

# **A framework of capabilities and business dimensions influencing servitization based upon service dominant logic, service science and network and system theory**

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## ***ABSTRACT***

**Purpose** – Servitization is the transformational process of a company shifting to a business model and logic based on service, including the innovation of an organisation's capabilities and processes. As the servitization literature is fragmented and lacks a systematic framework, this paper tries to contribute by developing a framework of capabilities and business dimensions influencing servitization based upon service-dominant logic, service science and network and systems theory.

**Design/Methodology/approach** – A systematic literature review was conducted, looking for factors critical for the success of servitization. 126 papers have been fully reviewed and analyzed leading to twelve critical success factors. Second, these factors have been discussed in 26 qualitative interviews with companies and two focus groups to verify and extend them.

**Findings** – The underlying concepts of service dominant logic, service science and network and systems theory highlight the need for a systematic concept that emphasizes interaction. The literature review and the quantitative study confirmed the need for a broader framework and an emphasis on interaction. Thus, a framework with twelve business dimensions influencing servitization has been developed that includes interaction as well as other factors important for successful servitization.

**Research limitations/implications** – This paper confirms the need for a broader concept in servitization research. Moreover, this research indicates the usefulness of the three underlying concepts. Future research should address how to measure the twelve dimensions and to manage the servitization status-quo in practice. This research is embedded in an EU-funded research project in which these limitations shall be further examined.

**Practical implications** – The twelve success factors presented in the paper can offer guidance to practitioners of what to consider when managing their servitization attempts.

**Key words** service-dominant logic, network theory, service science, servitization

**Paper type** –Research paper

## 1. Introduction

In order to gain a competitive advantage many manufacturing companies, especially in industrialized countries, are following the so-called “servitization” path (Lay et al 2010), offering additional services or product-service-solutions. Services often have higher margins and more stable revenues, customer increasingly demand them and they can be possible sources of sustainable competitive advantage as they are difficult to imitate (Oliva & Kallenberg 2003). However, many companies trying to servitize have financial difficulties (Neely 2008; Benedettini, Swink & Neely 2017). Among others, manufacturers do not often recognize the need to change the organization as a whole to be ready to offer services and solutions or have limited knowledge concerning this change (Martinez et al 2010). In the scientific world Baines et al (2017) identify a lack of prescriptive knowledge for companies helping them to understand when and how the change should take place and what to change. They especially point out that “holistic audits and capabilities for servitization” is a field of research undeveloped in understanding. The purpose of this paper is, therefore, to add a contribution for the guidance of manufacturers on their servitization journey. Hence, this paper develops a framework of capabilities and business dimensions influencing servitization which is based on three underlying concepts specifically of a) the service dominant logic, b) the service science and c) the network and system theory. To discover which capabilities are important for a successful servitization a systematic literature review has been conducted. Thereafter a qualitative study has been conducted to verify the identified business dimensions and capabilities influencing servitization by investigating the capabilities necessary and practical problems of companies on their servitization journey.

## 2. Underlying concepts

Kowalkowski et al (2017) state that there is a lot of research, conferences and industry engagement concerning servitization but still no broad consensus on the core concepts. This is partly due to a lack of theoretical foundation and different underlying concepts as different research fields are engaged in servitization research (Lightfoot, Baines & Smart 2013). Service dominant logic, service science and network theory and system theory have been proposed as possible frameworks for servitization research (Barile & Polese 2010; Lightfoot, Baines & Smart 2013; Maglio & Spohrer 2008; Vargo & Akaka 2009) and are therefore used as basis for the framework developed in this paper.

The service dominant logic (Vargo & Lusch 2004a, 2008a, 2016) highlights that goods and services are two ways of offering service to the customer. The value-in-use for the customer and how companies can assist their customers in generating this value-in-use become central. It has some normative implications like customer orientation, focus on value in use, interaction and collaboration (Vargo & Lusch 2008b).

Service science explicitly builds on the service dominant logic (Maglio & Spohrer 2008; 2013). The goal of service science is to combine knowledge from various fields to better understand service systems and to build service innovation on scientific knowledge (Chesbrough & Spohrer 2006; Maglio & Spohrer 2013). Maglio et al (2009) define service systems as “a configuration of people, technologies and other resources that interact with other service systems to create mutual value”, mentioning explicitly the importance of systems and their interactions. These two elements are also central to network and system theory. System theory applies a holistic approach and considers especially the relationships between the single parts. According to the systemic perspective, it is not possible to fully comprehend a phenomenon by analyzing the individual parts. This can be a possible start but has to be accompanied by a holistic view. Therefore, system thinking shifts the attention from the part to the whole (Mele, Pels & Polese 2010). The systemic approach is not a theory, it is

a general framework of reference. It offers an approach to analyze complex systems but does not yield operative models for a specific problematic context (Barile et al 2012). Among others, Mele, Pels & Polese (2010) and Barile et al (2012) argue that system theories are well suited for marketing, management and service research, especially because it is both holistic and reductionistic: It analyses the small parts as well as their interactions and the “big picture”. Network theories as well emphasize the importance of relations. Hakansson et al (2009) describe interaction as fundamental to business life. Therefore, a framework for servitization based on service dominant logic, service science and network and system theory has to have two characteristics: It has to be holistic and it has to consider interaction.

### **3. Methodology**

In order to develop a framework of capabilities and business dimensions influencing servitization, a systematic literature review (Levy & Ellis 2006) was conducted. The databases Emerald, EBSCO and Scencedirect were searched, looking for highly-ranked articles according to VBH-Ranking 2015 (Schrader & Hening-Thurau 2009) from January 2004 till March 2016, by using service and servitization keywords. To include also articles that are not shown in these databases, a forward- and backward author and article search was conducted. After an abstract observation 126 articles were identified as relevant for the analysis. These papers were then analyzed in detail with the research purpose: What are relevant success factors and capabilities for servitization?

The articles were analyzed and codified in MAXQDA. The success factors and capabilities were clustered and refined leading to 12 business dimensions relevant for servitization. In order to empirically verify the framework a qualitative study was conducted. The aim of this study was to investigate if companies consider these twelve dimensions as important and if there are additional elements that should be included by also investigating their main problems on their servitization path. 26 qualitative expert interviews with 26 companies were conducted in Austria and Bavaria. A theoretical sampling approach was chosen to include companies of different sizes and from different sectors to get a broad picture. The interviews lasted on average one hour and were transcribed verbatim. In addition to the interviews, two focus groups with in total nine participants were organized. Participants were managers as well as representatives of cluster and economic institutions. The transcript of the interviews and the focus groups were coded according to the twelve dimensions to refine the identified dimensions. In addition the transcripts were analyzed for possible new dimensions.

### **4. Results**

The literature and the qualitative study confirmed that a broader interconnected view is needed (Nudurupati et al 2016) as suggested by the three underlying concepts. Most of the companies analyzed struggle to take this wider view too (see also Martinez et al 2010). Successful servitization often means changes in all important aspects of the company (Baines et al 2017). However, changes in one aspect or dimension often call for change in others as well. A good alignment is thus particularly important (Gebauer, Edvardsson, Gustafsson & Witell 2010, Gebauer, Fischer & Fleisch 2010). The twelve developed dimensions listed in Table 1 are separated for analytical purpose but are interwoven in practice, as emphasized by system theory (Mele, Pels & Polese 2010). They are presented in detail afterwards, summarizing the literature and empirical findings.

**Table 1: twelve dimensions of successful servitization**

1. Strategic partnership with customer and value co-creation	7. Service competent executives and top management service strategy
2. Network and relational capabilities	8. Risk assessment/key performance indicators
3. Organizational culture	9. Organizational processes
4. Organizational structures	10. Customization and repeatability
5. Ability to price services	11. Service quality
6. Sales force capabilities and selling approach	12. Continuous development of services/service design

### **Strategic partnership with customers and value co-creation**

Contact and collaboration with the customer are crucial in offering services and solutions. The literature on value co-creation emphasizes the importance of the customer in creating value (Prahalad & Ramaswamy 2004, Galvagno & Dalli 2014). Grönroos (2008) posits that the customer is not the co-creator of value but the main creator. The supplier can only assist in offering value propositions. Because of this critical role of the customer in creating and co-creating value the strategic relationship between customer and supplier is highlighted in servitization literature. Prior (2016) emphasizes the personal resources of the service workers as crucial for relationship value. Tuli, Kohli & Bharadway (2007, p. 5) add that servitization is based upon an ongoing, relational process of delineating, meeting and supporting a customer's evolving needs. Thus, they shift the attention from solutions as bundles of different offerings to relational processes. Herein, co-production and co-creation processes play a crucial role (Sampson & Money 2015, Kohtamäki & Rajala 2016). The experts add that a clearly defined and responsible contact person on both side of the relationship is extremely helpful in managing the relationship. Moreover, they emphasize that coaching of the customer (through advising and training) by the manufacturers is essential for successful partnerships and value co-creation.

### **Network and relational capabilities**

As emphasized by Dyer & Singh (1998), the network can be a source of competitive advantage. To offer services and solutions not only is the relationship with the customer of high importance, but also the wider network involving suppliers, universities, government agencies and other business partners (Windahl & Lakemond 2006). Kowalkowski et al (2016) show that sometimes a wider network beyond the customer-supplier dyad is needed. This is also emphasized by Chakkol et al (2014), as they show that the offering of solutions usually leads to more partners. Kohtamäki et al (2013) study relational capabilities as a moderator of the link between service offering and sales growth, emphasizing the importance of network capabilities. Companies have to decide if they should develop capabilities internally or if they should use partners to utilize external capabilities (Kowalkowski et al 2011; Salonen & Jaakkola 2015). Gebauer et al (2013) analyze different service networks and conclude that firms offering services form and utilize new types of service network and hence, need capabilities to orchestrate the network of actors. Mustak (2014) adds that a wider network is especially important for service innovation. Within the network trust plays a crucial role as often mentioned by the interviewees. However, managers need time, persistence and a long-term horizon as building trust needs time. Therefore, the ability to professionally select partners is indispensable.

### **Organizational culture**

Traditional manufacturers usually have a strong organizational culture that is focused on products. In order to servitize, this culture has to change. The change of the “soft factor” culture is often described as the hardest step on the path from products to services and solutions (Homburg et al 2003). Customer centricity (Gebauer & Kowalkowski 2012), service orientation (Lytle, Homs & Mokwa 1998; Nuutinen & Lappalainen 2012) and market orientation (Jaworski & Kohli 1993; Narver & Slater 1990) are central elements of a culture of servitized companies. Gebauer, Edvardsson & Bjurko (2010) find a significant influence of service orientation values in management/employees on their service orientation behavior leading to better overall performance. Kohtamäki et al (2015) additionally prove that service offerings need to be accompanied by cultural changes to increase profits.

### **Organizational structures**

To develop the service business, the organizational structure has to be considered too (Bustinza et al 2015). Although often mismatched the structure should finally support the strategy (Gebauer, Fischer & Fleisch 2010; Gebauer, Edvardsson, Gustafsson & Witell 2010, Raddats & Burton 2011). Neu & Brown (2005) emphasize the necessity of interfirm collaboration supported by organizational structures guaranteeing resource flow and availability of people among business units and functions. Oliva, Gebauer & Brann (2012) assess the question if service business units should be established as profit centers concluding that a profit center approach is not necessary whereas organizational clarity about the responsibility is much more decisive.

### **Ability to price services**

Despite being crucial many manufacturing companies struggle in professionally pricing their services. A first step is to move from free to fee (Anderson & Narus 1995; Witell & Löfgren 2013). However, some companies stated that this is often challenging due to converse market conditions caused by counteracting competitors. In such situations, manufacturers should make the costs of services transparent to customers leading to a better understanding and willingness to pay. Another approach is to offer product-service packages including indirectly the price of services. Avlonitis & Indounas (2005) analyzing the pricing methods in the service sector find that pricing methods are mostly cost-based and competitor-based. Indounas (2009, 2014) shows that companies basing their service pricing decisions on a strategic and more comprehensive approach also including the value offered to the customer, involving inward- and outward-looking considerations, are more successful. Strategic pricing includes the development of service pricing strategy and periodic review and adaptation of the service prices. The value-based pricing approach (Hinterhuber 2004) is often considered as the best way to price services. However, organizational, institutional (Töytäri, Rajala & Alejandro 2015) and personal (Töytäri, Keränen & Rajala 2017) barriers reduce effective implementation of a value-based pricing approach.

### **Sales force capabilities and selling approach**

Service and solution selling differs from product selling in many ways. Companies offering services and solutions in addition to products have the difficult task of changing the selling approach and the capabilities of their sales force (Reinartz & Ulaga 2008; Ulaga & Reinartz 2011; Ulaga & Loveland 2014). The change from product selling to service and solution selling is often accompanied by value based selling strategies (Reinartz & Ulaga 2008). However, due to many difficulties Töytäri et al (2011) conclude that a value based approach should only be followed if the customer is willing to partner and the value of the relationship is high. Another services and solution selling approach is consultative selling where sales reps act as trusted advisors, tailoring the offering to the specific needs of the customer by

understanding their needs without pushing to sell as much as possible (Liu & Leach 2001). These different selling approaches lead to the need for additional sales force capabilities. Ulaga & Loveland (2014) point out the more fine grained understanding of the customer and his environment by the sales people, their ability to proactively manage complex networks and customer expectations as well as the capability to visualize the intangible offerings into tangible ones for the customer as important capabilities. To cope with these challenges, the sales reps should have a learning orientation, customer service orientation, intrinsic motivation, general intelligence and emotional stability. Because of these differences a clear distinction of sales reps responsible for product and service selling has to be made along with training of the sales staff who have to adopt to a different approach (Reinartz & Ulaga 2008; Ulaga & Reinartz 2011). Sometimes, a part of the sales force has to be replaced (Reinartz & Ulaga 2008). Strategic sales management has to strive for a match between personality of the sales rep, selling style and customer preferences. The different selling approach has also implications beyond the sales department, as sales become a strategic and cross-functional process (Storbacka et al 2009). The frontline service employees can serve as sales reps, as they have a lot of customer contact and can initiate new sales, becoming part time marketers (Gummesson 1991).

### **Service competent executives and top management service strategy**

To be successful in the service business, a clear service strategy has to be developed. Services should also be a part of the overall strategy. The strategy should be aligned with the environment, calling for market orientation as well as customer orientation (Neu & Brown 2005). Eggert et al (2014) investigate success factors in service strategy implementation. They highlight the importance of accounting for and monitoring the cost of services and the alignment of incentive systems as critical in strategy implementation. Senior management and supervisors are important as they should embody the strategy and should be an example for the whole staff (den Hartog & Verburg 2002; Wirtz & Johnston 2003). Oliva, Gebauer & Brann (2012) show that managerial commitment to services exerts a significant direct effect on service performance.

### **Risk assessment/key performance indicators**

The offering of services and solutions is often proposed because of more stable revenues (Oliva & Kallenberg 2003). However, there are many risks associated with the offering of services and solutions. Some of the risks that were formerly assumed by customer have to be assumed by the supplier (Nordin et al 2011). According to Gebauer & Fleisch (2007) operational, strategic and financial risks increase with service provision, although Nordin et al (2011) differ and show that risks depend on the kind of service offering. Gebauer, Fleisch & Friedli (2005) introduce the term “service paradox” and show that investment in services often do not lead to a proportional increase in service revenue. Neely (2008) explores the financial consequences of servitization and shows that servitized companies generate higher revenues, but lower profits as a percentage of sales. This points to the problems that even when the “service paradox” is overcome, profitability is not ensured. Benedettini, Neely & Swink (2015) analyze risks and bankruptcy likelihood and conclude that servitized manufacturers incur significantly more bankruptcy risk due to higher internal risks. They propose that managers should know the risks associated with different service offerings and should be aware that sometimes the risks outweigh the benefits of servitization. Benedettini, Swink & Neely (2017) also highlight the risks of service offerings, but they show that additional services can increase the survival chances if they are complemented by adequate firm-level contextual factors, a claim made as well by Josephson et al (2016). To handle the risks of service offerings, the implementation of performance measurement (Nudurupati et al 2016) and key performance indicators (Parmenter 2010) are proposed. KPIs can be used as a

basis for decisions, demonstrating the evolvement of the service business also in comparison to other businesses. However, the investigated companies point out that the emphasis on KPIs should not lead to blindly trusting figures but rather support sensations and perceptions of how the service business is going. Managers still need to interpret the data and to decide on actions considering all impressions.

### **Organizational processes**

Another dimension to be considered in the servitization journey is how to design service processes. Crotts, Dickson & Ford (2005) emphasize that service processes have to be aligned with the strategy and the goals of the company, as well as with the structure of the firm (Gebauer, Fischer & Fleisch 2010). Although manufacturing companies often have highly standardized production processes they frequently have to define standard service processes from scratch. A well-developed tool for designing and improving service processes is service blueprinting (Bitner, Ostrom & Morgan 2008; Fließ & Kleinaltenkamp 2004). This method has been adapted for service processes in manufacturing companies to consider the uniqueness of these processes (Biege, Lay & Buschak 2012). Additionally, supporting processes of other areas like in Human Resource Management sometimes have to be adopted too in order to ensure that competent employees are engaged and stay in the company.

### **Customization and repeatability**

Neely (2008) finds that servitized companies often suffer from lower profit margins because their costs per employee, their working capital per employee and their total assets per employee are higher. The complexity of services and requirement of specialized staff further lead to increasing costs. One possible solution suggested already by Levitt (1972; 1976) is standardization and the use of economies of scale. However, services are a possible way to offer the customer an individualized solution that meets his specific needs. As customized solutions are expected to be more cost intensive they should be priced accordingly to account for these higher costs. Servitizing companies have to handle this conflict between individualisation and standardization. A possible way to avoid this conflict is the offering of standardized service modules, which can be combined individually by the customer according to his needs (Carlborg & Kindström 2014). Bask et al (2011) offer a framework for modularity and customization and Böttcher & Klingner (2011) provide a method for composing modular B2B services, showing how services can be decollated into separate service modules. An alternative to modularization is the reuse (and maybe adaptation) of already developed services and solution for other customers. The investigated companies emphasize pursuing a more critical line for customization which should be done only if the customer can really be astounded.

### **Service quality**

Since the late 1980s the measurement of service quality and the use of the data generated by service quality surveys have become important in the service sector. Servitizing companies can learn from the experiences of professional service companies to also assess their service quality to improve and professionally manage their service offerings. Various models and instruments are available – among others Grönroos' (1984) service quality model, "SERVQUAL" developed by Parasuraman, Zeithaml & Berry (1988), performance based instruments (Cronin & Taylor 1992) or models adapted to a b2b environment (Vandaele & Gemmel 2004; Gounaris 2005). However, frontline employees of manufacturers play a crucial role in monitoring, keeping and even increasing high service quality and collecting sophisticated feedback.

### **Continuous development of services/service design**

Manufacturing companies that want to offer services have to think which services should be offered and how they are designed. One possible approach is service design thinking (Stickdorn & Schneider 2012). Edvardsson et al (2007) list success factors for new service development like developing a deep understanding of the customer, customer focus, a multi method approach, customer involvement and a holistic approach. Den Hertog et al (2010) developed a framework for capabilities that are necessary for service innovation, emphasizing the importance of dynamic capabilities. Especially in manufacturing companies it is important that resources for new service development are available and that resources are not used solely for operations and product development (Santos & Spring 2013). Rabetino et al (2015) emphasize the importance of developing services for the whole life cycle of the accompanying product. The interviewed experts often mentioned the importance of customer co-creation and production as well as intrafirm collaboration for their success. The importance of frontline employees in the development was emphasized as well.

### **5. Implications, limitations and outlook**

Many companies that try to servitize lack necessary capabilities (Martinez et al 2010). The servitization literature offers some recommendations however, prescriptive knowledge is scarce and a holistic audit for companies has not been developed (Baines et al 2017). The developed framework of business dimensions and capabilities influencing servitization success can offer companies guidance concerning what they have to consider, manage and adapt. It gives them the possibility to get an overview of the most important aspects as well as the possibility to analyze one or more dimensions in depth without losing the wider picture.

The framework developed is based on service dominant logic, service science and network theory and system theory. However, other concepts may be also well suited for servitization research. The systematic literature review analyzed articles from three databases. Although article research was augmented by forward- and backward research to include articles that are not indexed in these databases, some relevant articles may not have been included. As the definitions in servitization research are often not clear and different vocabulary is used (Kowalkowski et al 2017), some articles may not be found through the keywords used due to different wording. The qualitative study used managers as key informants. Including the perspectives of other stakeholders like customers and frontline employees can help to get an even broader picture. The developed framework can be used as a basis for the development of a comprehensive audit for companies. This measurement instrument will be developed in the context of a European research project in which the missing quantitative empirical verification of the framework has to be still provided.

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