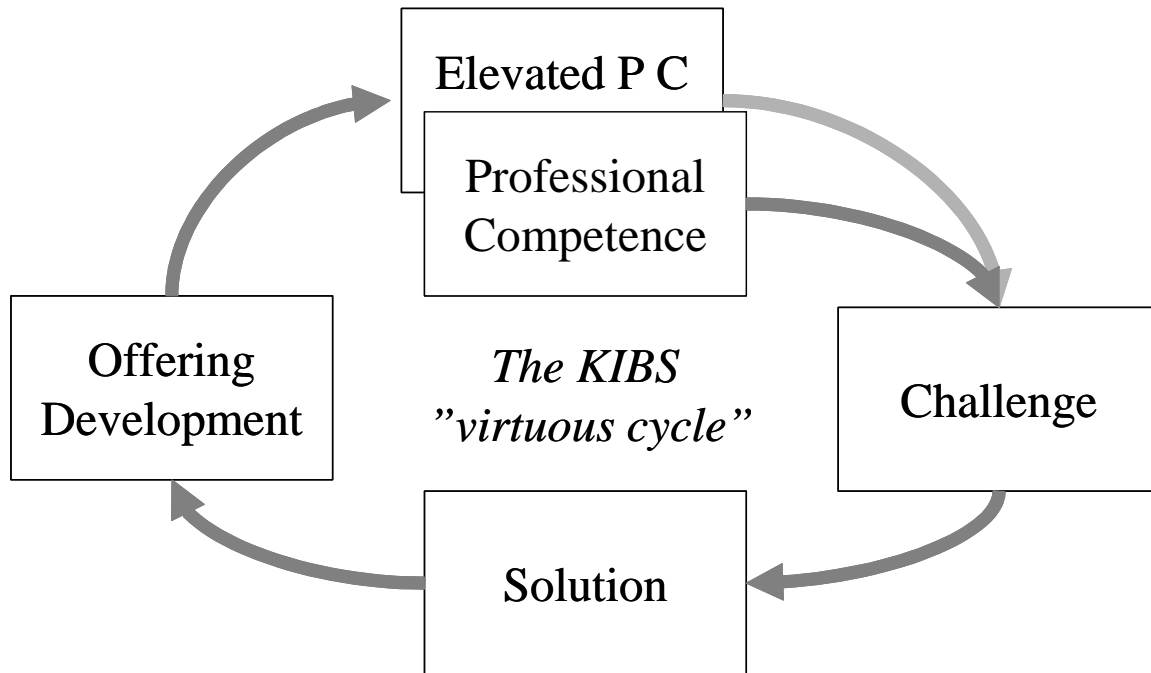


Figure 2. The virtuous cycle in KIBS

Concept dimension in KIBS

We will now look at the concept dimension of KIBS based on our initial analyses of the interview data. The value proposition to the customer is the core of the service concept dimension. In KIBS, the value proposition often reflects the aim of having an impact on the customer's thoughts and supporting the customer in its improvement and further development of business practices.

For example, one of the studied cases was an architectural service in which the KIBS provider aimed at changing the customers' understanding of work space. The service provider's architects worked in the customer organization to make it as a collective realize that office work space contributes to their productivity either positively or negatively. The offices were redesigned to support customers' business strategy and processes, instead of using the space for purposes such as reflecting organizational hierarchy. As part of the redesign planning process, the customer organization was prepared for the change so that when the actual remodelling took place, the customer did not face resistance inside its own organization.

The customers are the main partners in service development as ideas based on newly identified customer needs are often initiated in customer relationships. Furthermore, although KIBS seem to be relationship intensive, surprisingly enough it seems that pre-existing trust is not required to provide KIBS. Several respondents viewed their KIBS offering as a relationship builder:

"This gives a great chance to create a good and trustful relationship. ...lot of the relationships have been fresh... this is a good way to build the trustful relationship, as after we have gone through all this we know and understand the customer very well." (R2)

Most of the KIBS offerings studied did not have formal quality procedures, at least not in a central role. Quality was approached rather intuitively, as many respondents indicated that in close business relationships it is possible to immediately sense if problems are occurring. Due to the inherent newness of KIBS value propositions, a basic criterion for service provider personnel is to surprise the client positively.

KIBS services have different roles in the firms' total offerings. Many of them are initiated when the 'traditional business' faces economic fluctuation or decrease of profitability. Such emerging KIBS tend to have a differing demand curve and they can be used to balance the firms' business in the long run. Most importantly, KIBS do not compete with the traditional professional service business of the firm.

As the KIBS are engaged in supporting and shaping the customer's strategy, while providing effective solutions for the customer, a lucrative margin may be achieved. Such a margin is often higher than in traditional services where competition is usually strong. The abovementioned criterion of surprising the client positively may be linked with the concept of expected service quality, i.e. quality is good or excellent when it exceeds customer expectations (see Grönroos 1990). Organizations providing excellent service have been shown to get significantly better higher net margin than their poor service competitors (Bates et al. 2003).

In KIBS offerings a tendency towards packaging the services as bundles was observed. Traditional professional services are often priced per hour, whereas the creation on totally new value propositions allowed the companies to use customer value based pricing instead of cost-based pricing. Cases in which the pricing strategy was a combination of fixed total price and cost-based price were also found.

Infrastructure dimension in KIBS

Continuously developing competence was usually viewed as the most important resource. Therefore investment in expensive equipment is usually not necessary. In general, it seemed that the service concept comes before technology, but with successful concepts new technology is quickly developed to automate bulk tasks. Tools were quite simple in the beginning of a new service; the fundamental idea was what to create something of unique value. Manual tools were developed first, after which efforts were made to automate the tools. Thus KIBS evolved towards a more standardized service. Also, as companies were moving from traditional professional services towards KIBS, they already possessed the information technology and tools required for the professional services on which the KIBS were built. The tools developed especially for KIBS were typically methods, analysis and thinking tools, or data gathering procedures. Other important resources were marketing materials and formalized ways of reporting the provided service to clients, e.g. standardized reports, plans and workshops as the end deliverables.

The companies were usually organized based on their domains of expertise. The companies organized according to specific skills and offerings, not e.g. customer segment:

”We started to organize this as a group on its own, as we recognized that a lot of special know-how is required, and you cannot just pick someone behind the drawing board and computer to do this kind of service.” (R2)

The organizational structures and setting were geared towards continuous development and sharing of information. More than *sharing*, the respondents emphasized *creating* knowledge. The companies had tools to share information electronically, so this was not a challenge for them. Communication and co-working was perceived as extremely critical for creating knowledge and ideas: the respondents reported that no ideas arise if they try to tackle a problem on their own. This is an interesting aspect to consider, especially since our notions of consultation revolve around the individual.

“Then we start the design process. In practice its my and Michael’s job... well it’s great to do it just by ourselves sometimes, but usually it is more fun if there are more people. We’re not supposed to be so jealous about our jobs. If you are alone at work you don’t have much to do and you don’t get much done, at least you should go hang around somewhere, listen somebody... to try to get something designed alone, it really doesn’t work that way.” (R13)

Workers expressed high motivation to both learning and routinizing the newly created knowledge and putting it into practice in their KIBS offering. Workers seemingly enjoyed and were self-directed in their learning. Their companies had a supportive culture towards learning, but the respondents were self-directed in choosing their areas of expertise as well as their learning methods. It was common that they studied a field completely different from their original education and then utilized this combination innovatively. It also seemed important that the members of a KIBS organization could freely focus on the fields they were interested in as this allowed a broad and creative combination of skills in the collective level to appear. Yet, the interests shown towards new disciplines were initiated by the nature of the KIBS provided, e.g. an architect engaged in redesigning workspace was studying social psychology to acquire a more comprehensive understanding of collaborative work.

Process dimension in KIBS

There were two kinds of production processes. The first consisted of *project type services* that involved design and its implementation. The second type consisted of *continuous process* type services which included such activities as monitoring, diagnosis and problem solving with regularly repeated consultancy as the KIBS element. Several of the KIBS offerings were hybrids of the two. The service providers saw the actual service process as the main value generator, although they also made the outcomes tangible (e.g. reports, plans, and manuals) to ensure that customers realize the value that is being produced during the collaborative process.

The respondents strongly emphasized ethical values. This seemed to be much more important to respondents than the usual professional rhetoric about ethics; a possible hypothesis is that ethical values provide the experts a guideline and criteria to evaluate the quality of their work in the context of continuous change. Also, as the respondents were aware of the impact they may have on client organization, they perceived the responsibility as a central part of their jobs:

”The clients want a professional as their partner, one who knows where the world is going to, and who they can trust on. And someone they know will provide value for their money, not only in the short term but someone who has further insight, who builds a strong basis for the long run.” (R1)

“In practice, the project manager’s responsibility is ...to ensure that all is fine with the client. We look at interest of the client’s brand, not the interest of the individual person on the other side of the table purchasing our service... That is a basic thing that has been forgotten in many advertising agencies, that they try please the person, not the brand.” (R12)

A lot of customer interaction is required, especially in constructing a view of the customer situation and in delivering and implementing the final solution to a particular customer problem. The KIBS offering development was backed up by using and conducting research, not mere intuition or experience. Also, KIBS offerings often included research activities especially in the problem diagnosis phase.

KIBS consumption requires strong commitment. What was especially important was the customers’ ability to make decisions effectively and achieve collective agreement in decisions along the service process. According to the respondents, the customer need not have specific skills other those they need their core business.

The respondents explained that all customer organizations have a “personal” style to collaborate. At the KIBS level it is the provider who adjusts to customer’s business conventions. When the service is further standardized the customer too adjusts, and the service offering transforms from a KIBS offering into a professional service: the provider does not learn as much anymore as with KIBS.

It is important that the customer involves the KIBS firm in an early phase of their change. The KIBS offerings operated at a strategic level or as a link between strategy and operational level; thus if the client involved the KIBS firm after having all strategic decisions made, the KIBS firm typically refused to provide the service, as this was viewed as the “un-success scenario”. Sometimes the customer realized the situation and understood the value of the KIBS service, and decided to take a step backwards in their decision process, even if this created additional costs, in order to benefit from the KIBS offering.

Most management of KIBS is embedded in the production process and as part of the service tasks. Thus KIBS professionals are not mere experts; they also need to take a managerial role as well. Most importantly, KIBS providers need to continuously integrate between the production and the consumption process. The integration was based on communication, from which we can conclude that *if communication were to fail, the integration too would fail*.

Maintenance processes focus on the psychological dimension, as the competences and motivation to learn must be enhanced continuously. In service systems erosion is a common problem as ‘mechanistic’ rules tend to change unintentionally, but this was not a problem for KIBS. Erosion of service systems is not likely to occur due to the virtuous circle of continuous development. The fuel that keeps the system running seemed to be the motivation to learn and elevate competence continuously.

Conclusions and discussion

This paper has described KIBS as system phenomena. Key aspects indicated by all cases may be summarized as follows. The value proposition of KIBS is based on using existing expertise to tackle arising customer problems, and to increase both customer and provider knowledge through the service process. The most important resources for KIBS firms are the knowledge competences as well as the employees' motivation to continuously learn and increase their know-how even beyond their traditional professional fields.

For the persons participating in the provision of a specific KIBS offering it seemed important to be able to continuously reflect their offering and develop it further. Thus it is not surprising that the KIBS companies did not have specialized product development functions. Development is continuous and takes place on-the-job. This is an interesting issue if we think about the traditional ways of increasing service productivity through modularization or dividing tasks between back and front office and specializing resources to different tasks. These approaches do not seem relevant for KIBS that are likely to require an organization structure that allows adopting this holistic approach.

A virtuous cycle of continuous development was observed at the heart of the KIBS service concept. This feature of KIBS suggests that the traditional 'stage-gate' type models of new service development process (e.g. Alam & Perry 2002) cannot be directly applied to KIBS settings. Models with more iterative and systemic orientation might be more useful in the KIBS context. Also, experiences from developing KIBS might be useful for developing the new product development body of knowledge in general. For instance, 'customized expert services' have been found as the most successful new product scenario with 77% of development projects being successful (de Brentani 1995).

The KIBS providers developed tools and standardized parts of their KIBS offerings. Do they continue to be KIBS? In our view, the offerings stay as a KIBS type as the continuous element of development remains at the core of the service offering despite of the partial standardization of other service elements. It seemed to us that the standardizing activities usually focused on supporting technologies and consultative work could still be viewed as the core of the service.

The framework provided in this paper has mainly looked at the service systems' internal aspects, and thus could be argued being a closed system model (cf. Katz & Kahn 1969). However, earlier authors have argued that closed system models are tools to understand complex open systems that would be otherwise impossible to represent as they are in real life, and therefore closed system models may be used also in the open system contexts (Ackoff 1981; Ashmos & Huber 1987).

Based on these initial findings, KIBS offerings are systems phenomena; the concept, process and resources are tightly linked and reinforce further development in the system level. As KIBS are continuously evolving by their nature, change takes place in all three dimensions. On a general level we may summarise that the system of KIBS adjusts through learning and implementation of what is learned. KIBS also actively shape their environment as they facilitate customer learning and change.

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