

# A Problem-Solving Typology of Service Business

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**Abstract:** In this study, we sketch a “problem-based perspective” of the service business, following the latest theoretical developments in the field of the knowledge-based view of the firm and the related problem-solving perspective. In particular, we approach services as “problems to be solved” for and with the customer. Our paper outlines a framework in which the knowledge processes regarding service delivery are conceptualized on two axes: 1) the intensity of knowledge sharing and co-creation of services between the provider and the customer and 2) the nature of the problem-solving process regarding the service delivery. Based on the developed conceptual framework, we provide implications concerning the organizing of various types of services in terms of the different problem-solving processes they require. Furthermore, after identifying the distinctive problem-solving processes with the help of the typology, theoretical and practical implications for service and knowledge management are discussed.

**Keywords:** services, service business, knowledge, co-creation, problem solving, typology

## 1. Introduction

The service sector has shown a significant increase in importance, and it has become the dominant driver of economic growth in many economies over the last decades (Andersen et al., 2000). Services – rather than products – are often in the core of the business models of contemporary organizations (Hurmelinna-Laukkanen and Ritala, 2010). Consequently, research on services has gained increasing attention within recent years to understand the factors of competitiveness in this field. The basic assumption behind this stream of research is that services differ from products in many important aspects. In particular, services are seen as extremely heterogeneous and often intangible processes, which most often involve and depend on specialized human labor. In fact, specific challenges and best practices of managing so-called “knowledge-intensive services” have received increasing interest (e.g., Tether and Hipp, 2002; Freel, 2006). It has also been widely suggested that knowledge-intensive service firms generate value and contribute to growth in the contemporary economy more than other types of services (e.g. Andersen et al., 2000).

The knowledge-intensive nature of many high-value services calls for effective knowledge management in this field. However, since services are extremely heterogeneous, it is difficult to formulate generic management guidelines or best practices for service business-related knowledge management. For instance, Oliva and Kallenberg (2003) note how the transition from products to services causes major concern in terms of how to replicate HR and knowledge management capabilities in service provision. In any case, human resources and the related knowledge assets are seen as especially valuable in service-oriented firms (Kianto et al., 2009). Thus, the underlying challenge of service management in general is to pursue effective combination and integration of individual and organizational-level knowledge in order to create new value through service solutions (e.g. Chesbrough and Spohrer, 2006).

To address this issue, we propose a pragmatic conceptualization on the nature of the service business (in B2C and B2B contexts) which we call a “problem-solving perspective of the service business”. In this task, we utilize the knowledge-based view of the firm (Grant, 1996; Spender, 1996), as well as the recently established problem-solving perspective of a firm (Nickerson and Zenger, 2004; Nickerson et al., 2007, Heiman et al. 2009). The problem-solving perspective views the organization as a problem-solving entity, where the role of the organization is to solve valuable problems and utilize various knowledge processes to organize for this task. In accordance with the problem-based perspective we analyze knowledge processes in services simultaneously from the customer and provider perspectives, showing that services can be seen as problems to be solved and where the process involves different levels of knowledge sharing and creation. Even though earlier conceptualizations of the knowledge intensity of service providers and customers exist (see e.g. Hauknes, 1999), the problem-solving perspective allows a more in-depth as well as pragmatic analysis in terms of understanding the knowledge processes involved in service provision.

The main contribution of our study is twofold. First, we elaborate a knowledge process-based view on services and analyze problem-solving issues. The framework enables a useful theoretical and practical categorization of all types of services based on the different levels and types of their knowledge intensity. In this, we distinctively identify the role of customers and providers in solving the service-related “problems”, which helps to analyze the value and provision of a service from a value co-creation perspective. Second, we formulate theoretical and managerial implications for different types of services, utilizing the proposed framework as a basis for these implications. In addition, the typology proposed in this study is helpful for future research in suggesting that all services can be viewed from a problem-solving viewpoint, taking into account the variation in the intensity of co-creation as well as the level of routinization.

The study is structured as follows. In the next section, a problem-solving perspective of service business is briefly formulated. Then, a problem-solving typology of service business is sketched with the help of a two-by-two matrix. Finally, we discuss and summarize the proposed framework with the help of practical examples from different service industries. To conclude, we propose concrete implications for practice, as well as further avenues for research.

## **2. Problem-solving perspective of service business**

Services are by nature something that help customers to solve their specific problems. Thus, by consciously adopting the customer’s problem as the object of inquiry in theory development, the nature of services is intuitively taken into account throughout the analysis. In this section, we formulate very simple foundations to a view what we call a “problem-solving perspective of service business”. Our aim is to adopt the problem as the unit of analysis, and analyze service business from the co-creation perspective where such problems are solved in collaboration with the customer and provider of the service.

### **2.1 Problem-solving perspective of a firm**

Why do firms exist and how do they organize to create value? These questions are fundamental ones in organization theory, and have been approached from many perspectives, including transaction (Coase, 1937; Williamson, 1985), evolutionary (Nelson and Winter, 1982), resource and capability (Penrose, 1959; Barney, 1991; Teece et al., 1997; Teece, 2007), and knowledge (Kogut and Zander, 1992; Grant, 1996; Spender, 1996) perspectives.

The problem-solving perspective of a firm (Nickerson and Zenger, 2004; Nickerson et al., 2007) departs from the other theories of a firm in that it takes the problem as the unit of analysis. The perspective fundamentally builds on the knowledge-based view of the firm (Kogut and Zander, 1992; Conner and Prahalad, 1996; Grant, 1996) and also contributes to the recent discussion around the “knowledge governance” approach (Foss, 2007; Foss et al. 2010; Heiman et al., 2009). From this perspective, any individual organization is seen as a problem-solving entity. The “problem” is understood in a broad sense, including any type of issue or activity that can create value (or is valuable) if a valuable solution can be found. Therefore, successful organizations are those that are able to identify and solve problems that eventually bring unique competitive value in the eyes of the organization’s customers. In other words, the more valuable the problem identified and the more valuable the solution found to such a problem (in the eyes of the customer), the more value is created in the end.

In a more practical sense, the problem-solving perspective helps to understand the nature of problems the organization encounters and identifies which problem-solving methods (i.e. organizational knowledge processes) are most applicable. This is the viewpoint which is used in this study to categorize different types of services according to the problem-solving processes involved, and to develop theoretical and practical implications based on this.

### **2.2 Services as problems to be solved**

The problem-solving perspective has been used to describe the identification and solving of problems inside an individual organization (Nickerson and Zenger, 2004; Nickerson et al., 2007), we extend the logic to cover the customer/provider interface in order to describe the service business through this perspective. We claim that services can fundamentally be seen as “problems to be solved”. A service is often a specific benefit that the customer obtains, for example, in terms of convenience, time saving, physical transformation, or a value adding function for customers’ possessions (for a review, see e.g. Cook et al., 1999; Lovelock, 1983). All these can be viewed as different types of problems. For example,

the customer can seek a solution for a broken car (solution = repair), monetary assets that are in redundant use (solution = financial advice, e.g. wealth management), transportation (solution = a bus service/taxi), or uncertainty over the target market's needs (solution = market research/consulting advice). All these examples include the logic that there is a problem which has been identified, and that providing a solution to it creates value.

As the services by their very nature involve intense cooperation between a client and a provider, problem-solving processes in services can be delineated in two categories: 1) service co-creation with the customer and the related knowledge sharing and 2) the nature of the service-providing process. First, the co-creation perspective suggests that the customers are the fundamental initiators (more or less consciously) of the problems (or the issue around which they have a problem that they have not specified yet) to which they seek solutions. In this task, there are varying levels of knowledge sharing (and co-creation) required between the customer and the provider in interactively identifying the exact problem to be solved. Second, the nature of the service-providing process suggests that the service provider solves the problem for (and with) the customer through certain problem-solving processes. Again, there are varying levels of knowledge requirements in such processes.

In the following sections, we first discuss the co-creation of services and related knowledge sharing and secondly the nature of service provision in terms of different problem-solving processes.

### 3. Problem-solving typology of services

#### 3.1 Co-creation intensity

Customers are viewed here as individuals or institutions seeking solutions to their problems in collaboration with service providers. This requires various types and levels of knowledge sharing. Especially in cases where knowledge sharing requires complex and intense interaction between the provider and the customer, customers become the "co-creators" of services (e.g. Sawhney and Prandelli, 2000). The co-creation perspective on services implies that value is created in collaboration with customers (and with other organizations in the overall value network). Indeed, a better understanding of the customers' role and developing methods for motivating customer involvement in co-creation processes is needed within the service science (Ostrom et al., 2010). For instance, Bettencourt et al. (2002) note how customers must perform effectively and take an active role when co-creating services. They should openly communicate useful and timely information, and take responsibility for maintaining the relationship itself and problems that arise. The complex and customized nature of interactions makes problems and adjustments unavoidable. Thus, it is essential for customers to communicate potential bottlenecks on time, provoke questions, and provide constructive feedback (Bettencourt et al., 2002).

Prior research focusing on customer relationships within knowledge-based services distinguishes between *transactional* and *co-operational* relationships (Sivula et al., 2001, O'Farrel and Moffat, 1991, Miles, 2005). In transactional relationships, the customer typically knows a solution to the problem in question and the relationship is dominated by market efficiency. In contrast, in cooperative relationships the customer does not know how to solve the problem beforehand. In line with the co-creation perspective, solutions to problems are developed in the relational exchange of knowledge and skills between the service provider and customer.

Based on the aforementioned issues, two basic modes of knowledge sharing and co-creation relevant for service-related problem solving can be roughly divided into "low" and "high" categories. First, some services require only few in-depth knowledge inputs from the customer, and related to this, low levels of co-creation regarding the service. In such cases, problem identification is a process where the customer has a problem (= a service need) which is repeated over and over again, to the extent that the identification of the problem is basically similar each time the problem occurs. Services that are used frequently in a similar manner, such as transportation, grocery store shopping, or car repair are situated within this category. In some cases, the customer has a problem which is repeated from time to time and is thus of familiar nature, but there is some variation over the specific customer need involved each time the service is requested.

Second, certain services require service creation-related knowledge to be exchanged between the customer and provider. In these instances, the problem is identified and solved in an intense co-creation process between the provider and the customer. Oftentimes in these situations, the customer has a unique need which needs to be communicated and solved case by case. Such needs can relate to one-

time, individualized services, which often include contingencies over the time, place, and other contextual issues related to the service. In other words, knowledge exchange is mostly *situational*, rather than generic. For example, services provided by the fire brigade are most likely to be unique for the customer and to involve unforeseen elements related to the environment where the service is needed. On the other hand, co-creation can only concern a certain part or element of the service, while other parts are similar for all types of customers.

### **3.2 Nature of the problem-solving process**

As the services are viewed as problems to be solved in our perspective, the nature of service provision is discussed here as different types of problem-solving processes. The nature of the problem-solving (i.e. service-providing) process fundamentally causes variation in the provider's need to create and utilize unique, service-specific knowledge during the process (from the provider's viewpoint). The various types of problem-solving processes of the service provider can be examined from the perspective of *routinization* in these processes.

In general, a distinction between different types of organizational activities in terms of their routinization can be found in the existing literature in the manufacturing context (see e.g. Lillrank, 2003). In the service context, Tether et al. (2001) have distinguished firms' service outputs as either standardized, partially customized, or bespoke (individualized). Following these sources, and by integrating the problem-solving perspective into the discussion, we distinguish between the different types of service providing processes based on their nature in terms of problem solving between the polar types of "routinized" and "unstructured" problem solving. Routinized processes are based on the repetition of existing ways of identifying and solving problems, whereas unstructured processes relate to unique, highly customized and often one-time ways of identifying and solving problems. In the business practice context, all the problem-solving processes are eventually situated somewhere on a continuum between fully routinized and completely unstructured processes. For the sake of simplification, we discuss both extremes separately in this study.

First, *routinized problem solving is a process where the service is delivered as a standard offering where very little or no customization is involved* (unless there is a crisis in the delivery process). Often, routinized problem solving can be (almost) completely automated or standardized. In the process of delivering these kinds of services, there is usually no need to create unique knowledge from the perspective of the provider. Second, *unstructured problem solving is a process where the service is delivered in a unique way, involving none or only few pre-existing structures*. In these instances, the service provider is required to create new knowledge because the problems often range beyond the pre-existing knowledge base of the organization.

Between these two extremes, there are naturally many "shades of gray". However, most of the services can be identified as belonging to one of these categories. These two types of problem solving, coupled with the co-creation intensity discussed in the earlier section, are put together to propose a typology in the following.

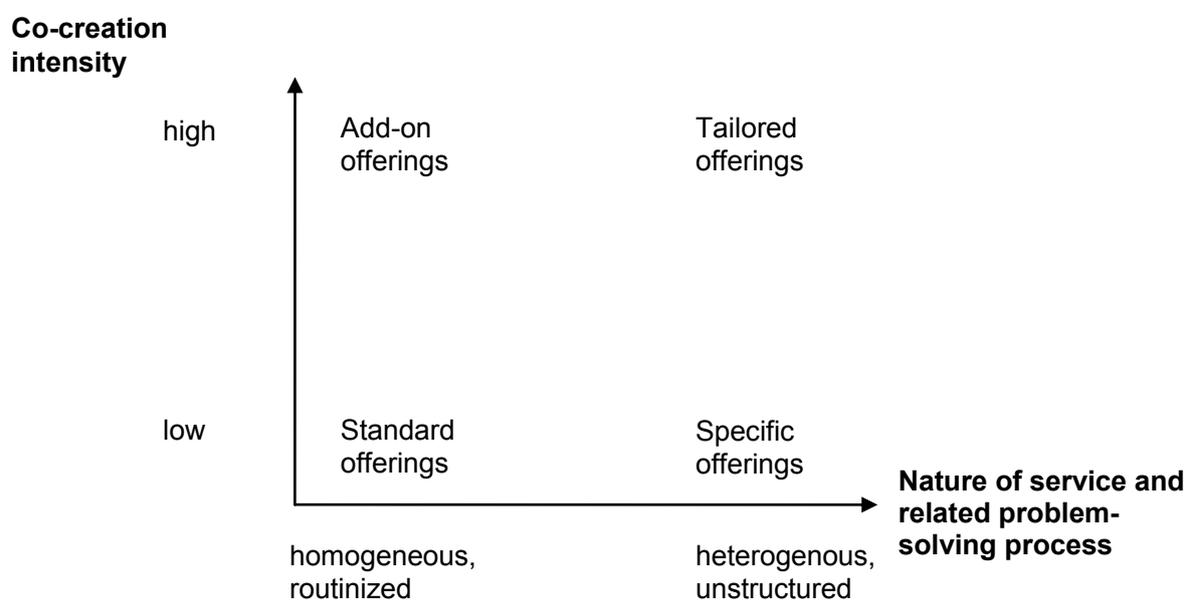
### **3.3 Typology and implications**

In Figure 1, a two-by-two matrix is presented where the co-creation intensity of the service, as well as the nature of the service-providing process are illustrated. As discussed throughout the last two sections, these two axes determine the nature of problem solving in services from both the customer and provider perspective. According to the model, services can be categorized according to the need for knowledge sharing between the customer and the service provider in determining the service (i.e. co-creation intensity), and according to the nature of the service and the related problem-solving process.

The lower left corner illustrates the logic of *standard offerings*. In such services, customer knowledge inputs in the co-creation process are low, and very little knowledge sharing is required. In addition, problem solving is a routine process, where services are delivered each time in a quite similar manner. Examples of these types of services include car wash or railroad transportation, which are practically pre-determined in terms of their delivery process.

The upper left corner identifies a type of service that we label *add-on offerings*. The difference with the purely standard service offerings is that in these types of services, customer knowledge inputs are rather high, and they are utilized in the co-creation of the service. Still, problem solving is a routine process,

where the service is offered efficiently to address various types of customers' problems. This type of problem solving sometimes also allows the mass customization of services, where the customer has the possibility to affect the contents of the offering, although the service delivery is routinized. Google, for instance, pursues to offer access to any type of information the customer is seeking in a way that can be scaled to cover all the possible customers possessing an internet connection. In a B2B setting, firms offering market research services often have highly routinized ways to solve the customer's problem (i.e. framing of the search, conducting and reporting a survey etc.), but provide the customer with the possibility to co-create the offering in terms of its target and eventual contents.



**Figure 1:** A problem-solving typology of service business

The lower right corner shows the area of *specific offerings*. In these types of services, co-creation intensity with the customer is low, while problems need to be solved in an unstructured manner, yet with some reliance on the existing service offerings or platforms. Rajala and Westerlund (2008) suggest that these types of services are especially challenging in terms of business profitability, since the offering can typically be only partially finished due to the pursuit to serve the needs of many different customers. Furthermore, they suggest that these types of services are most common in subcontracting with semi-finished products such as (software) subcontractors. Examples of these types of services are typically more common in B2B settings, where providing integrative components and service platforms are quite commonplace in the ICT industry or factory process maintenance services, for example.

Finally, the upper right corner identifies *tailored offerings*. In these services, customer knowledge inputs for the co-creation process are particularly high, providing input in the individualized service delivery. In addition, problem solving in these instances is a highly unstructured process, where the service is tailored every time to meet the unique, often one-time customer needs. Thus, problems are solved with only a very thin pre-existing knowledge framework, which makes it possible to come up with creative and customer-centric solutions. These types of creative service offerings are quite commonplace in the contemporary economy. A good example of such activity is interior design, where each case is different depending on the context and customized customer needs. Further examples involve unique and one-time service activities, where each identified customer problem is solved in a unique way. Examples include creative R&D services, and consulting projects concerning the client's specific emergent problem.

#### 4. Discussion

In this study, we proposed a framework where we described services as problems to be solved, involving 1) different levels of co-creation between the service provider and the customer and 2) different types of problem-solving processes (routine or unstructured). Based on these axes, we suggested a framework of problem-solving types in services, which provides a more in-depth view on approaching different types of services and their knowledge-intensity than the pre-existing formulations. Table 1 below summarizes the implications and provides practical examples.

**Table 1:** Summary of the typology and practical examples

	<b>Standard offering</b>	<b>Add-on offering</b>	<b>Specific offering</b>	<b>Tailored offering</b>
<b>Nature of the problem-solving process</b>	Mostly routine, rigid	Mostly routine, yet allowing customization	Mostly unstructured	Unstructured
<b>Knowledge requirements in service co-creation</b>	Almost no customer knowledge required	Basic knowledge on customer preferences required	Low requirements for customer knowledge, but high requirements for service-specific knowledge	High requirements for customer preferences and service-specific knowledge
<b>Examples from B2C markets</b>				
Car services	Car wash	Car maintenance service	Car repair	Race car design
Banking services	Opening a bank account	Bank loan	Wealth management	Loan re-negotiation
Health services	Taking temperature	Eyesight check	Mending fractures	Mental health
<b>Examples from B2B markets</b>				
Marketing consulting	Market report	Market research	Future trends research	Market strategy consulting
Factory maintenance services	Supply of spare parts	Supply of customer process-specific spare parts	Unexpected process break down maintenance service	Customer core process re-engineering

#### 4.1 Theoretical implications

Our study provides important implications to the literature on organizing services. While comparable frameworks have been crafted about services or offerings (e.g. Haukness, 1999; Rajala and Westerlund, 2008), the typology provided in this article takes two knowledge-related categories into account in a unique way. Firstly, we elaborated a problem-solving based view on services, which has been greatly lacking in the literature. Secondly, we approached problem-solving not as a passive, firm-initiated process, but more as interaction between service providers and customers, thus incorporating the service co-creation perspective (e.g. Bettencourt et al., 2002) and illustrating the types of knowledge needed for mutual problem identification and solving.

Based on the framework different types of services can be studied empirically for a more thorough understanding of the axes and different classes in the typology. Our perspective provides a useful point of departure for studying the organizing of efficient and effective problem-solving processes in organizations delivering different types of services. Also, our typology may serve as a foundation for the comparison and re-interpretation of prior research on best management practices in the services sector, and, through this, for building a more comprehensive theory of management of services.

#### 4.2 Practical implications

Our study leads to important managerial implications for building sustainable competitive advantage in service industries. The service offering of most firms can be seen to consist of a variety of services requiring different type and level of knowledge sharing with the customer, and differing types of problem-solving processes from the service provider. Taking this into account, the relevance for service providers is to optimize the appropriate knowledge processes and co-creation activities to suit their service offering. In addressing this issue, our typology can provide a valuable tool for practitioners to analyze their services portfolio in line with types and levels of problem-solving processes.

For example, it can be expected that most of the relatively more routine service-providing processes with various knowledge inputs from the customer can be automated and sold over the Internet. When the service provider is able to provide services in this way, while taking into account also the individual customer preferences (the upper left corner in Figure 1), the “sweet spot” of service providing can be reached generating maximal customer value with routinized (and thus sufficiently inexpensive) problem-solving processes. Of course, not all services can be delivered in such a way. Thus, it is important for managers in service firms to identify the customer needs and the underlying problem-solving processes in their organizations in order to maximize customer value while still operating efficiently organization-wise.

In order to provide practical guidelines for practitioners, the proposed typology needs to be linked with strategies and operational issues of firms. For example, our typology could help managers operating in the service business to make informed choices regarding their overall knowledge management strategy. The extant literature suggests that knowledge management efforts bring value to the organization only if they constitute a coherent strategy (Blumentritt, Johnston, 1999). Two widely discussed knowledge strategies are codification versus personalization or tacitness (Hansen et al., 1999; Schulz, Jobe, 2001; Haesli, Boxall, 2005). Our typology suggests that organizations that represent the left part of the matrix may benefit more from adopting the codification knowledge management strategy, since the customer preferences and related problem-solving are quite homogeneous in these types of services. On the other hand, organizations from the right part of the matrix may opt for the personalization strategy because customer preferences are more heterogeneous and vague.

### 4.3 Limitations and further research directions

The main limitation of this study is naturally its conceptual nature. Thus, further research could empirically investigate services in the four suggested categories. The differences between offerings/firms situated in these categories could be tested in terms of profitability, size, industry, and so on. Case-based studies focusing on the service portfolio of a certain firm could also be beneficial for the empirical application of the framework. In this context, further study of the management practices (including human resource management and knowledge management practices) in organizations of the four suggested categories could be very informative for service practitioners.

In addition, the typology presented here could benefit from further theoretical and conceptual development. For instance, the difference of and interaction between customer and provider possessed knowledge could be analyzed in a more profound manner, as the value of services is fundamentally co-created between these actors. Also, while they are analyzed within the same framework in this study, the two distinct phases of problem identification and problem solving could be analyzed separately, as they may consist (at least partially) of different types of interaction between the actors involved.

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