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Business customers' readiness to adopt manufacturer's new services

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Abstract

Purpose – For successful servitization, manufacturing firms must understand how their customers adopt new services. The purpose of this paper is to explore customers' readiness for a manufacturer's new services to complement its goods. The goal is to increase knowledge of the aspects that manufacturers should consider when bringing new kinds of services to market.

Design/methodology/approach – A qualitative case study design is used to analyze readiness for services and interest in service adoption in three customer firms of a manufacturer. The interview data were collected from 14 persons at customer sites and were content analyzed.

Findings – The results show that readiness – a concept that is often used in the field of technology – is relevant also for the service adoption process. In a business-to-business context, readiness for service adoption concerns the individual and organizational levels, and hence a new dimension of organizational culture and habits had to be added to the concept that originally focuses on individuals. People consider different factors when making consecutive decisions during the service adoption process and these factors can vary even within a company. The cornerstone for new service adoption is the customer firm's actual need for the service.

Originality/value – The results offer new knowledge about service adoption in a business-to-business context by taking a customer firm's perspective. They, thus, complement previous studies on the supplier perspective of servitization and service adoption in consumer business. The contributions help manufacturers focus their efforts when bringing new services to market.

Keywords Servitization, B2B, Technology readiness, Service acceptance, Service adoption process, Service readiness

Paper type Research paper

1. Introduction

As part of servitization, manufacturers expand their service mix and develop new advanced services that complement their goods (e.g., maintenance contracts and more advanced availability and capability contracts) (Baines and Lightfoot, 2013; Oliva and Kallenberg, 2003; Vandermerwe and Rada, 1988; Gremyr *et al.*, 2010). Manufacturers' motivations to broaden their business to include more services stem typically from competition-oriented benefits, such as using services to differentiate offerings from those of competitors; economic or financial benefits, such as growing revenue streams; and market- or demand-based benefits, such as extending customer relationships (Baines *et al.*, 2009; Brax, 2005; Fang *et al.*, 2008; Oliva and Kallenberg, 2003). However, what is not yet clear is how business customers respond to changes in service offerings and how ready they are to adopt new services that may be more advanced than those to which they are accustomed. Therefore, this study assesses the perceptions of three process industry customer companies about a manufacturer's advanced new service ideas and their readiness to adopt these new services.

The idea of servitization, defined as "the process of creating value by adding services to products" (Baines *et al.*, 2009), was first discussed by Theodore Levitt (e.g. Levitt, 1976), but the term servitization was coined by Vandermerwe and Rada (1988) and has led to a

developing stream of research, including seminal works by the likes of Wise and Baumgartner (1999). More recent servitization studies have highlighted the changes that a manufacturer needs to make when servitizing – for example, changes in cultures, structures and processes (Baines *et al.*, 2009). Although changes in manufacturing companies are essential, many studies have also highlighted the important role that customers play in manufacturers' servitization (Brax, 2005; Matthyssens and Vandenbempt, 2008); therefore, attention should also be turned toward customers (Brax and Jonsson, 2009). However, the servitization literature is focused almost exclusively on the supplier's perspective, leaving the customer's perspective rather neglected (Brax and Jonsson, 2009; Nudurupati *et al.*, 2016). Customers are the ones who determine the demand for a service, but their service adoption is not self-evident.

Customers' views of and intentions to use innovations have previously been covered as adoption of innovations, with an attempt to recognize what affects their adoption decisions. To date, most innovation adoption studies have focused on goods, technologies and technology-intensive services, such as e-services (e.g. Yu and Tao, 2009). Research on the adoption of other kinds of services – especially goods-related services – is scarce (Rexfelt and af Ornäs, 2009; Catulli, 2012). This is surprising given that technology acceptance frameworks have been recognized as useful for studying the acceptance of solutions also more generally (Rexfelt and af Ornäs, 2009).

Individuals as innovation adopters have different responses to new solutions. An individual's disposition to a new technology may vary significantly, and technology adoption has been noticed to require the individual's readiness for the technology (Walczuch *et al.*, 2007). Technology readiness can be assessed at the firm level, too, where the firm's technology readiness has been defined as the company's inclination to embrace, and the ability to utilize new technological assets (Vize *et al.*, 2013). Technology readiness is based on Rogers' idea that more technology-ready customers are more willing to adopt new technologies (Ranaweera *et al.*, 2008). The technology readiness concept has been identified as relevant to the adoption of technology-intensive services (e.g. Liljander *et al.*, 2006), suggesting that the concept can also be relevant to services. Many authors have suggested that people with more familiarity and experience with services are more inclined to use new services (Johne and Storey, 1998; Rexfelt and af Ornäs, 2009). Familiarity and experience can be seen as knowledge that enables customers to use (advanced) services, to see their benefits and, hence, increase their inclination to embrace these services. In this paper, service readiness is defined as the inclination to embrace, and the ability to use, relevant new services in the organization (adapted from Vize *et al.*, 2013).

In the business context, customers' readiness for innovations is not, yet, well understood. Even technology readiness has been studied only in a few cases in a business-to-business context (Vize *et al.*, 2013), but the few studies have found readiness to be an important phenomenon (Richey *et al.*, 2007; Vize *et al.*, 2013). Further, business customers' readiness to adopt new services has not previously been studied, although servitization is clearly relevant to business-to-business companies (Brax, 2005; Kohtamaki *et al.*, 2015; Laine *et al.*, 2012). Business customers' service adoption may differ from that of consumers, for example, due to the more complex inter-firm context (Asare *et al.*, 2016) and the involvement of several people in decision making. Thus, there is a need to study whether the existing readiness concept can be transferred from technology-intensive services to goods-related services and from a consumer context to a business-to-business context.

Studying the customer's position with regard to a servitizing company's new services can offer influential information about the important factors in customers' service adoption decisions, such as specific customer concerns. These factors can be used for forthcoming research and by manufacturers that are going through a process of servitization. After all, customers determine whether a service will be adopted and, thus, whether service-based

revenue is created for the manufacturing company. Utilizing the existing concepts from the technology adoption literature can provide important information for servitization researchers and practitioners by adjusting already tested frameworks and tools for studying the customer perspective of servitization.

This research explores business customers' readiness for new services and their interest in the adoption of these services. The goal is increased knowledge of the issues that manufacturers should consider when introducing new services. The following research questions are investigated:

RQ1. How can readiness to adopt be conceptualized for new goods-related services in a business-to-business context?

RQ2. What factors do industrial customers consider relevant when adopting new goods-related service offerings?

The focus of this study is on a manufacturing company's industrial services for complex systems (i.e. the business-to-business context). First, there is a need to discover whether readiness is a relevant concept not only in technology but also in the service context. Second, there is a need to find out what dimensions compose service readiness and whether it relates to the customers' interest in new services. Third, it is important to reveal the key aspects that business-to-business customers consider when thinking about adopting new services. Because the services covered in this study are more advanced than the regular services with which the customers are acquainted, it is interesting to assess the customers' readiness to adopt these services.

Next, the paper presents key literature related to servitization, innovation adoption and technology readiness, concluding the section with a tentative formulation of the service readiness concept. Thereafter, the methods are described, and the results regarding customers' service readiness and the important factors in their decisions on whether to adopt a new service are reported. The theoretical and managerial implications are then covered in the discussion section. The paper concludes that service readiness is also relevant in a business-to-business setting; has unique characteristics, particularly from the organizational viewpoint; and is connected to the customer's intention to adopt new services.

2. Theoretical background

2.1 Servitization

Servitization is a strategic change in which a company seeks to expand its service business. It can appear in different forms but generally necessitates remarkable modifications in the culture, structures and processes of the organization, especially when the organization has traditionally focused on manufacturing goods (Baines *et al.*, 2009). Servitization requires an increased understanding of customer interfaces (Raddats and Easingwood, 2010; Storbacka, 2011), the adjustment of the business model (Kindström, 2010; Ulaga and Reinartz, 2011), the adoption of new ways of marketing and creating customer value (Grönroos, 2008, 2011; Grönroos and Ravald, 2011; Vargo and Lusch, 2004) and the initiation of new business relationships (Edvardsson *et al.*, 2008).

Manufacturers often start their servitization by offering basic services that are closely linked to the companies' goods (Oliva and Kallenberg, 2003). Such services include warranties, spare parts, repairs and maintenance. However, manufacturers also often start offering more advanced services – for example, sensor-based services such as e-maintenance (Aboelmaged, 2014). Some authors distinguish between basic, intermediary and advanced services based on the sophistication of the service. Baines and Lightfoot (2013) described advanced services as having an outcome that is "focused on capability delivered through performance of the product." These services are more complex

than intermediate (e.g. scheduled maintenances) and basic services (e.g. spare parts Baines and Lightfoot, 2013). As manufacturers move from basic to advanced services, the existing habits regarding working with customers also start to change.

Typically, manufacturing companies that begin to servitize start modifying their offerings, earnings logics and methods of interacting with customers to build closer relationships (Brax, 2005; Oliva and Kallenberg, 2003; Windahl and Lakemond, 2010). Previous research suggests that servitizing, manufacturing companies can encounter major challenges when changing their approach to supporting service-oriented relationships with customers. For example, focusing on several solution-selling and -purchasing companies across industries, Tuli *et al.* (2007) highlighted the need to move from basic transaction-based exchanges to relationship-based customer contacts to be able to provide more effective and profitable solutions when servitizing (also Oliva and Kallenberg, 2003). Brax and Jonsson (2009) studied two manufacturing companies' condition-based maintenance solutions and explained how servitizing companies must understand their customers' processes and how their customers evaluate offerings to provide more unique value. Companies also need competences to meet customers' needs, and they need to turn their attention away from intra-company processes toward those of their customers' (Brax and Jonsson, 2009). An in-depth case study by Smith *et al.* (2014) revealed changes in the logic of delivering value during a manufacturer's servitization and proposed the increased need for customer resource integration, particularly when moving toward availability-and outcome-centric value propositions. Although the earlier research has largely focused on the supplier's perspective, adapting to the changes can also be demanding for the customer.

Customer inputs and resources are necessary for realizing the value of manufacturer's service, and they vary across different services (Smith *et al.*, 2014). As Brax and Jonsson (2009) stated, "Customers are interested in relieving their problems," but despite the manufacturer's interest in offering services because of customers' explicit or tacit needs (Oliva and Kallenberg, 2003), customers do not always know their service expectations and needs (Tuli *et al.*, 2007). Therefore, the manufacturer's understanding of customers' businesses and their problems plays a key role in getting its service selected. As business customers' service-purchasing behavior is different from that for goods (van der Valk and Rozemeijer, 2009), when moving toward services, manufacturers must understand the customers' purchasing operations and how they may change. It might be beneficial for manufacturers to be proactive toward customers and allow their personnel to be flexible when encountering varying customer needs (Dale *et al.*, 1997). Customer adoption of new services is not self-evident, and manufacturers have to work to get the customers to accept their services.

In the servitization literature, very few studies are conducted from the customer's perspective (Brax and Jonsson, 2009); thus, in their recent literature review, Nudurupati *et al.* (2016) highlighted that the study of the customer perspective would be an important theme in the future. In the servitization literature, studies on service adoption are almost nonexistent. However, servitization studies highlight the need for change in customer relationships, the difficulties of purchasing services, and the need for increased customer consideration. Therefore, there is a clear demand for studies on service adoption, as it is vital for the manufacturer's successful servitization. Service adoption is a special case of innovation adoption and this is why we discuss this topic next.

2.2 Frameworks of innovation adoption and technology readiness
New services imply innovations for the customer firms, even if they were not new to the manufacturer or the industry. Innovation adoption and acceptance have been widely studied for decades, although primarily in the context of technologies, not services.

Adoption and acceptance are often used as synonyms (Planing, 2014), but different meanings have also been offered. Rogers (1983) defined adoption as a "decision to make full use of an innovation as the best course of action available." Planing (2014) later addressed adoption and acceptance by specifying adoption as the initial decision to use an innovation and acceptance as the continued intention to use an innovation. In this study, we follow Planing (2014) and conclude that adoption is the initial decision to use a service. In some studies, it is claimed that adoption includes both the adoption and the intention to adopt (Arts *et al.*, 2011), whereas other studies see adoption and the intention to adopt as separate, with intention preceding adoption and interest preceding intention (Jung *et al.*, 2012; Leonidou and Katsikeas, 1996).

Usually, studies on innovation adoption and acceptance have been focused on technology and have used different frameworks, of which three of the most commonly used are summarized in Table I. Rogers (1983) built his ideas on the diffusion of innovations by shifting attention away from the innovation designer's perspective toward an understanding of the adopter's perspective – that is, how the adopter perceives the innovation (Rogers, 1983). The perceived characteristics of innovation have, consequently, been utilized by several authors (e.g. Moore and Benbasat, 1991; Plouffe *et al.*, 2001), particularly in the context of technology adoption. Ajzen and Fishbein's (1975) theory of reasoned action focuses on the beliefs, attitudes and intentions that guide an individual's behavior (in Gong and Yan, 2004). It has been widely applied in studies of technology adoption, and it also addresses the issue of social pressure (Gong and Yan, 2004; Venkatesh *et al.*, 2003). The theory of reasoned action has also been the starting point for the theory of planned behavior (Ajzen, 1985; Lu *et al.*, 2009), which additionally considers the effect of perceived behavioral control – that is, the extent to which an individual believes that resources or obstacles that can help or hinder performance exist (Rexfelt and af Ornäs, 2009). The technology acceptance model is also rooted in the theory of reasoned action (Gong and Yan, 2004) and focuses on perceived usefulness and ease of use in driving technology-related behavioral intentions. The technology acceptance model has received a great deal of attention in studies on the adoption of technology-intensive services (Chen *et al.*, 2007; Lanseng and Andreassen, 2007; Wang and Lin, 2012).

The previous research that has focused on technology adoption and acceptance suggests that individuals assess innovations before adopting them based primarily on the attributes of the innovation, such as observability, trialability, ease of use, usefulness of the innovation and social pressure. In addition to an innovation's characteristics, the effect of the adopter's characteristics has been recognized as relevant in studies of technology adoption (Shih and Fan, 2013). A limited amount of literature has examined the role of personal traits in technology adoption (Lin and Chang, 2011).

Key theories in adoption literature	Theory	Author
1. Perceived characteristics of innovation	Relative advantage, observability, compatibility, and trialability drive innovation adoption and complexity hinders it	Rogers (1983)
2. Theory of reasoned action/theory of planned behavior	Behavior is directed by believes, attitudes and intentions	Ajzen and Fishbein (1975)
	Developed from Theory of reasoned action by adding perceived behavioral control to drivers	Ajzen (1985)
3. Technology acceptance model	Perceived usefulness and ease of use drive the attitudes toward technologies, which further drive the behavioral intentions	Davis (1986)

Table I.
Key theories
of adoption

One of the key concepts used for considering adopter characteristics, and the one on which this study is based, is technology readiness. Parasuraman (2000) focused on high-tech products and services and developed the technology readiness concept with four dimensions: optimism, innovativeness, discomfort and insecurity. Optimism and innovativeness are positive drivers of readiness, whereas discomfort and insecurity hinder people's technology readiness. According to Parasuraman (2000), optimism is viewing the technology positively and believing that it offers people more control, flexibility and efficiency. Hung and Cheng (2013) found that of the four dimensions, optimism has the strongest ability to explain knowledge-sharing behavior. However, in the business-to-business context, Richey *et al.* (2007) found that optimism is not important for a retailer's perception of the quality of a manufacturer's logistics service. Innovativeness describes "a tendency to be a technology pioneer and thought leader" (Parasuraman, 2000). However, the study results regarding the importance of innovativeness vary. Several studies have shown innovativeness to be an important factor for technology readiness and adoption (Chen and Chen, 2008; de Melo Pereira *et al.*, 2015), but other studies have shown that innovativeness either does not explain technology adoption (Liljander *et al.*, 2006; Pires *et al.*, 2011) or has an unexpected negative effect on technology adoption (Theotokis *et al.*, 2008; Walczuch *et al.*, 2007). In keeping with Engel *et al.* (1990), recent studies have shown that an individual's innovativeness as a general trait is not consistently related to innovation adoption.

Of the factors hindering an individual's technology readiness, Yieh *et al.* (2012) highlighted discomfort, which deals with a person's incapability to manipulate the technology, which, in turn, causes the feeling of being overwhelmed by it. Insecurity deals with the distrust of technology and its ability to function properly (Parasuraman, 2000). Tsikriktsis (2004) observed that insecurity focuses on specific aspects of technology-based transactions, such as the trustworthiness of the information provided. Therefore, insecurity is different from discomfort, although they have some similarities (Tsikriktsis, 2004). These aspects are important for technology readiness (Parasuraman, 2000; Richey *et al.*, 2007; Tsikriktsis, 2004), but several researchers have struggled to create reliable independent dimensions for these factors (Liljander *et al.*, 2006; de Melo Pereira *et al.*, 2015) or to find them having an impact on technology adoption (Chen and Chen, 2008).

As the previous research shows somewhat conflicting findings, the role of technology readiness is not yet clear, and scholars have utilized this concept differently. However, the expectation is that readiness as a distinct concept affects adoption. Some studies have measured only the technology readiness level (Jaafar *et al.*, 2007) or clustered respondents based on their scores for different readiness dimensions (Parasuraman and Colby, 2001; Tsikriktsis, 2004). Others have studied how technology readiness affects use patterns of technology (Son and Han, 2011) or adoption by adding technology readiness to the models built upon other technology adoption theories, for example, as an antecedent or moderator (Aboelmaged, 2014; Chen and Chen, 2008; Hung and Cheng, 2013; Lin and Chang, 2011). Therefore, technology readiness seems to be important for technology adoption even if its role in the complete technology adoption process is not yet clear. Figure 1 summarizes the previous conceptual idea underlying technology adoption and acceptance and the unclear role of readiness with regard to the other concepts of adoption.
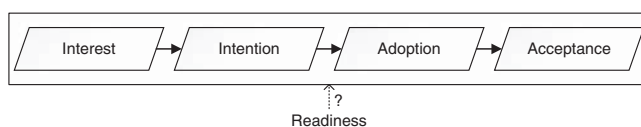
Figure 1.
Key concepts of
adoption process
for the study

Even if the majority of the technology adoption literature focuses on individuals (Asare *et al.*, 2016) – and, in this regard, technology readiness is no different (Vize *et al.*, 2013) – the readiness to use a technology is also important in an organizational context (Richey *et al.*, 2007). Some authors, such as Richey *et al.* (2007) and Vize *et al.* (2013), have applied technology readiness in a business-to-business context. Based on previous studies, Vize *et al.* (2013) defined technology readiness at the firm level as the firm's "inclination to embrace, and the ability to use, relevant new technological assets." Richey *et al.* (2007) studied manufacturing firms' and retailers' technological readiness across industries and how readiness affected their perceptions of the quality of logistics services. They found that technological readiness affected the perceptions of both types of companies: manufacturers with high technology readiness perceived technology as a tool to enhance efficiency, whereas retailers saw technology as a way to be innovative and to respond better to customers' needs (Richey *et al.*, 2007). In a more focused study, Vize *et al.* (2013) examined small Irish retailers that had used services to provide or manage their websites, and their results echo those of Richey *et al.* (2007). They also demonstrated that technology readiness affects retailers' perceived service quality but also their satisfaction with the service. Further, inexperience, industry trust and switching costs were important aspects determining business customers' technology readiness (Vize *et al.*, 2013). These studies have provided some evidence of the suitability of the concept of technology readiness for services in the business-to-business context, but they do not cover the customer perspective of the goods-related services of manufacturers, which is the focus of this study. This is why we explore the concept of service readiness in the next section.

2.3 Tentative concept of service readiness

As described above, there is some evidence that technology readiness may be appropriate for business-to-business contexts (Richey *et al.*, 2007; Vize *et al.*, 2013). Further, the four dimensions of the concept, optimism, innovativeness, discomfort and insecurity, seem relevant for services, especially for a manufacturer's goods-related services, which are often linked to technology. Goods-related services are not as technologically intensive and demanding for the customer as services such as e-learning (de Melo Pereira *et al.*, 2015). Therefore, there would be challenges in using the measures of technology readiness, but the dimensions can be considered a suitable starting point for service readiness in the organizational context. In this study, Parasuraman's (2000) technology readiness concept was modified to cover service readiness in a manufacturer's service context.

The original four dimensions were kept, but new definitions were given and adapted to the service context. The general innovativeness construct has received criticism, and it has been suggested that domain-specific innovativeness is more suitable for explaining adoption (Liljander *et al.*, 2006). Therefore, a domain-specific innovativeness construct was used in this study. Further, due to the lack of clarity in the formation and measurement of the dimensions in the previous literature, a qualitative method was required, especially for a new construct such as service readiness.

The dimensions of service readiness are adapted from Parasuraman's (2000) work and follow the work done in an organizational context (Richey *et al.*, 2007; Vize *et al.*, 2013). These dimensions are defined as follows:

- Optimism is a positive view of the service and a belief that the service offers people increased flexibility and efficiency or other benefits in the workplace.

- Innovativeness is a person's tendency to be a pioneer and a thought leader in the development and use of services in the work context.

- Discomfort describes a perceived lack of control over the service or the task completed by the service and a feeling of being overwhelmed by it.

- Insecurity represents the distrust of services, skepticism about their ability to work properly, and worry over the security of their information.

With these dimensions as the starting point, the paper seeks to discover qualitatively whether readiness is relevant to services and whether it reveals customers' interest in adopting new services in a business-to-business context. Further, we wish to cover the factors that customers consider when thinking about adopting a new service and the kind of implications they have for the service adoption process and the manufacturer.

3. Methods

3.1 Methodology and case selection

A qualitative embedded case study was implemented to develop knowledge about the phenomenon of industrial service adoption in real life (Yin, 1994). We sought an industrial company that was active in the business-to-business setting and was taking its first steps toward producing advanced services. Through an ongoing research project, we gained access to a manufacturing company that fulfilled these criteria. This manufacturer designs, produces and sells machines for complex systems in customer companies' production processes in a traditional process industry. The company offers basic maintenance services, inspections and other services that are typical for the industry. The company has started to offer data collection services and is considering other advanced services.

The data were collected through interviews conducted in three customer companies chosen in coordination with the manufacturing company's contact person. The three companies were chosen because they are the biggest customers for the manufacturer in their home market. Therefore, they play an important role in steering the overall adoption of the manufacturer's new services in this market. There was a desire to study companies in this kind of key position in new service adoption because this can provide meaningful information about the direction in which the industry is heading and the possibilities for manufacturers to servitize. After all, company size has been found to be a significant predictor of the adoption of both technical and administrative innovations: compared to smaller companies, bigger companies are more commonly adopting innovations due, for example, to economies of scale and available financial resources and capabilities (Kimberly and Evanisko, 1981; Buonanno *et al.*, 2005). These customer companies manufacture goods for their business customers. To avoid confusion in this text, the word manufacturer is used solely for the focal firm. The customer companies were selected from one country but had several factories in different locations. This way, the effects of cultural differences were avoided while sufficient variety was ensured. The customers procured basic services, such as maintenance, but only rarely used advanced services, such as sensor-based condition monitoring. The customer companies had close relationships with the manufacturer, enabling the interviewees to discuss their service utilization comfortably.

In total, interviews with 14 individuals representing 12 manufacturing factories were conducted. The number of interviewees from the various companies differed, as the companies were different in terms of size and the number of separate factory locations. Interviewees in senior and middle management were selected to represent the parties making new service purchase decisions. In the business-to-business context, several decision makers can be involved in purchase decisions; for example, strategic and company-level decisions may guide factory-level decisions, and people at the corporate and factory levels and across factories may collaborate. Most interviewees described making decisions about basic services alone or in small teams at the factory level. For some services, the decisions were made at the corporate level; therefore, in the largest company,

a corporate-level interviewee was included. This ensured that all interviewees were well aware of, and involved as key individuals in, the practice of decision making regarding the purchase of new services. The interviewees were, for example, maintenance managers, production managers, factory directors, and a vice president of production and operations. The interviews lasted 37 minutes on average, ranging from 24 to 58 minutes. Table II presents information about the customer companies.

3.2 Data collection through interviews

The semi-structured interview covered topics such as the grounds for choosing new services and potential service needs, as well as opinions about and interest in certain services that the manufacturer is planning to offer. As there were no existing studies on service readiness, we created our own interview outline (available in the Appendix). We included some themes that the earlier technology adoption literature had utilized, such as factors affecting adoption (e.g. Hung and Cheng, 2013) and supplier's means to enhance the adoption or readiness (Deeter-Schmelz et al., 2001), and used example services (e.g. Rexfelt and af Ornäs, 2009). The interviewees were asked where service ideas originate – that is, whether internally or from service providers. The interviews also addressed aspects that affect the interviewees' adoption-related decisions to undertake a task themselves or purchase it as a service (i.e. a make-or-buy decision) and supplier selection. Problem areas in production, ideas for new services, and potential needs for outsourcing were discussed. In addressing the services that the manufacturer plans to offer, the interviews covered topics such as remote monitoring, a benchmarking service, and predictive maintenance, as well as customers' perceptions about these.

The interview outline was created so that at the beginning of the interview, the interviewee discussed services generally and was given a chance to consider his or her own potential problem areas and service needs before being exposed to the manufacturer's service ideas. The manufacturer's services and the customer's perceptions of the services were then discussed. Further, after the interviewee delved into his or her own service needs and the potential service possibilities of other companies, the interviewee was once again given the chance to provide service ideas no matter how unrealistic they might seem to the individual.

The interview ended with a brief survey asking how interested the interviewees were in six new services. These were chosen by the manufacturing company as examples of rather new industry services that the company is considering offering. These services were: maintenance operations management and performance monitoring, the monitoring of production effectiveness, predictive spare-parts services and a web store, the remote monitoring of the customers' production lines, digital technical documentation, and remote maintenance services. Each service was rated on a scale from one (not at all interested) to five (extremely interested and would like to hear more).

3.3 Analyzing the interview data

All the interviews were recorded and transcribed. The transcribed interviews were content analyzed utilizing the Atlas.ti software. The coding was based partly on the data and partly on the chosen theoretical frameworks. In line with Parasuraman's (2000) dimensions of

	Revenue (M€)	Factories	Employees	Interviews
Company A	250	< 10	1,000	3
Company B	850	10-20	2,000	3
Company C	10,100	50-60	20,000	8

Table II.
Information about the customer companies

service readiness, the first coding round covered the interviewees' potential service needs and ideas, and the manufacturer's service ideas. Consequently, in this phase, the interviewees' expressions of readiness dimensions were deductively coded. As various aspects related to organizational culture and habits were repeated in the interviews and did not fall neatly into any of the literature-based dimensions of readiness, these aspects were inductively coded in the data.

The validity of the coding was increased by having another researcher form the five dimensions from the existing codes. After the first researcher coded the data based on the dimensions of service readiness, another researcher was asked to arrange these existing codes into the predetermined dimensions. To reduce bias that knowledge about the subject and aims of the study might cause, the second researcher was not deeply involved in the research. The second researcher was given the definitions modified from Parasuraman (2000) and a preliminary definition for the organizational dimension. The other researcher classified the majority of the codes similarly in the first phase of validation (60 percent). A few codes were misclassified due to a misunderstanding about the content of the organizational dimension. Otherwise, the classification of codes was not always consistent between the dimensions discomfort and insecurity and between optimism and innovativeness. In the second phase, the initial coder and the second researcher discussed different classifications and, when needed, checked the quotations related to the codes. After this phase, the coder and the second researcher reached an agreement about the correct dimension for all the codes (100 percent).

After coding, the number of positive and negative comments about each dimension in each interview was calculated to assess the strength of the readiness dimensions. For example, if an individual had five positive comments and one negative comment about innovativeness, the individual received a score of four for innovativeness. As an example of positive comments about optimism, an interviewee could describe the benefits of a service, and for innovativeness, the interviewee could describe a new service idea. To describe negative comments – for example, discomfort – the interviewee could discuss losing control over the task and information; for insecurity, suspecting the ability of the service to work properly; and for optimism, the challenges of using a service to undertake a task. The combined total score for service readiness was calculated as the sum of the scores for the dimensions. For example, if an interviewee scored 5 for optimism, 2 for innovativeness, -2 for discomfort, -1 for insecurity and -1 for organizational factors, the total service readiness score would be 3. We further divided the interviewees into three groups according to their service readiness level. The interviewees with medium readiness were interviewees with scores around the 0 so that as the range of scores shifted slightly toward positive answers, medium readiness shifted slightly toward the positive side. Therefore, the medium readiness scores were those ranging from -2 to 3. This left four interviewees with low service readiness and three interviewees with high readiness. These classifications are further utilized in Section 4.2.

These readiness scores should not be confused with the scores calculated in previous studies on technology readiness. This is for two reasons: first, the survey method and the scales were not used here, and second, this study focuses on customer service readiness, not technology readiness. Service readiness was considered at the factory level, but the topic was studied through individuals' experiences. Decisions about new service adoption were made mostly at the factory level. Combining the perceptions of decision makers in different factories into corporate-level readiness would not be feasible as there are differences, for example, in previous service use and practices among factories within a company.

We utilized new service interest as a proxy for service adoption, as the new services were not yet available, and therefore, intention could not be measured, as is often done in the literature (Lanseng and Andreassen, 2007; Shih and Fan, 2013). Interest is found to emerge

before intention in the adoption process (Jung *et al.*, 2012; Leonidou and Katsikeas, 1996). The survey covered the interviewees' interest in six services, the interest was assessed on a scale of 1 (not at all interested) through 5 (extremely interested), and new service interest was calculated as the average interest in these services. We divided the interviewees into high, medium and low interest categories based on their service interest score. There was a clear medium-interest cluster in the data, as six interviewees had the interest score of 3.5-3.7, and this formed the cutoff points for the categories, leaving three interviewees with low and five interviewees with high interest. These clusters are further utilized in Section 4.2.

The last inductive qualitative coding round focused on the factors that interviewees' consider when thinking about adopting a new service. The interviewees discussed factors related to decisions about the adoption of new services: whether to implement a task themselves or buy it as a service from an external provider (i.e. a make-or-buy decision), and which provider to purchase the service from (i.e. the supplier-selection decision). All factors were coded in the interviews. A table was created to report the factors that the customer companies considered regarding the make-or-buy and supplier-selection decisions. Quotations are included in the text to illustrate the main findings.

4. Results

4.1 Customer companies' readiness to accept goods-related services

The results from the interviews on service readiness for Parasuraman's (2000) four dimensions of technology readiness (optimism, innovativeness, discomfort and insecurity) are summarized next. These are followed by the inductively added organizational dimension identified as relevant for service readiness in a business-to-business context.

The optimism dimension appeared most commonly in the interviews, often positively but sometimes negatively as a lack of optimism. Interviewees expressed their optimism, for example, by describing their interest in the new service ideas presented to them, by demonstrating openness to using new services in general and by explaining the benefits they saw of using the services. One interviewee compared doing the task himself with purchasing a service: "An external service provider is more flexible. If I can say it here, you can push them around a bit more." Negative comments were often related to the challenges of using the services or to how the interviewees did not see the services as suitable or realistic options. One interviewee explained, "It is not clear that there would be such a service (that would be competitive when compared to doing tasks oneself) now, or that it would be realistic. No, there actually aren't (such services)." Thus, some interviewees seem to be reserved, but mostly the comments were positive resulting in optimism scores ranging from –1 to 7 (number of negative comments ranged from 0 to 4 and positive 0 to 7).

The second dimension of service readiness, innovativeness, was also commonly expressed by the interviewees. For example, their ideas for new services and their own actions in developing data-based services were demonstrations of their innovativeness. Most interviewees wanted new services, although they were not particularly radical in terms of innovativeness. Even when the interviewees were encouraged to think about the future and express wild and unrealistic ideas, they provided very traditional ideas. The service ideas included improving data collection, automating for upkeep and quality control, managing spare parts and providing remote support. An interviewee described his idea as follows: "Somehow, management of spare parts always comes to mind […] Storing and service for spare parts would be one that in the long term could be considered." Although the ideas were not advanced, they were counted as demonstrations of innovativeness as they were examples of services that were new to the customers. If an interviewee could not come up with new service ideas that was interpreted as lack of innovativeness. In the end, the interviewee innovativeness scores ranged from –1 to 4 (number of negative comments ranged from 0 to 2 and positive 1 to 5).

Insecurity, the third dimension of service readiness was less commonly discussed, but almost all of the interviewees expressed it at some point. Most of the interviewees did not use and were skeptical about services in which data from their operations would leave their internal network. In that case, the interviewees felt that they were losing control over their own information. The interviewees were, for example, interested in production monitoring but not all were ready to buy that service from an external supplier. An interviewee stated, "Yeah […] I have been a bit skeptical myself about that." The interviewees were unsure about who would get their information and how it would be used, a result that indicates data insecurity. One interviewee explained that he, as a customer, would not like to share production information with a machine manufacturer. As a customer develops the procured machines further, he also wants to safeguard the information so that the machine manufacturer cannot use the information in the company's own product development, and thus, the customer loses its competitive edge. Further insecurity was expressed in the interviewees' disbelief that the services could be implemented and would actually provide benefits. In addition, an interviewee stated, "It is very challenging for any outsider to start interpreting those [data] […] you need to know the process and even the products extremely well to be able to do that." Therefore, the interviewees' insecurity scores ranged from –3 to 0.

Of all the dimensions, discomfort was the least visible; it appeared only in one third of the interviews. Some interviewees expressed worry about the lack of control. They were worried that they would lose control over tasks; when and how they are executed, if they purchased the service. An interviewee stated, "And then the outsourcing, when you give it [a task] [away] then you cannot control it any more. Anyone can come from there [the service provider] whenever, and the quality of the work may decrease at times." Similarly, on many occasions people discussed how they wanted to keep tasks within the company rather than procure a service. For discomfort, most interviewees had a score of 0, but scores of –1 and –2 also emerged.

In addition to Parasuraman's (2000) dimensions of readiness, aspects related to organizational culture and habits appeared frequently in the interviews and seemed to have an effect on how ready the interviewees were to consider using services. Some interviewees indicated that in their organization, they focused on current problems and did not think about future service needs. Some interviewees described how their organization is keeping more and more tasks internal. Further, some interviewees were having trouble focusing on services, and their answers tended to move toward goods. Five interviewees illustrated this goods-centric mindset at least once. For example:

> Interviewer: What kinds of services do you usually purchase when you purchase services from Company X?

> Interviewee: Either machines or equipment or then maintenance.

However, also a couple of positive comments were given as an interviewee described his or her organization as very positive about development in general and development conducted with the manufacturer. Due to these relevant illustrations of the influence of organizational aspects, a fifth dimension, organizational culture and habits, was added to service readiness. Scores for the organizational dimension ranged from –3 to 2 (number of negative comments ranged from 0 to 3 and positive 0 to 2).

The dimensions of service readiness, their definitions and presence in the interviews are summarized in Table III. In this paper, the service readiness definition was adapted from Vize et al. (2013) and is formed as the inclination to embrace, and the ability to use, relevant new services in the organization. These results suggest that in an organizational context service readiness needs an additional dimension compared to the earlier dimensions identified for technology readiness.

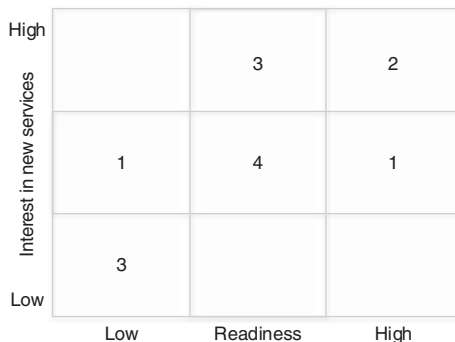| Service readiness	Definition	Interviewees' experiences
Individual readiness		
Optimism	A positive view of the service and a belief that the service offers people increased flexibility and efficiency or other benefits in the workplace	Content of many services was good, but not all wish to buy a service from an external service provider
Innovativeness	A person's tendency to be a pioneer and a thought leader in the development and use of services in the work context	Weakly demonstrated by the interviewees
Discomfort	A perceived lack of control over the service or task completed by the service and a feeling of being overwhelmed by it	Lack of control over tasks caused discomfort among interviewees
Insecurity	A distrust of services, skepticism about their ability to work properly and the worry over security of their information	Many interviewees were worried about use of their data, and few did not believe that the services could work and provide benefits
Organizational readiness		
Organizational culture and habits	The dominant perceptions either toward or against service usage and the prevalent focus on goods instead of services in the organization	In many customer organizations, a goods-centric mind-set and strong habits of doing things themselves guide decisions

Table III.
Customers' service readiness and its features in the customer companies

4.2 Relation of customer companies' service readiness to their interest in new services
The interviewees' interest in six new services chosen by the manufacturer was inquired in the questionnaire part of the interviews as a proxy for service adoption as the services were not on the market, yet. The interviewees' average interest ranged from 2.7 to 4.5 on the scale of 1 through 5. All interviewees expressed some interest in at least some of the services whereas only two persons were at least very interested in all of the services. To determine whether service readiness is linked to the interest in new services, the readiness scores for individuals were compared to their average interest in the new services. Respondents were divided into three categories (high, medium and low) based on the level of their interest in the new services and service readiness as described in the methodology section. Then the interviewees were mapped into the 3 by 3 matrix illustrated in Figure 2.

The matrix shows that interviewees with a low service readiness also had a low interest in the new services except for the one interviewee with a medium interest, although with the lowest score that was categorized as medium interest. In addition, at the opposite end, interviewees with high readiness have at least a medium-level interest in the new services,

Figure 2.
Number of interviewees in each section based on their service readiness and interest in new services

similarly to interviewees with medium readiness. Therefore, there seems to be a slight tendency toward diagonal positions in the matrix, although the variations in medium service readiness may indicate a non-linear relationship. Clearly, this result can be taken only as a tentative indication that readiness and interest in services are related as the number of interviews does not allow for quantitative analysis.

The data were explored for company-specific effects. Most of the clusters (high, medium, low) for both variables (service readiness and interest) had representatives from at least two of three companies. The only exception was that all the interviewees with low interest were from one company. However, they were from different locations, and from that company, there were also interviewees with medium and high interest in the services. Therefore, there are no signs of a clear company effect. This result strengthens the notion that companies have very different service readiness in their different factories making any company-level generalization misleading.

4.3 Factors that affect interviewees' adoption of services

The interviewees highlighted the importance of their company's own needs as a key factor in considering a new service. Although the interviewees were asked about the service ideas origin (i.e. within the company or externally), 8 out of 14 people described that no matter where the idea originates, the service decision depends on a problem or a need in their organization.

Interviewees were asked to describe what affects their choices in make-or-buy and supplier-selection decisions for the services. In both decisions, the most commonly mentioned factor was price. For some interviewees, price was not the most important factor, but many stressed that it must be considered. An interviewee stated, "Price, price and price […] Maybe not quite like that, but it [the service] must be cost-efficient."

When selecting a supplier, the second most common criterion was earlier experiences or a relationship with the service provider. This criterion was related to trust and the ability to minimize risks. A familiar service provider knows their factory and work methods and does not need supervision. As one interviewee described it: "We have a few service workers concerning whom we do not always remember what is written on their work clothing (i.e. what company they are employed by), it might be their fourth firm (as the company they work for has changed). But we always ask the same guy."

In addition, the other commonly discussed factors were very practical: availability and flexibility of the service. At least half of the interviewees discussed these factors for both adoption-related decisions. For some interviewees, procuring a service was not an option because it takes hours for a service provider to get to the location, and time is money. An interviewee stated, "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."

Quality was important for interviewees especially when they considered supplier selection. Just over half of the respondents mentioned this criterion. Interviewees compared their own job quality to that of the suppliers and compared the quality of the work of potential suppliers. Quality was clearly a significant factor for some interviewees: "Quality of the service is what we appreciate here so that we get value for our money."

In the make-or-buy decision, almost half of the interviewees highlighted the firms' own capabilities and resources. If the interviewees felt that they could do the task well, they wanted to keep it within the company. Similarly, some considered the timing and amount of work: if it fitted in their daily job or there was enough work for a full man-year, they wanted to keep the task within the company. Related to this, some interviewees wanted to keep core operations and other information-rich tasks within their company. However, for the supplier-selection decision, some interviewees highlighted the need to consider the service provider's capabilities in implementing the specific task.

Table IV summarizes the factors mentioned for both decisions in each customer company (A, B and C). Factors marked with + were mentioned by less than half of the interviewees in the company, ++ by about half and +++ by more than half of the interviewees.

When considering the consistency of the factors affecting decision making within the companies, interesting results can be seen in Table IV. Even within the companies, the factors are fragmented, and different people within the same company emphasize different factors. Especially for make-or-buy decisions, different factors are used within all of the companies. This may be due to the different locations in which these companies operate. For example, an interviewee from company B described how the decision "is largely location specific. A philosophy in a different factory is completely different when they have service providers nearby."

Only in company C's supplier-selection decision were many factors mentioned by at least half of the interviewees. This company has a rather systematic method for evaluating investments, as described by a company-level interviewee: "Also, when we are making investments there is about ten things that we systematically tabulate and similar kind of things are (considered) for services." Therefore, it seems that guidelines within the company can help control diverse factors used when considering new service adoption.

Table IV illustrates also the difference in factors between different decisions. Few factors are shared, such as economic, availability and quality issues. However, suitability of own capabilities and resources, willingness to keep tasks within the company, as well as own ability to control the task are highlighted in the make-or-buy decision. The service provider's capabilities, flexibility, reliability and even relationships with the service provider or the service workers, however, were highlighted in the supplier-selection decision. Regarding this decision, previous experiences and relationships with service providers emerged to control the risks related to purchasing the service. However, reflection of these risks was also identified in the first decision when some customers described their willingness to keep the tasks internal when possible.

5. Discussion and implications
5.1 Theoretical implications on service readiness in the organizational context
The first research question focused on how service readiness should be conceptualized in a business-to-business context. Earlier, adopters' readiness has been emphasized as important for technological innovations (Parasuraman, 2000; Tsikriktsis, 2004; Vize *et al.*, 2013), and this study has shown that it is also relevant for new services. The readiness dimensions that were used earlier for technologies, i.e. optimism, innovativeness, insecurity and discomfort, were clearly observed in the interviews and seem relevant to the industrial service context.

	Make-or-buy			Supplier selection		
	A	B	C	A	B	C
Availability	++	+++	+	+	+	++
Economic viability	+	++	++		+++	+++
Quality	+	+	+	+	+	+++
Risks	+					
Amount of work and its repetitiveness	+	++	+			
Possibility to control the task			+			
Own capability and resources	+	+	+			
Keeping operations internal			+			
Relationships and reliability				++	+	+++
Flexibility				+	+	+
Service provider's capability				++	+	+

Table IV.
Prevalence of the factors considered in adoption decisions categorized by decision content and customer's company

As one of the key theoretical implications, the concept of readiness, which was covered earlier from the individual's perspective, was adapted to the organizational level in a business-to-business setting. The analysis of readiness for new services and service adoption among the customer companies' representatives revealed similarities with the dimensions of the technology readiness of individuals (Parasuraman, 2000), as all four original dimensions were clearly present in the interviews. To complement this, the business-to-business context revealed an additional dimension at the organizational level: organizational culture and habits. In the servitization literature, the manufacturing-oriented culture has been found to hinder the manufacturer's servitization process (Brax, 2005). This study shows that similar habits of doing things oneself and a goods-centric culture in the customer organization guide purchasing decisions. The importance of the different aspects of organizational culture for employee decision making and behavior has been acknowledged in several other contexts, such as ethical decision making (Trevino, 1986) and the use of information in business processes (Popovič *et al.*, 2012). Our findings highlight organizational culture and habits as a key dimension of service readiness in the context of goods-related services.

At the interviewees' factories, the culture of doing things inside the customer organization (instead of buying services) was dominant, and a goods-centric mind-set was still common. In addition, regarding the four original dimensions, readiness did not seem self-evident: service innovativeness seemed low, discomfort was clear in how the interviewees wanted to be able to control the service in terms of flexibility and timing, insecurity was observed in their disbelief about the capability of the services to actually work and in their worry about what is done with their information, and the interviewees were partly optimistic and partly demonstrated a lack of optimism about the services in general. Therefore, the interviewees' readiness for new services was not high in general although it varied widely. The findings suggest that manufacturing companies need to pay attention to both individual and organizational issues when developing their customers' service readiness.

Based on the results, readiness appeared to be relevant to services, and it can be relevant, more generally, in the service adoption process in the same way as in the case of technology (Chen and Chen, 2008; Hung and Cheng, 2013; Lin and Chang, 2011). The findings show that service readiness seemed to be related to the customer's interest in new services, indicating that service readiness may be a prerequisite for service adoption. The study also has clear implications for existing customer-centric servitization research, which has encouraged manufacturers to understand customers' needs and processes as starting points of relevant service offerings (Brax and Jonsson, 2009; Nudurupati *et al.*, 2016; van der Valk and Rozemeijer, 2009) and revealed an increased need for customers' resource integration with advanced service offerings (Smith *et al.*, 2014). Our findings complement them by drawing attention to the customers' service readiness as a relevant factor for manufacturers' customer-oriented practices and assessment of real service potential, thus providing service researchers a tool to be further developed to better understand customers' service readiness.

The results revealed different groups of potential service users that may require different actions from the manufacturer or multiple "layers" of customers' purchase potential. When a manufacturing company brings new services or solutions to the market, the company faces customers who all have their own degrees of service readiness and purchase potential, as illustrated in Figure 3. All goods-related customers can be potential customers for the manufacturer's services, but as the interviewees clearly highlighted the need to consider new services as a first step, customers with a service need are identified here as the first relevant sphere for goods-related services. The findings in this research seem to suggest that some degree of service readiness is needed from people before service adoption. Only some of the customers with a service need have a readiness for external services, and they can be considered a second sphere with more potential for goods-related services. Similarly,
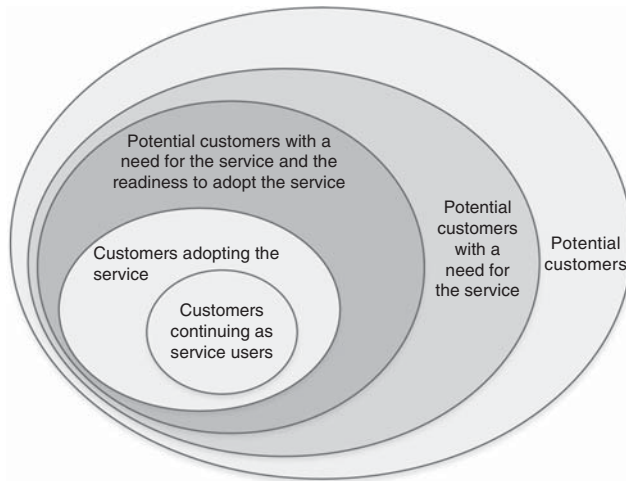
as evident by the definitions of adoption and acceptance, only the same customers who have first adopted the service can be willing to continue using it – that is, demonstrate service acceptance. Thus, each consecutive sphere limits the number of potentially interested customers and the number of customers who are actively utilizing a service in the end. Our findings encourage manufacturers to differentiate their actions for customers with different degrees of service readiness in order to target their service efforts appropriately. At the same time, our findings urge scholars to consider the implications of the service readiness for new service adoption and to develop new frameworks to facilitate service purchasing in the industrial context.

5.2 Theoretical implications on service evaluation before adoption in the business-to-business context
The second research question explored the kinds of factors that industrial customers consider when thinking about adopting new goods-related services. In this research, the interviewees recognized the service need as a first step in considering new service adoption. Availability, economic viability and quality were the primary factors that were generally considered in service adoption, and other adoption factors were differentiated, depending on the decision being made. The service adoption process in the business-to-business context involves consecutive decisions starting with defining the need and ending with choosing a supplier and making a purchase (Novack and Simco, 1991). The different service adoption factors seemed to separate the make-or-buy and supplier-selection decisions: in the make-or-buy decision, the customer's attention was directed to his or her own internal effort, control and capabilities, and in the supplier-selection decision, the attention was directed to the relational issues and the service provider's capabilities, reliability and flexibility. Based on the empirical findings, Figure 4 summarizes the differences between the factors considered in the different service adoption decisions.

These results offer new empirical evidence concerning goods-related services. They lend support to some earlier studies in that the adoption process consists of different decisions, and varying decision factors are important for these different decisions. Day and Barksdale (1994) studied the purchase of professional services and found that even during the different stages of the supplier-selection process the factors vary, indicating that there is a need to consider which step of the process is ongoing. Similarly,

in their meta-analysis of consumer innovation adoption, Arts *et al.* (2011) found that different factors affect adoption intention and actual behavior.

Where the current technology adoption literature has focused on the characteristics of the innovation and the innovation adopter, our findings indicate that the decision-making content is also relevant, particularly in the context of goods-related services. The existence of the different criteria in the various phases of innovation adoption can have significant theoretical implications; it may suggest more general differences between individual (consumer) and organizational (industrial) service adoption. As the make-or-buy decision is not as relevant in the consumer context (as consumers seldom have the necessary capabilities to carry out specialized tasks themselves), the findings may imply that some additional factors need to be considered in service adoption decisions in the organizational context. We observe that in the case of service evaluation by organizations several aspects interact: the context of a customers' company site, the characteristics of multiple individual decision makers in that company (in terms of readiness but also in terms of their level in the company) and the stage in the process of decision making. The interaction of the variables in service adoption is more complex than the individual's technological innovation adoption, unraveling that it represents a theoretical challenge.

When comparing the factors affecting business customers' service adoption decisions with the findings on service readiness, it would seem that service readiness is formed before and during the make-or-buy decision, as service readiness is not completely demonstrated even if the customer decides that they have a need for the service. Service readiness is completely demonstrated only as a customer takes the step from identifying the service need to deciding to buy the service. To do this, the customer needs to overcome the feeling of lack of control over the service and their own information and overcome the potentially strong organizational habits that may encourage them to do the tasks themselves. Therefore, it is not only about optimism and innovativeness toward the task or service and the willingness to use it, but it is also about the customer's readiness to buy it from an external manufacturer or service provider.

5.3 Managerial implications
This research has important lessons for managers. Servitization involves a cultural change in the manufacturing companies, which is widely discussed in the literature (e.g. Baines *et al.*, 2009), but also in the customer companies, which is less commonly covered, especially in a business-to-business context. Therefore, it might be useful for manufacturing companies in the business-to-business context to introduce new services in a stepwise fashion and be in close contact with the companies that adopt these services to make the adoption of new services easier for the customer. In line with previous research,
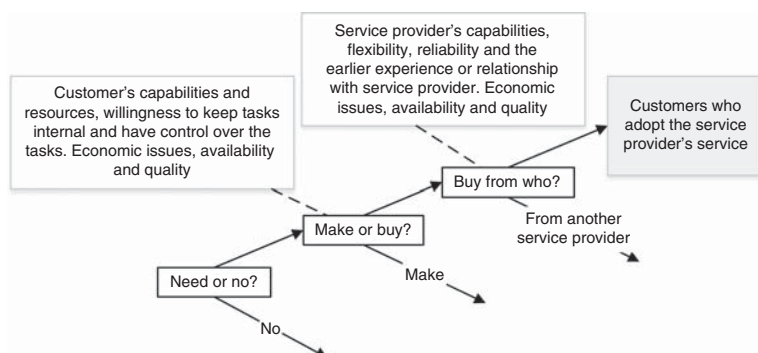
Figure 4.
Factors affecting
different decisions
when adopting a
service in the
business-to-business
context

it is good to start with simple services to enable the customer to become familiar with service use first because moving straight to the advanced services can be difficult for customers.

Previous researchers have shown that customers do not always know their service needs or are not able to express them (Tuli *et al.*, 2007). Manufacturers, therefore, cannot build their service business based merely on explicit customer needs. Service readiness can act as a helpful conceptual tool for companies to assess their potential markets, and customer relationship personnel can develop tools to assess customers' service readiness. Our results showed that the interviewees with high service readiness had at least a moderate interest in the new services, and for lower readiness, interest in the new services was lower. Therefore, through knowing customers' service readiness levels, it might be fruitful for manufacturers offering new services to focus on the customers with high service readiness first. Once companies have more convincing arguments and reference cases, they can turn to customers with moderate readiness.

To begin, before pursuing a broader service market, manufacturers can further develop the new services with selected lead users who have high service readiness. Customers with low service readiness should possibly be considered only when the new services become more common and when industry-level trust in the new technology-based services has increased (Vize *et al.*, 2013). Conversely, manufacturing companies can take action to increase the customers' service readiness. Vize *et al.* (2013) suggested that collaborative business relationships could be formed to overcome a purchasing firm's insufficient technology readiness. This study highlights that the customer's service readiness is affected by many factors, some of which are internal to the customer, but some actions can also be taken by the manufacturer. One clear step is to convince the customers about the privacy of their information even if they choose the manufacturer's service, as this was one of the key factors decreasing customers' service readiness. Another possible step is to counter the challenges that the customers perceive in using the services (e.g. expectations of unsatisfactory response time or prices that are too high; doubts about the benefits and actual functionality of the service; and uncertainty about who will implement the service, when, and how well), for example, by setting up contracts, building trust or explaining the service and its benefits clearly and in detail. Convincing the customers when using the service can help to deal with the negative aspects that hinder their service readiness.

The identification of different decisions in the service adoption process also has important implications for managers. Managers who are responsible for purchasing seem to view service adoption through these different decisions. From the service provider's perspective, it is difficult to influence a potential customer's new service adoption in the make-or-buy decision, as internal factors dominate in the customer's decision making, and external factors are less important. However, even then, manufacturers can provide information that may be helpful for the customer's decision making. Emphasizing availability, quality and economic reasoning concerning the services is important for informing the customer both to activate the need for a service and to support the decision on whether to make or buy. For the supplier selection decision in service adoption, the manufacturer can highlight its own capabilities and flexibility and leverage existing relationships to possibly differentiate it from its competitors. Choosing the aspects to highlight when interacting with the customers can help the manufacturer to convert customer needs into possible service readiness and, further, encourage the customers to adopt the service.

The results indicate that the factors used when considering adopting new services differ among individuals, and even within the companies. This is important for both the supplying company and the customer to note and address, as this can be a challenge (Day and Barksdale, 1994). Particularly in business-to-business settings, multiple individuals participate in the decision-making process. This variety in factors affecting service

adoption decisions makes it difficult for manufacturers to sell services. For example, salespeople may find it difficult to recognize what is actually important for the customer and adapt accordingly. The results indicate the importance of common guidelines for new service adoption-related decisions in companies. The use of guidelines may help reduce the variety of factors, as demonstrated by Company C's rather consistent factors that are used to choose from whom to purchase, and may lead to more cohesive and controlled service adoption decisions at the customer companies.

6. Conclusions
6.1 Contributions
Servitization has previously been presented as a transformation challenge for manufacturers; studies on servitization have focused on the perspective of manufacturing companies and their required changes (Grönroos, 2008; Kindström, 2010; Storbacka, 2011). This study has important theoretical implications, as it emphasized customers' service readiness as a potential antecedent to the success of the manufacturing firm's new service offerings. The findings show similarities between business-to-business service readiness and the previous technology readiness frameworks that are primarily used in the context of consumer solutions, but they added the dimension of organizational culture and habits as a relevant organizational component of service readiness. Furthermore, the study indicates that service readiness is connected to customer interest in new services and, thereby, to customers' intentions to adopt the services. This kind of customer readiness has not been previously discussed in the area of services, and therefore, this study contributes to servitization research and provides scholars a new way to study customer's inclination toward service use.

The findings draw attention to the differences between the practice of service adoption and the traditional, technology-centric adoption literature. The findings remind academics about the importance of the customer's need as a key source for new service adoption and points out the differences, even within a company, in the factors that are considered when thinking about adopting new services. The study also highlights the differences in the factors that are used for the multiple consecutive decisions that must be made during the service adoption process, particularly in business customer companies. In organizations, considering only a single adoption decision, as is often expected in the adoption literature, is insufficient.

The study shows that the customer personnel's subjective experiences with services should be considered when the manufacturer promotes and sells new services. It provides managers with information about the factors that are important for customers when they are considering purchasing new services. Manufacturers can consider such factors in advance, and decrease the negative forces in customer service adoption and encourage customers to utilize the manufacturers' services. The study also revealed the potential challenge of selling new and advanced services. Potential customers often consider traditional practical factors that might not be as relevant for the adoption of new kinds of services, especially if the customers do not yet fully understand the service, and the factors can differ between individuals, even within an organization. Therefore, manufacturers should consider how they can change the factors that customers consider and how they can describe the new service benefits in such a manner that they match well with the factors that are central to customers' service adoption.

6.2 Limitations and ideas for further research
The study was implemented as a single-case study, and interviews were conducted among three customer companies. Therefore, the generalizability of the results is limited. There is a clear need for further studies in other contexts and among more customer companies to

cover goods-related service adoption more broadly. Additionally, the case study method is affected by researchers' interpretations, which may limit the validity of the results. The researcher asked the interviewees to elaborate on unclear matters and discussed the results with the manufacturer's employees to correct possible misunderstandings and validate the results. To reduce the subjectivity of the coding, another researcher was asked to categorize the codes to identify potentially misplaced codes and reconsider the codes. In addition, the research setting did not enable the researchers to study the relationship between service readiness and the customer's actual adoption decision, as the services discussed were not yet available. Therefore, future research should also examine this actual adoption behavior. In addition, the method of assessing readiness in this paper is neither trouble-free nor feasible for a more quantitative approach. Thus, tools should be developed to make this method usable for companies to assess their customers' service readiness and, thereby, determine the actions they take in service sales. Regardless of the limitations, this study is a good starting point for further research on service readiness in a business-to-business setting, and varied case companies and research methods should be used.

Acknowledgments

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Appendix. The interview outline (main themes)

Part I background

- Position in the company/How long interviewee has worked in this position/company/industry.
- Interviewee's own job description.
- How common is service purchasing in your company? Does it have a strategic role?

Part II adopting new services

(1) Customer's action in adopting a new service:

- Where does the idea for a new service usually originate (within company, suppliers, etc.)?

- Who decides on purchasing a new service, and who gets to affect the service selection?

(2) Factors affecting service adoption:

- What factors do you consider when making adoption decisions (make-or-buy/supplier selection)?

(3) Supplier's action in supporting new service adoption:

- How well aware are you of the manufacturer's services? Do they market them? Do you get enough information from the manufacturer?

- Would you like to have more information about the manufacturer's services or support when adopting these services?

Part III current service use and hopes for future services

(1) What kinds of services are you using now, and how are they functioning?

- This manufacturer's services/Other manufacturers' services.

- What do the adoption and use of these services require from you?

(2) Are there potential maintenance-related activities that you could consider outsourcing in the near future?

- Do you have hopes for new services/challenging areas in your operations?

(3) Do you use services that move data outside of your network?

- What kinds of services? How do you perceive these kinds of services?

(4) What kind of information would you like to have collected remotely from your production lines to help you improve their effectiveness and efficiency (+ from the manufacturer)?

- What do you think about these kinds of services?

(5) Which critical parts of your production would you like to be able to monitor better?

- Interest in predicting wear and maintenance needs.

- Interest in this if the manufacturer were to provide it as a service.

(6) Would you be interested in benchmarking services? What do you think about these kinds of services?

- What kind of information would be suitable for these?

- Would you be interested in the service if it would require you to share some of your information anonymously?

- What kinds of boundary conditions do you see?

(7) Are you developing digital production monitoring services related to your own production?

- What kinds of services are you developing?

- Are you doing this alone or with partners?

(8) If you take a look into the future, can you come up with some other new service that you would like to have? (It can even be utopian).

Part IV hopes for digital services

What kinds of digital services would you like to have from a machine manufacturer to support your activities? How interested would you be, ranging from 1–5? (1 = not at all interested, 2 = a bit interested, 3 = interested, 4 = very interested, 5 = extremely interested and I would like to hear more):

(1) maintenance operations management and performance monitoring;

(2) monitoring of production effectiveness;

(3) predictive spare-parts services and a web store;

(4) remote monitoring of the customer's production lines;

(5) digital technical documentation; and

(6) remote maintenance services.

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