**ENHANCING THE ACCEPTANCE OF ADVANCED SERVICES AMONG USERS OF COMPLEX SYSTEMS**

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**ABSTRACT**

**Purpose:** In order to succeed in servitization, manufacturing firms need to understand the mechanisms through which their customers accept advanced services. This research explores the customers' readiness towards more advanced services. The goal is increased knowledge on the aspects that manufacturers need to consider when bringing advanced services into market and ways to enhance the customer acceptance of these services.

**Design/methodology/approach:** A qualitative case study design is used, to analyse readiness for advanced services and service acceptance in a manufacturer's three customer firms. Interview data were collected among 14 persons at the different customer sites and were content analysed.

**Findings:** The results show that customers accustomed to purchasing basic services or implementing them in-house may not yet be ready to purchase advanced services from manufacturers. Customers are uncertain about the benefits and the complete costs of the service. Manufacturers can enhance the customers' acceptance of advanced services by certain activities within the organisation and in relation to the customers e.g. by training service employees and educating the customers.

**Originality/value:** The results offer new knowledge on customer service acceptance in a business-to-business context and, thereby, complement previous studies on the supplier perspective to servitization and service acceptance in consumer business. The contributions help manufacturers to identify practices for enhancing the customer firms' readiness and acceptance of advanced services.

**Keywords:** advanced services; service acceptance; service readiness; B2B; servitization

## 1. INTRODUCTION

### 1.1 Enhancing acceptance of services

As part of servitization, manufacturers are moving towards offering advanced services. Manufacturing companies wish to broaden their service business from basic product-related services towards more advanced services to achieve several benefits such as differentiation from competitors. It is uncertain how customers respond to changes in the service offering, and how the manufacturer can enhance customer acceptance of advanced services. To clarify these uncertainties, this study focuses on customers of a certain manufacturer and their perceptions of the manufacturer's more advanced services and on means to enhance customer's service acceptance.

Servitization is a strategic change that may take different forms and requires significant modifications in the organisation's structures and processes (Baines et al., 2009). Servitization requires from manufacturing companies, among other things, an increased understanding of the customer interface (Storbacka, 2011). Manufacturing firms have typically initiated their servitization through modifying their offerings and earning logics as well as their ways to interact with the customer more closely (Oliva & Kallenberg, 2003;). However, previous research suggests that servitization will take time and effort. For example, Neu & Brown (2008) explored IT manufacturing firms' means to successful business services and emphasised the need to align organisational factors to match with the market conditions. Some studies have observed the need to switch attention from intra-company processes towards those of the customer (Brax & Jonsson, 2009).

Even though the changes in manufacturing companies are essential, customers are in the core role when manufacturers servitize their operations. Therefore, it is important to understand changes needed in the customer firms, too. Purchasing of business services has been considered as quite different from purchasing goods (Van der Valk & Rozemeijer, 2009). Customers do not always know

their service expectations and needs (Tuli et al., 2007), and some degree of proactiveness by the supplier might be beneficial in enhancing service utilisation among customers.

Our interest is in service acceptance and therefore, we study whether the manufacturer's customers are inclined to use the advanced services. Baines & Lightfoot (2013) describe advanced services to have an outcome that is "focused on capability delivered through performance of the product". These are more complex than the intermediate services (e.g. scheduled maintenances) that are provided to assure the proper maintaining of the product, and base services (e.g. spare parts) that may merely provide the needed access to the product (Baines & Lightfoot, 2013). The terms acceptance and adoption have been used as synonyms (see Planing, 2014), but also as parallel terms so that adoption (as a decision to use an innovation) has been stated to precede acceptance (continued usage of the innovation) (Planing, 2014), but still some authors use these terms in the opposite order. In this text we use the word acceptance and do not limit it to Planing's (2014) definition but see it as encompassing both the initial use and continued usage of the service.

Both innovation acceptance and adoption have been studied particularly in connection with various technologies. Previous research has indicated that individual's dispositions towards a new technology may vary significantly, and technology acceptance requires readiness for the technology, which thereby challenges the technology acceptance (Walczuch et al., 2007). Technology readiness, according to Parasuraman (2000), includes four dimensions: optimism, innovativeness, discomfort and insecurity. It has been identified as a relevant issue, for example, in the adoption of self-service technologies in consumer business (Liljander et al. 2006). Furthermore, Vize et al. (2013) found that technology readiness has been studied in the business-to-business (B2B) context only in a few cases, and thus to bring Parasuraman's (2000) scale into B2B domain they applied the scale in a retailer context. However, this kind of customer's readiness to accept services has not been studied earlier.

Several studies on the antecedents of service acceptance have touched upon the means to enhance service acceptance (Frambach, 1993). Deeter-Schmelz et al., (2001) studied the acceptance of online purchasing in customer organisations and discussed several antecedents. Among these were: customers' understanding of the benefits, security concerns, customer's habits, information and training, and the supplier's incentives (Deeter-Schmelz et al., 2001). Similarly, Yu & Tao (2009) studied organisational adoption of e-marketplaces and found that the perceived usefulness of the system and subjective norms are important for the decision to take an e-marketplace into use. Deeter-Schmelz et al., (2001) and Gatignon & Robertson (1989) concluded that suppliers have an important role in enhancing customer acceptance, e.g., through incentives. Incentives, such as trial periods and key customer discounts can be used to decrease the risk in accepting a new service (Frambach, 1993; Gatignon & Robertson, 1989). Furthermore, the supplier needs to educate the customer about the benefits, use, and convenience of the system, and provide enough information to support the buyer acceptance (Deeter-Schmelz et al., 2001; Gatignon & Robertson, 1989).

Even if some studies have touched upon the ways in which service acceptance can be enhanced, profound research on service acceptance is scarce, especially when it comes to product-related services in a B2B setting. Mostly the studies on service acceptance have focused on technology-intensive services, such as e-markets (e.g. Yu & Tao, 2009). Among the few studies on the acceptance of product-related services are the ones by Rexfelt & af Ornäs (2009) and Catulli (2012). These both concern the acceptance of product-service systems (PSS) but even they exclude product-oriented services and focus on such PSSs in which the customer does not own the product. Most of the studies on service acceptance are done in the consumer context (e.g. Rexfelt & af Ornäs, 2009) leaving the applicability in a B2B context unclear. Even in the technology acceptance literature studies in B2B context are scarce (Yu & Tao, 2009). With business customers, service acceptance may be different from consumers as the service purchasing and use involves multiple persons - the buyer,

the decision maker and the users. Also even in traditional acceptance and diffusion literature, studies considering the supplier's role are uncommon (Deeter-Schmelz et al., 2001). Therefore, there is a clear research gap in how B2B customers accept product-related services generally and more advanced services particularly, and how a supplier can enhance this acceptance.

### 1.2 Research objectives

This research explores the business customers' readiness towards advanced services and the acceptance of these services. The goal is increased knowledge on the issues the manufacturer needs to consider when bringing more advanced services into market and ways to enhance customer acceptance of these services. We present the following research questions:

1. *What is the customers' readiness to accept a manufacturer's more advanced services?*
2. *How can a manufacturer enhance the acceptance of their more advanced services?*

The focus is on manufacturing firms' industrial services for complex systems (i.e. B2B context), and on customers accustomed mostly to the procurement of basic level services such as maintenance. In this study some of the manufacturer's services can be considered as advanced services but some others (e.g. condition monitoring) are closer to intermediate services in the classification of Baines & Lightfoot (2013), even if considered as advanced for the manufacturer and the customer. Therefore, in this study advanced services are considered as services that are more advanced than the existing basic services, from the manufacturer's and its customers' perspective.

## 2. MATERIAL AND METHODS

A qualitative embedded case study was implemented to develop new knowledge on the phenomenon of industrial service acceptance in its real-life context (Yin, 1994). We sought access to an industrial company that is currently moving towards producing more advanced services and is taking its first steps in this process. Through an ongoing research project we gained access to a manufacturing company that fulfilled these criteria. This manufacturer produces machines for the complex systems in their customer companies' production processes in a certain industry. The company offers basic maintenance services, inspections and other services typical for these kinds of manufacturers. Further, the company has started to offer some data collection services and is now looking to broaden the data-based service offerings and considering other more advanced services.

Data were collected by interviews in three customer companies. Customer companies were selected so that they were from one country but had several factories in different locations. From these companies a total of 14 interviewees representing 12 different factories were included in the study to gain a broad perspective. Further, the customer companies had rather close relationships with the manufacturer, enabling the interviewees to comfortably discuss their service utilisation. Interviewees from top and middle management were chosen so that they represent parties making decisions to purchase new services. Interviewees were, for example, maintenance managers, production managers and factory managers. The length of the interviews ranged from 24 to 58 minutes, averaging slightly over 37 minutes. Table 1 presents information about the customer companies.

| | Revenue (M€) | Production units | Employees | Interviews |
|---|---|---|---|---|
| Company A | 250 | <10 | 1000 | 3 |
| Company B | 850 | 10-20 | 2000 | 3 |
| Company C | 10 100 | 50-60 | 20 000 | 8 |

Table 1: Information about the customer companies

The semi-structured interview outline covered, e.g., the grounds for choosing new services and potential service needs in the future. Interviewees were asked, e.g., do they identify the service needs internally or do the ideas come from service providers and what aspects affect their decisions when they are considering whether to do a task themselves or purchase it as a service or when they are choosing the service provider. In addition, the later part of the interviews covered some potential

services that the manufacturer is planning to offer, such as remote monitoring and predictive maintenance. All the interviews were recorded and transcribed. The transcribed interviews were content analysed by utilising Atlas.ti software. Coding was done based on the interview frame and complemented with codes arising from the data. In the results, quotations are utilised to highlight the main findings. Those were translated so that the content has been preserved as well as possible.

## 3. RESULTS

### 3.1 Customer companies' readiness to accept the manufacturer's advanced services

The customers were currently utilising rather basic services in their factories. Most commonly the interviewees told about their experiences with maintenance services and inspections. Only two interviewees mentioned procuring slightly more advanced services such as monitoring and data collection services. However, the product-oriented mind-set was apparent throughout the interviews. Even when interviewees were asked to talk about services, the talk turned often to products. Almost half of the interviewees mentioned investments and machines when discussing current services, for example, "*Interviewer: What kinds of services do you usually purchase when you purchase services from CompanyX? Interviewee: Either machines or equipment or then maintenance"*.

Most of the interviewees had hopes for new services. The interviewees wished for somewhat more advanced services than those already in use but still these services were not too innovative and could be considered as basic or intermediary services. In addition, even when the interviewees were encouraged to think towards the future and express wild and unrealistic ideas, they still provided very traditional ideas. Among the service ideas were, e.g., improving data collection and automation for upkeep and quality control, managing spare parts and remote support. Furthermore, interviewees stuck to the product-centric view as most of the ideas related to improving the product, and even product investments were mentioned. One interviewee even explained his hopes for future services in the following way *"At least I have thought that it could be even more than before related to the product and its improvement".* Only one interviewee took a broader view and vaguely hoped for something adding value for their customers.

Some activities that could be seen as advanced services were already done to some extent within most of the facilities. So interviewees were interested in, e.g., production monitoring but not all of them were ready to buy those as a service from an external supplier. *"Yeah… I have been a bit sceptical myself about that (an external supplier providing a certain service)".* Many interviewees had suspicions, for example, about giving their data to supplier. As an example, one interviewee described how they develop the procured machines further and want to safeguard the information about the effects of the changes, so that the manufacturer could not use the information in their own product development. Such modifications can give the customer a slight competitive edge that they do not want to share. In addition, not all of the interviewees were convinced that an external supplier could have enough understanding about their products and processes to do something meaningful with their data. *"It is very challenging for any outsider to start interpreting those (data)...you need to know the process and even products extremely well to be able to do that."* Some also doubted whether real benefits could be achieved by these services. Therefore, insecurity about the service in the form of distrust and suspicions is clearly felt by the interviewees.

In general, the interviewees seemed to be somewhat more open towards new service ideas when those originated within the company. In other words, when people within the company found a problem and looked for a solution instead of manufacturer or other service provider presenting a new service to them. This was rather clear as all of the interviewees admitted that new service ideas come through both of these channels but almost half of the interviewees felt that mostly the service ideas come within the company and only one interviewee presented the opposite opinion.

In conclusion, the customers still seem to cherish the idea of doing things themselves as opposed to buying a service and they seem to be rather product centric as, in addition to difficulties in focusing on services and not products, most of the service ideas were closely product related. Despite the customers' interest in the advanced services, it is not self-evident that the manufacturers can easily bring more advanced services to the market as the customers do not seem to be quite ready to purchase them. Instead, manufacturers are likely to face some resistance. Therefore, it is crucial for manufacturers to anticipate and deal with the emerging resistance, before launching a new service.

**3.2 Manufacturer's means to enhance service acceptance**

One of the key themes discussed with the interviewees was information about the services. Interviewees did not feel that the manufacturer actually promotes its services. Only three interviewees thought that the manufacturer engages in marketing the services, and the following quotation demonstrates the state of the actual marketing of the services towards the customers: *"(yes, the manufacturer) markets when you know who to ask from".* Still, respondents' opinions were divided half and half on whether the supplier should advertise their services more. A possible explanation for this is that most of the interviewees experienced the cooperation with the manufacturer as rather tight and, therefore, did not feel the need for more marketing.

Interviewees who wanted more information about the manufacturer's services most commonly hoped for information about new services or even service ideas that are not yet available as offerings. One respondent even clearly expressed an interest in doing this kind of joint development as it can provide the customer a competitive advantage. Therefore it is very important for a manufacturer who wants to bring new services to markets to keep their customers informed about new services and even about services under development. The latter could be a way to get some customers to commit to a certain service in the early phases of its development. In general it is obvious that without information about the new services the customers cannot accept them.

The customers' internal sources of service ideas were apparent in how the interviewees address the marketing issue. Customers are happy that they know who to ask from and a half of the interviewees do not hope for more marketing. As one interviewee put it *"I get information from (the manufacturer) if there are changes in the organisation or (if there are changes) on the phone number for person on-call".* Similarly some interviewees felt that if there is enough work for them to hire an employee for their company, they would rather do that than purchase the work as a service. One interviewee described this decision: *"it is mainly determined so that if there is so much need for the service that it employs a man-year then it is worth keeping in the firm*". This presents an additional challenge for manufacturers wanting to provide services that could also be done rather reasonably within the customer company. In these cases the manufacturer really needs to inform the customer about the benefits of the service and convince the customer. The attitude and habit these examples present is problematic as it does not encourage the manufacturer to offer more information and might make it difficult as some customers may not see added information provision as a positive change. Therefore this cultural issue is important to address and the added information must be of value to the customers in order to avoid annoying them with excess information.

Interviewees gave several reasons for why they buy services or do the tasks themselves and which factors affect their decisions when they are choosing a certain service provider. These factors and their importance in interviews are presented in Table 2 together with short descriptions and an example quotation to give an impression what kinds of aspects were discussed. Relevance describes the prevalence of a certain theme in the interviews, so that those with three stars were mentioned most commonly and at least by half of the interviewees.

| Important factors | Rele-vance | Instances | Example |
|---|---|---|---|
| Price & Overall profitability | *** | Overall profitability important for Make or Buy (MoB) decisions<br>Price important when choosing the service provider<br>Improvement ideas for the services and reasons why the manufacturer was not used were often price related | *"Price, price and price… Maybe not quite like that but it (service) must be cost efficient"* |
| Availability & Flexibility | ** | Responce time and speed important for MoB decisions and choice of the service provider<br>Predictability of service need decreases demands for responce time<br>Supplier's flexibility in adjusting the service for the customer important | *"We can't get the help from anywhere. We can't really expect that if we call someone in the middle of the night he would get to our yard at lightning speed"* |
| Resources & Knowhow | ** | Customer's knowhow and free resources important in MoB decisions<br>Sufficient resources and the needed knowhow with enough experience available to deal with the task | *"A pofessional needs to be professional, when there are these resource problems … then the service is not always of uniform quality"* |
| Quality | * | Quality important in MoB decisions and in choosing the service provider<br>Quality in service implementation and in finishing the service needed<br>Balance of price and quality important | *"Quality of the service is what we appreciate here so that we get value for our money"* |
| Relationship & Reliability | * | Supplier's knowledge of the customer facilities and ways of working makes service implementation easier for the customer<br>Earlier relationships a way to convince customers about the suppliers' ability and reliability | *"We have a few service workers that we do not always remember what is written to his work clothing, it might be their fourth firm. But we always ask the same guy"* |

Table 2: Factors important for interviewees when considering service usage.

Price was the most commonly discussed factor. For some interviewees it was not the most important factor but many of them stressed that it needs to be considered and it is significant. Because price seemed to have a remarkable impact on the customers' decisions, it is very important to consider different pricing possibilities, e.g. lower prices for the introductory period or trial periods, especially with new services whose benefits are not yet clear and demonstrable for the customer. Furthermore, describing the composition of a certain price can help customers to accept the price.

Another important aspect was the availability and flexibility of the service. For some interviewees the procurement of a service was not an option because it takes hours for a service provider to get to the location and time is money. Because of this, manufacturers have to consider can they guarantee a certain response time or otherwise quicker problem solving. Remote connections, for example, were suggested for this. Still it is not only about the quick response time. Another way to address the problem of delivering services on time is to increase the ability to predict and schedule service needs. This way the manufacturer can help the customers to avoid down time and make service utilisation possible. Further, it is necessary for the manufacturer to consider how they can build flexibility into their services without making it unprofitable as flexibility still can be a key issue for the customer.

It was important for the interviewees that a manufacturer has resources with required knowhow to perform the service. Therefore, it is imperative for the manufacturers to make sure that the company has enough resources when launching a new service to avoid delays or poor quality when employees are striving to do more than they can. Additionally, making sure that service employees have enough training and are specialists in their work is vital. This way the manufacturer can improve the quality of the service in the eyes of the customer. Quality came up in multiple ways in the interviews. It was clear that when a manufacturer promises and the customer pays for a high-quality professional service, the service really needs to be well implemented. With new services it might be difficult to guarantee the quality of the service in the first implementations as surprises may appear. This highlights the need for proper planning and testing of the service and making sure that the service is actually fine-tuned. Furthermore, this too encourages service providers to consider offering different pricing options due to the uncertainties related to the first implementation rounds of the service.

Reliability, earlier experiences about the service provider, and relations to a person performing the service were weighty for the interviewees. Interviewees felt that it is important that the person

performing the service knows their facilities and ways of working and does not need supervision. Some interviewees even wanted the same person from year to year. Thus it seems to be fruitful to invest in building relationships and utilise existing connections and customers when selling a new service as the relationship may provide a sense of safety to start experimenting with new services.

## 4. DISCUSSION

This study explored B2B customers' willingness to purchase advanced services from a manufacturer. Even if literature proposes a rather clear cut categorisation into advanced and basic services (e.g. Baines & Lightfoot, 2013), our results show that customers perceive services as advanced when they surpass the services they are currently utilising. This subjective assessment of a service type needs to be acknowledged, when studying service acceptance. It is important to start from the customer's and manufacturer's perceptions as challenges in accepting and selling services emerge when moving outside the range of familiar services, whether intermediary or advanced.

Studies on servitization have focused mainly on the perspective of the manufacturing firms and their required changes (Storbacka, 2011; Kindström, 2010; Grönroos, 2008). This study has emphasised that the prerequisite for the manufacturer to advance in servitization is that customers are ready to accept the new service offerings. This kind of readiness of customers has not been previously discussed in the area of services and thereby this study contributes to servitization research emphasising the close interactions with customers (e.g. Oliva & Kallenberg, 2003).

The analysis of readiness for new services and service acceptance among three customer companies revealed similarities with the dimensions of technology readiness (Parasuraman 2000), but in this study they were hindering the customers' service acceptance. Service innovativeness can be considered rather low in the interviewees' ideas; discomfort was clear in how the interviewees wanted to be able to control the service in terms of flexibility and timing; insecurity was observable in their suspicions about their information being used in an improper way; and the interviewees were not really optimistic towards purchasing the more advanced services. Despite these observations, service readiness cannot be considered static or enduring, and the manufacturer can take action to influence it. For example, having enough information about the services was more emphasised by the interviewees. To complement the framework of Parasuraman (2000), the B2B context highlighted an additional dimension at the organisational level: the mind-set and habits in the organisation guided the decisions of the individuals making the purchasing decisions. The culture of doing things inside the organisation (instead of buying services) was dominant in many facilities, and a product-centric mind-set was still rather common. The main findings are summarised in Table 3.

| **Dimensions of readiness** | **Individual readiness** | **Organisational readiness** |
|---|---|---|
| | Having enough and right information about the new service supports customer's acceptance;<br>Proof of functioning and benefits of the service can reduce customer insecurity;<br>Enough control over the service decreases the customer discomfort | Many customer organisations have a product centric mind-set and strong habits of doing things themselves due to which manufacturers must invest more in convincing the customers |
| **Ways for a manufacturer to enhance service acceptance** | **Customer-related practices** | **Organisation and offering related practices** |
| | Using close customers as pilots to ensure the flow of service implementation and to get reference cases;<br>Discussing the use of customer's information with the customer in the early phases;<br>Educating the customer and trying to change their habit of doing things themselves, e.g., by describing benefits | Planning the service so that it has flexibility and provides ways to respond to availability needs;<br>Giving service employees enough training and having enough employees capable to perform the service;<br>Using different pricing methods, e.g., trial periods;<br>Providing accurate and convincing information of benefits |

Table 3: Customer's readiness and manufacturer's ways to enhance service acceptance

Furthermore, to gain the customers' acceptance of more advanced services, manufacturers need to support the customers in increasing their service readiness by different means. In line with existing

literature (e.g. Deeter-Schmelz et al., 2001; Frambach, 1993; Gatignon & Robertson, 1989), for example, the need for information about the services and for incentives from manufacturers were found as important. Besides such traditional customer related ways, we identified practices relevant to the manufacturing organisation. The manufacturer can do many things within their company that can enhance customer's acceptance in terms of designing the service and preparing to implement it. Examples include designing flexibility into the service and training the service employees.

**4. CONCLUSIONS**

Servitization has previously been depicted as the manufacturing firm's transformation challenge. This study highlights that the customer's readiness for advanced services is required for them to accept the new services. Service acceptance can be considered as an antecedent to the success of the manufacturing firm's new service offerings, and it defines the pace at which the manufacturers' servitization can proceed. The findings show that the customer personnel's subjective experiences of services need to be considered, when the manufacturer promotes and sells new services. Practices were identified, driving the customer's service readiness and acceptance. In particular, we showed evidence of similarities between the B2B service readiness experience and previous frameworks of technology acceptance primarily used in the context of consumer solutions, but added the dimension of organisational habits and culture as a relevant component of readiness.

The study provides managers information about factors important for customers when they are considering the procurement of new services. The manufacturers can consider such factors in advance and, thereby, decrease the negative forces in customer's service acceptance and encourage the customers to utilise their services. This study offered example actions for managers to account for these factors affecting the customers' service acceptance. Manufacturers can take proactive steps towards more advanced services, rethink their customer orientation, and avoid the typical customer-related challenges of servitization.

The study was implemented as single case study and the interviews were done among three customer companies, and therefore the generalisability of the results is limited. There is clear need for further studies in other contexts and among a larger share of customer companies. Additionally, the case study method can be highly subjective, which increases the possible errors caused by the researchers and their interpretations. To decrease these the researcher asked the interviewees to elaborate on unclear matters and discussed the results with employees of the manufacturer to correct possible misunderstandings and validate the results. Regardless of the limitations, this study serves as a starting point for further research with varying case companies and research methods.

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