



Vaasan yliopisto
UNIVERSITY OF VAASA

OSUVA Open
Science

This is a self-archived – parallel published version of this article in the publication archive of the University of Vaasa. It might differ from the original.

Servitization of global service network actors : a contingency framework for matching challenges and strategies in service transition

Author(s): Reim, Wiebke; Sjödin, David R.; Parida, Vinit

Title: Servitization of global service network actors : a contingency framework for matching challenges and strategies in service transition

Year: 2019

Version: final draft (post print, aam)

Copyright Elsevier, Creative Commons Attribution Non-Commercial No Derivatives License

Please cite the original version:

Reim, W., Sjödin D. R. & Parida, V., (2019). Servitization of global service network actors : a contingency framework for matching challenges and strategies in service transition. *Journal of business research* 104, 461-471. <https://doi.org/10.1016/j.jbusres.2019.01.032>

**Servitization of global service network actors – A contingency framework
for matching challenges and strategies in service transition**

Wiebke Reim, David R. Sjödin, Vinit Parida

Abstract

Servitization is a rising trend across manufacturing companies, but it is not achievable without the corresponding transition of the manufacturers' service network. Despite the key role of service network actors, their servitization pathways are not widely understood. Thus, the purpose of this paper is to understand how diverse service network actors approach servitization under varying conditions. Findings are derived from an exploratory case study of eight service network actors for a global construction equipment manufacturer. The analysis reveals that service network actors face major capability- (lack of service provision capabilities, lack of service provision vision) and market-related challenges (unfavorable local conditions, low customer service readiness) that hinder their transformation. The analysis also reveals four unique servitization strategies (service extension, service benchmarking, digitalization, customer co-creation) that service network actors implement. A contingency framework is proposed to explain which challenges can be matched with which servitization strategies to achieve service network servitization.

Keywords: Servitization; Product-Service Systems (PSS); Distributor; Challenges; Service networks; Ecosystem

Servitization of service network actors – A contingency framework for matching challenges and strategies in service transition

1. Introduction

In today's globally competitive economy, servitization is a commonly applied strategic initiative among manufacturing firms. Servitization refers to the transition from the traditional provision of products and basic support services to the provision of advanced services to generate greater value to global customers (Baines & Lightfoot, 2014; Kindström & Kowalkowski, 2014; Spohrer & Maglio, 2008). Advanced services focus on the assurance of performance or outputs guaranteed by a product (Baines et al., 2013). Examples of advanced services are outcome- or results-based services such as Rolls Royce's "Power by the Hour" offer (Baines et al., 2017). As firms move toward the provision of advanced services, they must increase their efforts to manage the co-creation of value with customers by supporting the service networks that deliver their services in local markets (Baines et al., 2009; Gebauer et al., 2013; Parida et al., 2014; Wallin et al., 2015). Thus, the success or failure of servitization efforts in different markets largely depends on the role of service network partners such as distributors (Durugbo & Riedel, 2013; Parida et al., 2015). Distributors are the local intermediaries that are responsible for customizing and delivering advanced service offerings and co-creating value with local customers. Accordingly, a global provider's transition toward advanced service provision is rarely possible without the support and corresponding transition of service network actors. However, service network actors' servitization creates numerous challenges because it represents a radical transition of the *modus operandi* of these local actors and requires large-scale changes in their operational processes (Gebauer et al., 2013; Story et al., 2017).

Despite the critical role of service network actors, the servitization literature provides scarce insight into their transformation challenges. The literature predominantly focuses on aspects of the manufacturers' transition, such as capability development (Parida et al., 2014), central activities (Hakanen et al., 2016), governance strategies (Sjödén et al., 2019) behavioral implications (Gebauer & Friedli, 2005), business model fit, and capabilities (Ferreira et al., 2013, Reim et al., 2015) are just some examples. However, the challenges that service network actors face differ from those that manufacturers encounter (Durugbo & Riedel, 2013; Hakanen et al., 2016). For example, Parida et al. (2015) affirm that local market and regulatory conditions vary considerably between regions and countries. This variation increases the risk of market failure and burdens distributors with unexpected delivery costs. Indeed, a key challenge for

service network actors is adapting manufacturing firms' servitization efforts to local conditions. Yet knowledge of such servitization-related challenges is not well understood and needs further attention.

Because each servitization journey entails a different set of challenges and opportunities, each service network actor has to choose an individually suited strategic approach to ensure full-scale servitization (Kowalkowski et al., 2011; Zarpelon Neto et al., 2015). Factors that influence the choice of strategic approaches include the combination of customer and market heterogeneity and the heterogeneity in distributors' characteristics (e.g., financial slack, operational skills, and organizational maturity). For example, Cenamor et al. (2017) describe how digitalization or, more specifically, digital platforms help adapt advanced service offerings and increase flexibility in local front-end units (i.e., distributors). Sjödin et al. (2016) also identify mass service customization capabilities, which refer to the ability to integrate knowledge of specific customers' needs and tailor advanced services to meet the needs of a range of customers. This ability is critical to success in advanced service provision. Arguably, these mass service customization capabilities depend heavily on proficient distributors. Yet the literature offers no synthesis of how different service network actors apply diverse strategic approaches to meet the challenges of servitization and become advanced service providers in their local markets.

Based on the previous discussion, this study provides servitization insights that are specific to service network actors. Such insights are largely missing from the servitization literature (Ulaga & Loveland, 2013, Rabetino et al., 2017). Accordingly, the purpose of the paper is to *advance understanding of how service network actors approach servitization under varying conditions*. We present an exploratory case study of multiple distributors of a global advanced service provider within the construction equipment industry. Empirical insights were gathered from eight distributors from different global regions such as Europe, South America, and the Middle East.

Our primary contribution is the development of a contingency framework for the selection of strategies to manage servitization challenges under varying conditions such as a lack of service provision capabilities and low customer service readiness. This study shows that it is important to realize that each service network actor faces unique challenges that must be addressed through an individual mix of servitization strategies such as digitalization and value co-creation with customers to achieve servitization.

2. Theoretical background

2.1 The role of the service network in manufacturers' advanced service provision

Servitization is the focus of an emerging research stream with the potential to provide economic, social, and environmental benefits. The servitization literature typically focuses on the manufacturers' internal implementation processes or the relationship between provider and customer (Barguet et al., 2013; Stroughton & Votta, 2003; Tukker, 2004). In contrast, the role of the service network in manufacturers' servitization efforts has largely been overlooked.

In servitization, service partners such as distributors can be regarded as the intermediaries in an extended value creation network, providing the forward link to customers and the backward link to the manufacturer. Service networks extend beyond organizational boundaries. Customers, suppliers, partners, and distribution networks all work toward value co-creation (Sakao et al., 2009; Parida et al., 2015). However, there are major differences in the servitization journey of the manufacturer and the service partners. Service network actors commonly have even smaller amounts of resources and capabilities to drive business development toward servitization (Durugbo & Riedel, 2013). In addition, geographical heterogeneity calls for a detailed analysis of how to address servitization under specific local conditions (Zarpelon Neto et al., 2015). Applying existing manufacturer servitization theories to distributors would overlook their dependence on manufacturers and the service network while failing to account for local variations and customer characteristics.

The few studies that have focused on service partners recognize that readiness and willingness to offer advanced services to heterogeneous customers go hand in hand with the servitization of service partners (Durugbo & Riedel, 2013; Lockett et al., 2011; Parida et al., 2015). For example, Schweitzer and Aurich (2010) describe the importance of understanding global service networks, which are responsible for delivering advanced services in cooperation with customers throughout the product life cycle. Thus, investigating the role of distributors in servitization is vital to understand not only their role in mediating partnerships between providers and customers (Evans et al., 2007), but also the underlying dynamics that explain distributors' commitment, communication, and distributed work practices in advanced service provision.

Prior studies acknowledge the myriad types of services, ranging from simple consultancy to the outsourcing of entire operational processes (Sjödin et al., 2017; Tukker, 2004). Arguably, transformation toward advanced service offerings places greater strain on service network actors. For example, by offering advanced services such as pay-per-use or functional result contracts, service network actors assume greater risk. But advanced services also provide opportunities for collaborating partners to move up the value-chain, create additional value, and generate greater revenues (Meier et al., 2010; Parida et al., 2015).

2.2 Service network actors' servitization processes

Prior studies have indicated the key role of the service network in manufacturers' servitization processes (Parida et al., 2015), but few studies have actually focused on the challenges and strategies that distributors face in their own servitization processes. Nevertheless, recent provider-centric studies have provided some findings. Service network actors and manufacturers are likely to face some similar challenges in the servitization process. Such challenges include taxing behavioral processes (e.g., risk aversion) and diverging management objectives (Gebauer & Friedli 2005). Studies have highlighted the importance of the external business model fit for a successful transition. Studies have also shown the dynamic nature of the life cycle of the supplier–customer relationship, which needs reciprocal adjustments (Ferreira et al., 2013; Gebauer et al., 2011; Sjödin et al., 2016). Arguably, such adjustments are critical for service network actors. For example, customer segments and needs are likely to vary significantly from country to country. This variation creates major managerial and operational challenges for distributors, which must cope with diverse customer characteristics and incentive models and establish new partnerships with value chain actors (Legnani & Cavalieri, 2010; Pawar et al., 2009). Zarpelon Neto et al. (2015) also highlight local regulations, resource allocation, internal culture, commercial feasibility, and lack of knowledge as major problems that prevent distributors from offering advanced services. Culture is particularly well acknowledged because of its implications for organizations, which include uncertainty avoidance and power distance (Hofstede & Hofstede, 2005). Thus, understanding the risk and complexity associated with the transformation of distributors is an important area of inquiry that is not yet fully understood (Kowalkowski et al., 2011; Reim et al., 2016; Wilson, 1999).

The servitization literature highlights a need to focus on certain strategic initiatives (e.g., capability development and new processes) to handle the transition from transactional to

relationship-based business models, which are required for advanced service provision (Oliva & Kallenberg, 2003). These efforts include revised business model design, network management, integrated development of products and services, and service delivery network management (Parida et al., 2014). Despite not specifically focusing on the service network, Ulaga and Loveland (2013) describe how industrial sales forces handle challenges when transforming from product to service-led growth in manufacturing companies. How well the sales people manage the transition depends on individual variables such as learning orientation, customer service orientation, intrinsic motivation, and visionary thinking. However, the literature fails to offer insight into the strategic approaches that are applied by the service network, which is essential to satisfy customers and correctly perform the necessary services for global service provision. Customer understanding, customer engagement, knowledge management, governance strategies and trust-based interaction are cited as key capabilities in the literature (Bagheri et al., 2014; Kohtamäki and Partanen, 2016; Parida et al., 2015; Reim et al., 2018; Sjödin et al., 2019). This list can be further extended by adding the need for aligned objectives, risk transfer, shared values, and common IT systems across the enterprise (Harrington & Srari, 2012; Lockett et al., 2011; Nohria & Ghoshal, 1994; Sjödin et al., 2016).

In short, the literature primarily focuses on organizational structures, individual factors, and general problems of selling services globally but fails to address the critical role of the service network (Kucza & Gebauer, 2011). Accordingly, there is a need for studies that consider the full variety of global service network challenges and enrich our understanding of which strategic choices service network actors must make to successfully provide advanced services given their individual conditions (Durugbo & Riedel, 2013; Hakanen et al., 2016; Kowalkowski et al., 2011; Tabibzadeh and Wireman, 2003). Our study thus focuses on *advancing the understanding of how service network actors manage servitization*.

3. Research methods

3.1 Research approach and case selection

This study consisted of an exploratory multiple case study of eight distributors for a global Swedish manufacturing company (hereinafter Alpha). These distributors were actively pursuing a servitization strategy. We chose this research design because there is currently scant knowledge of how service networks transform their focus to offer more advanced services. Such knowledge is lacking because the literature focuses only on manufacturers' servitization. Therefore, data from rich, real-life cases are needed to identify new aspects and phenomena

(Yin, 2003) such as the specific challenges that distributors face during servitization and the strategies that they can apply to meet these challenges. Multiple case studies are well suited to new research topics where new perspectives are sought and where little knowledge of a complex phenomenon is available (Eisenhardt, 1989). Accordingly, these multiple case studies provide multifaceted, complementary insights into service network actors' servitization by allowing us to compare and contrast cases.

Alpha is a global provider of construction equipment. Alpha employs more than 14,000 people, has product and service revenues of 6.28 billion USD, and operates through internal and independent distributors. Depending on the distributor's maturity, additional services are offered to customers to complement or replace the sale of machines. These services include maintenance contracts, extended warranties, operation optimization (reduction of fuel consumption and operator training), leasing/renting, proactive maintenance, and advanced services such as pre-agreed availability or total care agreements. Thus, not all distributors offer the same services because servitization depends heavily on the skill and competence level of the distributor.

In collaboration with Alpha, we used purposive sampling to identify eight distributors that were relevant to our understanding of both distributor-specific challenges and strategies for meeting these challenges. Distributor selection was based on several criteria. First, building on Raddats and Kowalkowski's (2014) categorization of servitization types into enthusiasts, pragmatists, and doubters, we selected distributors based on their maturity in terms of offering advanced services. We used this criterion to identify the variation of existing challenges and observe the actions taken by distributors that had already addressed certain challenges. Specifically, we selected distributors that had initiated a servitization transformation but were at different stages of realizing this transformation because we expected maturity to affect the choice of strategy. Second, we included distributors from different global regions to capture as much regional variation as possible. Finally, we included both internal and independent distributors to analyze the effect of owner structure on servitization. Internal distributors are required to follow manufacturers' recommendations more strictly, whereas independent distributors have more freedom to try their own initiatives while still following manufacturers' key requirements. Although the differences between these two distributor categories enrich the study's findings, they may negatively influence generalizability. The selected cases thus offer a suitable setting for developing new knowledge of the servitization of global distributors. Descriptive data for each case appear in Table 1.

<Insert Table 1 about here>

3.2 Data collection and analysis

Data collection was primarily qualitative. Data were gathered from semi-structured and open-ended interviews with key informants. Informants had knowledge of the servitization transformation of the distributor where they worked. For each distributor, we interviewed the corresponding regional manager at Alpha. We also interviewed people at Alpha's strategic (global) level. Doing so provided several perspectives regarding distributor transition. We interviewed 27 respondents from the distribution network (12), Alpha's regional management (7), and Alpha's strategic (global) level (8). Accordingly, three to six respondents corresponded to each distributor. Respondents were actively involved in service development and operation for Alpha or for their part of the distribution network. Thus, we selected knowledgeable informants at strategic and operational levels. These informants viewed the servitization process from diverse perspectives. We thereby substantially reduced the bias in the data collection (Eisenhardt & Graebner, 2007). Respondents also varied in terms of age, years in employment, academic training, and position.

The interview guide was designed to explore the distributors' servitization transformation experience. For example, questions centered on distributors' challenges, possible solutions, strategies, and readiness for advanced service provision. Questions about the current service offers and future servitization plan allowed us to analyze the maturity and strategies in service provision across global settings. Because the study covered respondents from different levels within Alpha as well as internal and independent distributors, we asked questions about the manufacturer–distributor relationship and questions concerning the use of telematics and other IT tools. Such tools are crucial for advanced service provision. The face-to-face interviews lasted between 60 and 90 minutes. Interviews were recorded and transcribed. These recordings and transcriptions provided the basis for the analysis. Finally, secondary data such as annual reports, project documents, and operational process descriptions and tools (e.g., value calculators) were collected and reviewed.

The data analysis was based on open coding content analysis. Headings (i.e., codes) were written into the transcriptions based on the terms and content they addressed (Elo & Kyngäs, 2008). The codes were combined into first-order categories, which described the experiences of respondents in their own words. The first-order categories were analyzed for links and patterns and then grouped into theoretically distinct groups (second-order themes). Figure 1

shows an example of how the quotations were grouped into first-order categories and were then further aggregated. Finally, we aggregated the second-order themes into overarching dimensions of challenges and specific strategies to meet these challenges (Nag et al., 2007). Figure 2 depicts the overall data structure of first-order categories, second-order themes, and aggregate dimensions. Preliminary results were shared at several company presentations and workshops to provide validation and further develop the emerging findings.

<Insert Figure 1 about here>

4. Empirical findings

When the distributor's role is limited to the sale of the product, operations seem homogeneous, and distributors vary only by size. In contrast, when distributors seek to increase the service side of their operations, diversity among global distributors and service providers is vast, and the prerequisites for successful advanced service provision differ greatly. Based on our analysis, a data structure was developed to represent a summary of our findings. Figure 2 depicts the data structure. The data structure emerged from our analysis of respondents' statements and reports of experiences in the distributors' shift toward advanced service provision. Our findings indicate the crucial importance of understanding the different challenges that hinder distributors' implementation of advanced services. However, the distributors, especially the most successful ones, had developed strategies to cope with challenges and strategically address the servitization process.

We elaborate on our findings in the following sections. First, we discuss the challenges, which were related to either distributor capabilities or the market. Afterwards, we describe the strategic approaches that were most commonly applied to successfully meet these challenges.

<Insert Figure 1 about here>

4.1 Challenges impeding the servitization of service network actors

Our findings indicate two types of challenges in the shift toward advanced service provision: service network actor capability-related challenges and service network actor market-related challenges. These challenges strongly affect the service network actor's potential to successfully offer advanced services.

4.1.1 Service network actor capability-related challenges

To successfully offer advanced services, the service network actor needs new competencies and resources that must be either developed or gleaned from external sources. A typical example of a **lack of service provision capabilities** is the difficulty that many distributors face in *employing well-trained technicians*. Becoming a reliable service provider is impossible without the capacity to fulfill the promised services. The regional manager for the Middle East expressed this idea perfectly:

The distributor is lacking about 15 technicians for providing the standard services promoted by the manufacturer.

Another challenge is the need for advanced skills to perform the *price and data analysis* that advanced services require. When sellers are unable to conduct price and data analysis or they lack confidence in price setting, they avoid selling these contracts. The German distributor explained this situation:

The contracts need to be calculated manually by one person in the central team, and it takes time until the calculation comes back to the sales person, and that is not convenient.

The UK distributor noted that analyzing error codes from its machines is laborious because the distributor lacks this internal competence:

We get an alarm through from Sweden for the machine by an email ... I check the information in our system to double check before we start looking into it ... Then I put a case in the system. Once I have raised a case, we will email the nearest depot and ask them to contact the customer.

The higher risk linked to the transition to advanced services also becomes a challenge when the distributor *has a low ability to identify and mitigate risks* that relate to the services themselves. Distributors that depend on the risk coverage of the manufacturer lag behind. They only provide the services that are required by the manufacturer and that are fully backed up. The advanced distributor from the Netherlands described this situation:

We take the risk ourselves ... But I can imagine for small distributors, it could be good to have a little bit more support because for them it's more risk.

Depending on competencies from outside the company hinders the efficient integration of new services into the company's own operations.

Challenges do not only exist at the operational level; they are also prevalent at the strategic level when servitization is not prioritized. This **lack of service provision vision** becomes obvious when the distributors have a *weak understanding of the potential of advanced services* and prioritize business as usual over aiming for servitization. According to one global product manager:

Many of our distributors worldwide are not even convinced that normal maintenance contracts are a good idea, or they are not even mature enough to manage or sell them.

This understanding is critical to drive the development of more advanced service offers. When this understanding is lacking, however, it is often also linked to the challenge of a *low financial readiness to invest in advanced services*. One of the regional managers for central Europe described the distributor's hesitance:

It can be, for example, the unwillingness in doing investments because some of the services might need investments in equipment or investments in hiring or adding new people to the organization. The distributors have to take care of these investments.

When there is a lack of willingness to invest in services, distributors are far from being able to offer advanced services. A significant allocation of strategic and financial resources is necessary; otherwise, successfully implementing advanced services will prove impossible.

4.1.2 Service network actor market-related challenges

Distributors operate in highly different markets and geographic locations. This global spread can create challenges for the servitization process. **Unfavorable local conditions** hinder successful servitization. In some global regions, *digitalization functionalities are restricted by local regulations* that hinder advanced service implementation. The regional manager for central Europe described the differences in regulation:

In Germany, for example, when it comes to telematics, you have quite a lot of hard work to ensure data security laws in Germany. While, in Holland, it's not the same; it's not that hard. It was easier to launch telematics from the start. Also, the thinking of the customers is different in these two countries.

When laws and regulations challenge the implementation of advanced services, the distributors also hesitate to adopt such services.

Another crucial challenge is the *geographical spread of the key customer base*. The regional manager for the Middle East explained this very simply:

It is almost pointless trying to sell a maintenance contract in Sudan for servicing a machine when you have to make a 2000km round trip just to do it.

The same is true of Australia, where certain services are not feasible because of distance:

Generally, servicing machines that are far away requires accommodation because the engineers that travel a certain distance or certain time, due to union and safety regulations, have to stop, so the travel and accommodation all starts adding up, and it becomes expensive to carry out service agreements.

In contrast, a geographically concentrated region such as the Netherlands allows for easier service provision.

Therefore, the distance to customers has a major effect on the ability and feasibility to implement certain types of advanced services. Additional regional differences in the availability of *alternatives to authorized distributors* affect the power of the distributors in the aftermarket and their ability to sell advanced services easily. The distributor in Australia explained this problem:

The customers have alternatives in Australia like local mechanics or their own mechanics to work for, so it'll be difficult.

The regional manager for Cuba described the situation differently:

The customers don't have any influence; they can't buy parts anywhere else. It's quite easy to sell the contracts in Cuba.

Like the geographic location and conditions, the customer base can also raise challenges. For example, a **low customer service readiness** is a critical challenge when there are *conservative attitudes to buy services in the market*. Not all cultures are open to service agreements, and attitudes can pose a major challenge for distributors to successfully implement service provision. In addition, it is clear that different customers have different preferences for how to finance investments, different mindsets towards buying advanced services, and different skills and processes for evaluating and procuring advanced service offers. All these represents a challenge. The distributor from the UAE explained customers' unwillingness to adopt advanced services:

Not everybody wants the highly sophisticated piece of equipment and the telematics that go with it; they just want a basic machines, and [Alpha] needs to understand that as it is a very technologically advanced organization, but they also need to design the products to suit the markets, to make them more accessible, to do away with the stuff that people don't want or need, and they are a little guilty of getting too advanced and dealing with all the end users in the same way. There are lots of guys here that can't read or write. We've got to remember that.

Finally, customers' *interest to meet safety and sustainability benefits* varies considerably. If customers do not care, then the benefits of advanced service provision for safety and the environment will not attract them. The distributor from the UAE clearly illustrated this point:

Some of the customers don't care about fuels because it's so cheap and don't care about the operators because they are paying no money at all, and they don't care about safety and all the environments involving all the core values of [Alpha].

In contrast, the Swedish distributor emphasized the value and importance of safety issues: "When it comes to safety, Scandinavia has come quite far." This statement also implies that they see the value added of services that improve safety and sustainability. In conclusion, every distributor faces specific challenges that vary significantly in terms of how they constrain distributor servitization.

4.2 Strategic approaches to service network servitization

We identified four strategies: *digitalization*, *service benchmarking*, *service extension*, and *customer co-creation*.

4.2.1 Digitalization strategy

The digitalization strategy has high potential to meet certain challenges when used appropriately. First, digitalization is important for *building the ability and necessary resources to use data analytics*. Tracking machines with telematics creates endless opportunities if the data are analyzed and used correctly. As the distributor from the UAE stated:

The area of focus I am going on with is telematics... It is an excellent tool both for the dealer and for the customer, and that is something that now we really need to focus on because all the future uses are almost endless.

Besides the competencies that must be ensured, a digitalization strategy helps *reorganize delivery processes through digital platforms*. For the distributor from the Netherlands, a major step was restructuring the organization around a centralized service center that manages all issues that relate to services, including invoicing and administrative functions. This centralization sends a message regarding the importance of services and the focus on services throughout the company. A key to successful centralization was the development of a software planning tool:

We introduced a system to control all these, and it's called mobility. Mobility system means that we have advanced planning tools centralized and you can look all over Holland. You can see the vans, where they are driving, the states of the engineers—are they sitting, available, driving, or whatever?—and when the customer is calling, we can send the right engineer with the parts that he has in the van directly to the customer; so less travelling time, good control of the engineers, and strong communication with the customer.

A digitalization strategy is essential to be able to provide advanced services efficiently and to harness the full potential of servitization.

4.2.2 Service benchmarking strategy

The focus on advanced service provision is new to all the distributors, so they need to acquire the relevant knowledge for successful service provision. Benchmarking is very important to achieve this. *Building a strong relationship with the manufacturer to capture service knowledge* is a key component of this strategy. The distributor from the UAE noted that reporting on the needs of the distributors is important:

We have got a good enough relationship with the people in [Alpha] to get back to the product development when we need to. In our case, the people come down here and sit here, spend few days with us to understand the business with us.

Thus, it is important for distributors to use the manufacturer's experience and support to strategically address servitization. As well as working with the manufacturer, *cooperation with other distributors/partners* is important so that distributors can use other distributors/partners' experience or develop certain parts of the servitization process together. For the German distributor, this close contact is very important:

We have a close communication with our Swedish colleagues and regular meetings with the distributor from the Netherlands ... This is very important for me; there are always small ideas for some details and some bigger ideas for things that could be changed fundamentally.

However, there is also potential for partnerships with third parties, which allow distributors access to new competencies.

4.2.3 Service extension strategy

Developing existing competencies and operations is a promising strategy for becoming a successful advanced service provider. One example of how to do so is to *build on the existing leasing/rental business and other services*. "All the machines on our rental fleet have maintenance contracts on them," explained the distributor from the UAE. The rental business could be a perfect setting to test more advanced service offers and then introduce them to the regular business.

Additionally, some distributors have their own service offers, which are independent of the manufacturers' overall service strategy. These distributors can *integrate service bundles into preexisting contracts*. One distributor explained what this should look like:

The dealer rolls out bundles as one package, made up of various components from [the manufacturer] and maybe some components not from [the manufacturer], also bringing in things like lubricants, drivers, and fuel. The distributor would bundle everything into one package for the end user.

This approach shows that providing the most advanced services is most beneficial when looking beyond the manufacturers' service templates and creating customized offers.

4.2.4 Customer co-creation strategy

Customers play an important role in the successful provision of advanced services. Customers need to see clear benefits before they are willing to engage in a service contract. A *focus on key customer segments and core processes*, for example, makes it much easier to

convince customers of the benefits of taking responsibility for product availability. The regional manager for northern Europe explained this point:

I know as long you have projects with deadlines here there is always an intention with availability support. Because if you cross a deadline, you will get penalized with a lot of money.

The other part of the customer co-creation strategy is to *identify lead customers that are interested in co-creation*. It is important to be aware of the services that the customers demand, the services that would benefit them, and the services they are willing to develop and pay for. The distributor from the Netherlands explained how they recognized their customers' demands regarding services:

The big fleet owners are very much on [advanced services]; they want to cover everything that they know. For example, in waste handling, the operators are not those educated ones, so they damage a lot. So they want to know exactly about the running costs and life cycle costs for the machine.

This statement shows that customers are important drivers of advanced service provision and provide an extremely valuable resource in this process.

5. Contingency framework for the servitization of service network actors

The cross-case analysis of service network actors provides detailed insights into the unique approaches applied by distributors to achieve servitization. The analysis provides evidence for a contingency argumentation, where certain strategies help service network actors meet certain challenges more effectively. Thus, there is no one optimal strategy; strategy selection is contingent upon the internal and external situation of the service network actors such as the specific challenges they face (Donaldson, 2001; Thompson, 1967).

To empirically validate these insights, a pattern-matching technique was used to match service network actors' servitization conditions with four servitization strategies. Table 2 provides an overview of pattern matching between service network challenges and servitization strategies. The number of asterisks (*) indicates how well a certain strategy meets each challenge. In addition, the table indicates different service network types based on the strategies applied to meet specific challenges. The following paragraphs outline the key implications of this analysis.

<Insert Table 2 about here>

The match making shows that the digitalization strategy has considerable potential to address a lack of service provision capabilities and issues that relate to unfavorable local conditions. Most service network actors have invested in new IT-related skills. This investment increases their ability to provide services such as effectively offering services to customers located at a considerable distance. For example, remote monitoring can inform customers that a machine will shortly require an oil change, and a repair kit can be sent to equip customers with the necessary parts to perform this change themselves. However, the digitalization strategy exerts a limited influence on building a service provision vision or improving customer readiness for advanced services because promoting the potential of advanced services must focus on personal communication and interaction, which require other strategic approaches.

The customer co-creation strategy is useful to develop a service provision vision. Driven customers that demand advanced services will force the distributor to focus more on the development of advanced services. Furthermore, customer readiness can be improved by giving customers the chance to become actively involved in the development of the offer rather than losing control by entering predefined advanced service agreements. Unfavorable local conditions can also be overcome through co-creation with customers. For example, the distributor can use remote controls to track the machine's condition. If problems arise, the customer performs minor repairs under the guidance of the distributor. However, a lack of service provision capabilities will scarcely decrease under this strategy, although there might be a chance to benefit from customers' knowledge.

The service benchmarking strategy also supports improvements in service provision vision by benchmarking specific examples of successful servitization. Success stories, as well as promotion and training by the manufacturer or other service network actors, usually convince the distributor to prioritize advanced services. For example, at the annual distributor conference, best practices and inspiration are shared across the network to aid everyone's development. Also, a lack of service provision capabilities can be reduced substantially by learning from other service network actors in the ecosystem. However, low customer readiness and unfavorable local conditions are difficult to address with the knowledge absorption strategy. Local variations that are unique to each distributor must be dealt with individually.

Finally, the match making shows that the service extension strategy provides a useful way of increasing low customer readiness for advanced services. Customers that are familiar with simpler advanced services will be more receptive to more advanced services, so the distributor needs to build on existing competencies. For example, rental fleets are usually operated under

maintenance contracts. These contracts could be transformed into total care solutions, which would constitute a more advanced service. Both a lack of service provision capabilities and a lack of service provision vision can be addressed by the service extension strategy because confidence from the existing business encourages the goal of more advanced service provision. Problems with local conditions can only be mitigated by considering the local circumstances during the advanced service development process.

The analysis of matching challenges and strategies indicates that no single optimal servitization strategy can be adopted to meet all challenges. Furthermore, service network actors typically face more than one challenge, which means that several strategies must be combined to achieve the best outcome. Thus, a contingency perspective is needed to enable the servitization of service network actors. Figure 3 presents a contingency framework that summarizes the key logic of our findings. The framework indicates that the combinations of these strategic approaches could lead to either a strategy-challenge fit or misfit in terms of how well the selected strategies cope with specific challenges or sets of challenges. For example, the digitalization strategy enables service network actors to offer advanced services to remote customers, but this approach benefits considerably from co-creating value with customers to create a service provision vision. Consequently, a fit between the challenge and the strategy used to address that challenge is achieved. Another situation that represents a strategic fit would be to apply a service extension and service benchmarking strategy to build service provision capabilities and develop a service provision vision. However, when challenges and strategies are not properly matched, it results in a misfit. For example, service benchmarking and customer co-creation are not the best strategies to overcome a lack of service provision capabilities and unfavorable local conditions. Based on the contingency assessment, the digitalization and service extension strategies are more suited to meeting these challenges. Furthermore, as our respondents indicated, a key source of mismatch is the use of only one strategy to address multiple challenges or the adherence to the same strategy even when challenges change. Indeed, both respondents from the service networks actors and regional managers from Alpha suggested that such a mismatch between challenge and strategy could be the reason for poor service network servitization in certain markets.

<Insert Figure 3 about here>

While this framework offers important insights for the servitization literature, it also has strong practical potential if applied by servitizing network actors. For example, if the service network actor is a doubter with low maturity (e.g., the distributor from Argentina), the framework could be used to analyze the actor's challenges and identify that they have a major lack of service provision vision and a lack of service provision capabilities. Applying the contingency framework would suggest that a service benchmarking strategy would be the best match for these challenges because the advanced service offers need not be developed alone but can instead be learnt from others' initiatives. Doing so would reduce the number of technicians needed for the service development and would simplify the learning process through benchmarking.

To take another example, the distributor from Australia is a pragmatist that faces major challenges due to the unfavorable local conditions characterized by long distances from customers. To overcome this challenge, the best strategy is digitalization because it enables the implementation of advanced services based on remote monitoring. By co-creating these offers with customers, it is possible to achieve service network servitization also under these conditions, even when the offers may differ because of individual challenges. The distributor from the Netherlands, a real enthusiast, faces the challenge of a lack of service provision capabilities because it struggles to find skilled technicians. According to the contingency framework, a digitalization strategy would help make service provision more efficient by reducing the required number of technicians. In addition, learning from others and the further development of existing services should be considered to reduce the efforts needed to develop more advanced services.

These examples illustrate how the best strategy does not depend on the maturity of the service network actor but rather on the individual conditions where the actor operates. A contingency assessment is therefore required. Every distributor needs to develop its own unique servitization strategy to meet its specific challenges. To do so, novel insights are needed to shed light on the types of strategic approaches available as well as a deeper understanding of servitization-related challenges.

6. Conclusion

Prior studies have primarily focused on describing how manufacturers undergo servitization while largely overlooking the crucial role of service network actors as the intermediaries that facilitate the servitization relationship between manufacturers and global customers (Barquet

et al., 2013; Parida et al., 2015). Consequently, service network actor servitization differs vastly from manufacturer servitization, primarily because their individual conditions (e.g., geography, capabilities, and customers) affect their servitization paths in relation to the manufacturer's overall service ambition. Placing the service network actor at the center of the analysis provides a unique vantage point to observe how manufacturers' servitization efforts will be incomplete unless they are aligned with similar efforts by the service network (Hakanen et al., 2016; Kowalkowski et al., 2011; Kucza & Gebauer, 2011; Zarpelon Neto et al., 2015). To this end, this study provides insights into the challenges and strategic approaches of the servitization of service network actors. The empirical findings from the study are summarized in the contingency framework presented herein. Most importantly, the study shows that each service network actor's strategic choices are interlinked with their individual situation and market conditions. Accordingly, this study has numerous theoretical and managerial implications.

6.1 Theoretical implications

This study primarily provides theoretical contributions to the emerging servitization literature. The first contribution is to extend the servitization transformation focus beyond the provider and customer views (Baines et al., 2017; Hakanen et al., 2016) by providing insights from service network actors. Indeed, the service network represents the missing link between the manufacturer and its customers. Therefore, service network actors are vital in the implementation of advanced service businesses. The manufacturer's transition toward advanced service provider depends largely on the successful transition of the whole ecosystem. Yet prior studies have assumed that the service strategies of service network actors and manufacturers are inheritably aligned, despite a lack of empirical evidence to support this assumption (Ferreira et al., 2013; Oliva & Kallenberg, 2003). The heterogeneity of global markets means that service network actors must make diverse strategic choices based on their individual situations and conditions. Thus, consistent with a handful of studies (Kowalkowski et al., 2011; Parida et al., 2015; Zarpelon Neto et al., 2015), this study also highlights the need for a deeper understanding of the role of service network actors in the servitization of the manufacturing industry.

Second, this study contributes by identifying and conceptualizing challenges that service network actors face when attempting to offer advanced services. These challenges differ vastly from those that large manufacturers face during their servitization transformation (Parida et al., 2014; Zarpelon Neto et al., 2015). Empirical analysis reveals challenges related to the ability of the service network actor to provide advanced services. These internal challenges include a

lack of service provision capabilities and a lack of service provision vision, which directly affect the readiness and willingness of service network actors to actively provide advanced services. The empirical analysis also reveals market-related challenges that service network actors face regarding service provision. Such challenges emerge outside the organizational boundaries, which means the service network has limited control over managing their negative effects. For example, unfavorable local conditions, legal policies, and low customer readiness are external and uncontrollable from a service network actor's perspective. The mapping of challenges in service network servitization provides a rational understanding of why manufacturing firms' efforts to offer advanced services to global customers fails or faces high resistance from the service network.

Third, this study contributes to the servitization literature by identifying four servitization strategies that can be matched with specific challenges or combinations of challenges. The prior literature acknowledges that market heterogeneity makes developing customized strategic responses critical (Ulaga & Loveland, 2013; Zarpelon Neto et al., 2015). However, we still know little about which approaches are relevant and under which conditions. For example, the proposed digitalization strategy focuses on data analysis and the use of digital platforms. The service benchmarking strategy uses the relationship with the manufacturer and supports cooperation with other actors to access relevant knowledge. The service extension strategy builds on the development of the existing business and useful abilities for transitioning toward advanced services. Finally, the customer co-creation strategy focuses on using insight from lead customers or customers that have critical processes and that have high incentives to co-create successful service solutions. The process of identifying and decoding these service network actor servitization strategies provides evidence of how service actors can practically manage heterogeneity to achieve servitization.

Fourth, the findings provide empirical evidence of the effectiveness of proposed strategies in addressing service network-specific challenges. Through cross-case analysis, support for matching strategies with challenges is advocated. For example, the digitalization strategy is appropriate to improve a lack of service provision capabilities and to overcome unfavorable local characteristics such as physical distance. In contrast, the service benchmarking strategy is promising when the service network actor lacks a service provision vision and a willingness to provide advanced services and needs stimulation from other actors. In addition, matching strategies with challenges can result in either a fit or a misfit. Our findings also show that the choice of strategy does not depend on the distributors' maturity (Raddats & Kowalkowski,

2014) but rather on the individual conditions that distributors face during their servitization journey. This finding shows the importance of analyzing each actor's unique conditions and needs with the goal of developing an individually adapted strategy for the servitization process of each service network actor.

6.2 Managerial implications

This study has managerial implications not only for senior management within service network organizations, but also for manufacturing companies. Any manager who is responsible for developing advanced service offers within a service network actor must identify the unique challenges that the actor faces. Each service network actor must address different internal conditions and market-specific local conditions that translate into individual barriers to servitization. The proposed set of strategic approaches creates opportunities to cope with challenges and learn how other service network actors have used certain strategies to become successful providers of advanced services. However, each service network actor must develop its own servitization strategy. This strategy will be determined by matching challenges with strategic approaches. Combining the digitalization strategy, in particular, with the other strategies can lead to major advances in the servitization process.

Managers who are responsible for developing the manufacturer's advanced service offers must appreciate that every service network actor is unique. This heterogeneity in the network means that the servitization process must be aligned with the maturity and readiness of each actor. Therefore, understanding that each service network actor must be treated differently depending on its requirements and characteristics is crucial. However, service network actors are influenced by more than just their own characteristics: The customers they serve and the overall market conditions contribute substantially to differences between them. Crucially, the most advanced service network actors are a highly valuable resource in the development of advanced service offers. The manufacturer must build on their experience to help other service network actors' transition toward advanced service provision. Overall, this insight will substantially improve the manufacturer–service network relationship because it provides a better understanding of the need for an individual servitization strategy for each service network actor.

6.3 Limitations and future research

Although our findings contribute to the emerging servitization literature, this study has certain limitations. These limitations, which provide a starting point for future research, should be considered when interpreting the findings. First, by studying distributors from the global distribution network of a company that is currently developing its advanced services, we were able to gather insights from these distributors' rich experience in service offerings and perform cross-case analysis between similar entities. Nevertheless, the insights are limited to eight cases that belong to the same manufacturer's distribution network within a single industry. Therefore, the challenges and strategic approaches might be specific to the heavy construction equipment industry. Scholars should conduct further qualitative or quantitative empirical studies, preferably in other industries and other service network actors, to validate or extend our findings. Second, this study identifies challenges and the strategic approaches that can be adopted to address these challenges. Our list of challenges and strategies may be incomplete, so the matching of challenges with strategies requires further attention in future research. In addition, creating a weighting to determine the most critical challenges and optimal strategic approaches would aid advanced service implementation in the future.

References

- Bagheri, S., Kusters, R. J., & Trienekens, J. (2014). Business-IT alignment in PSS value networks: a capability-based framework. In *Working Conference on Virtual Enterprises* (pp. 273-284). Springer Berlin Heidelberg.
- Baines, T., & W. Lightfoot, H. (2014). Servitization of the manufacturing firm: Exploring the operations practices and technologies that deliver advanced services. *International Journal of Operations & Production Management*, 34(1), 2-35.
- Baines, T. S., Lightfoot, H. W., Benedetti, O., & Kay, J. M. (2009). The servitization of manufacturing: A review of literature and reflection on future challenges. *Journal of Manufacturing Technology Management*, 20(5), 547-567. doi:10.1108/17410380910960984
- Baines, T., Lightfoot, H., Smart, P., & Fletcher, S. (2013). Servitization of manufacture: Exploring the deployment and skills of people critical to the delivery of advanced services. *Journal of Manufacturing Technology Management*, 24(4), 637-646.
- Baines, T., Ziaee Bigdeli, A., Bustinza, O. F., Guang Shi, V., Baldwin., & Ridgway, K. (2017). Servitization: revisiting the state-of-the-art and research priorities. *International Journal of Operations & Production Management*, 37(2), 256-278.
- Barquet, A. P. B., de Oliveira, M. G., Amigo, C. R., Cunha, V. P., & Rozenfeld, H. (2013). Employing the business model concept to support the adoption of product-service systems (PSS). *Industrial Marketing Management*, 42(5), 693-704.
- Cenamor, J., Sjödin, D. R., & Parida, V. (2017). Adopting a platform approach in servitization: Leveraging the value of digitalization. *International Journal of Production Economics*, 192, 54-65.
- Donaldson, L. (2001). *The contingency theory of organizations*. Sage.
- Durugbo, C., & Riedel, J. C. (2013). Readiness assessment of collaborative networked organisations for integrated product and service delivery. *International Journal of Production Research*, 51(2), 598-613.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of management journal*, 50(1), 25-32.
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107-115.
- Evans, S., Partidário, P. J., & Lambert, J. (2007). Industrialization as a key element of sustainable product-service solutions. *International Journal of Production Research*, 45(18-19), 4225-4246.
- Ferreira, F. N. H., Proença, J. F., Spencer, R., & Cova, B. (2013). The transition from products to solutions: External business model fit and dynamics. *Industrial Marketing Management*, 42(7), 1093-1101.

- Gebauer, H., Gustafsson, A., & Witell, L. (2011). Competitive advantage through service differentiation by manufacturing companies. *Journal of business research*, 64(12), 1270-1280.
- Gebauer, H., & Friedli, T. (2005). Behavioral implications of the transition process from products to services. *Journal of Business & Industrial Marketing*, 20(2), 70-78.
- Gebauer, H., Paiola, M., & Saccani, N. (2013). Characterizing service networks for moving from products to solutions. *Industrial Marketing Management*, 42(1), 31-46.
- Hakanen, T., Helander, N., & Valkokari, K. (2016). Servitization in global business-to-business distribution: The central activities of manufacturers. *Industrial Marketing Management*.
- Harrington, T. S., & Srari, J. S. (2012). Defining product-service network configurations and location roles: a current and future state analysis framework for international engineering operations. *International Journal of Product Development*, 17(3-4), 228-253.
- Hofstede, G. H., & Hofstede, H. G. J. (2005). *Cultures and organizations: software of the mind*. McGraw-Hill, New York, USA.
- Kindström, D., & Kowalkowski, C. (2014). Service innovation in product-centric firms: A multidimensional business model perspective. *Journal of Business & Industrial Marketing*, 29(2), 96-111.
- Kohtamäki, M., & Partanen, J. (2016). Co-creating value from knowledge-intensive business services in manufacturing firms: The moderating role of relationship learning in supplier–customer interactions. *Journal of Business Research*, 69(7), 2498-2506.
- Kowalkowski, C., Kindström, D., & Brehmer, P. O. (2011). Managing industrial service offerings in global business markets. *Journal of Business & Industrial Marketing*, 26(3), 181-192.
- Kucza, G., & Gebauer, H. (2011). Global approaches to the service business in manufacturing companies. *Journal of Business & Industrial Marketing*, 26(7), 472-483.
- Legnani, E., & Cavalieri, S. (2009, September). Exploring the causal relationships of KPIs in after sales service systems. In *IFIP International Conference on Advances in Production Management Systems* (pp. 660-668). Springer, Berlin, Heidelberg.
- Lockett, H., Johnson, M., Evans, S., & Bastl, M. (2011). Product service systems and supply network relationships: An exploratory case study. *Journal of Manufacturing Technology Management*, 22(3), 293-313.
- Meier, H., Roy, R., & Seliger, G. (2010). Industrial product-service systems--IPS2. *CIRP Annals*, 59(2), 607-627.
- Nag, R., Corley, K. G., & Gioia, D. A. (2007). The intersection of organizational identity, knowledge, and practice: Attempting strategic change via knowledge grafting. *Academy of Management Journal*, 50(4), 821-847.
- Nohria, N., & Ghoshal, S. (1994). Differentiated fit and shared values: Alternatives for managing headquarters-subsiary relations. *Strategic Management Journal*, 15(6), 491-502.
- Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International journal of service industry management*, 14(2), 160-172.

- Parida, V., Sjödin, D. R., Lenka, S., & Wincent, J. (2015). Developing global service innovation capabilities: How global manufacturers address the challenges of market heterogeneity. *Research-Technology Management*, 58(5), 35-44.
- Parida, V., Sjödin, D. R., Wincent, J., & Kohtamäki, M. (2014). Mastering the transition to product-service provision: Insights into business models, learning activities, and capabilities. *Research-Technology Management*, 57(3), 44-52.
- Pawar, K. S., Beltagui, A., & Riedel, J. C. (2009). The PSO triangle: designing product, service and organisation to create value. *International Journal of Operations & Production Management*, 29(5), 468-493.
- Rabetino, R., Kohtamäki, M., & Gebauer, H. (2017). Strategy map of servitization. *International Journal of Production Economics*, 192, 144-156.
- Raddats, C., & Kowalkowski, C. (2014). A reconceptualization of manufacturers' service strategies. *Journal of Business-to-Business Marketing*, 21(1), 19-34.
- Reim, W., Parida, V., & Örtqvist, D. (2015). Product–Service systems (PSS) business models and tactics—a systematic literature review. *Journal of Cleaner Production*, 97, 61-75.
- Reim, W., Parida, V., & Sjödin, D. R. (2016). Risk management for product-service system operation. *International Journal of Operations & Production Management*, 36(6), 665-686.
- Reim, W., Sjödin, D., & Parida, V. (2018). Mitigating adverse customer behaviour for product-service system provision: An agency theory perspective. *Industrial Marketing Management*, 74, 150-161.
- Sakao, T., Ölundh Sandström, G., & Matzen, D. (2009). Framing research for service orientation of manufacturers through PSS approaches. *Journal of Manufacturing Technology Management*, 20(5), 754-778.
- Schweitzer, E., & Aurich, J. C. (2010). Continuous improvement of industrial product-service systems. *CIRP Journal of Manufacturing Science and Technology*, 3(2), 158-164.
- Sjödin, D. R., Parida, V., & Kohtamäki, M. (2016). Capability configurations for advanced service offerings in manufacturing firms: Using fuzzy set qualitative comparative analysis. *Journal of Business Research*, 69(11), 5330-5335.
- Sjödin, D. R., Parida, V., & Lindström, J. (2017). Barriers and conditions of open operation: a customer perspective on value co-creation for integrated product-service solutions. *International Journal of Technology Marketing*, 12(1), 90-111.
- Sjödin, D. R., Parida, V., & Wincent, J. (2016). Value co-creation process of integrated product-services: Effect of role ambiguities and relational coping strategies. *Industrial Marketing Management*, 56, 108-119.
- Sjödin, D.R., Parida, V. and Kohtamäki, M. (2019) 'Relational governance strategies for advanced service provision: Multiple paths to financial performance in servitizations?' *Journal of Business Research*, *In press*
- Spohrer, J., & Maglio, P. P. (2008). The emergence of service science: Toward systematic service innovations to accelerate co-creation of value. *Production and operations management*, 17(3), 238-246.

- Story, V. M., Raddats, C., Burton, J., Zolkiewski, J., & Baines, T. (2017). Capabilities for advanced services: A multi-actor perspective. *Industrial Marketing Management*, 60, 54-68.
- Tabibzadeh, R., & Wireman, D. (2003). Value chain collaboration. *Aircraft Engineering and Aerospace Technology*, 75(6).
- Thompson, J. D. (1967). *Organizations in action: Social science bases of administrative theory*. Transaction publishers.
- Tukker, A. (2004). Eight types of product-service system: Eight ways to sustainability? experiences from suspronet. *Business Strategy and the Environment*, 13(4), 246-260.
- Tukker, A. (2015). Product services for a resource-efficient and circular economy—a review. *Journal of cleaner production*, 97, 76-91.
- Uлага, W., & Loveland, J. M. (2014). Transitioning from product to service-led growth in manufacturing firms: Emergent challenges in selecting and managing the industrial sales force. *Industrial Marketing Management*, 43(1), 113-125.
- Wallin, J., Parida, V., & Isaksson, O. (2015). Understanding product-service system innovation capabilities development for manufacturing companies. *Journal of Manufacturing Technology Management*, 26(5), 763-787.
- Wilson, T. L. (1999). International after-sales services. *Journal of Global Marketing*, 13(1), 5-27.
- Yin, R. (2003). K.(2003). case study research: Design and methods. *Sage Publications, Inc*, 5, 11.
- Zarpelon Neto, G., Pereira, G. M., & Borchardt, M. (2015). What problems manufacturing companies can face when providing services around the world? *Journal of Business & Industrial Marketing*, 30(5), 461-471.

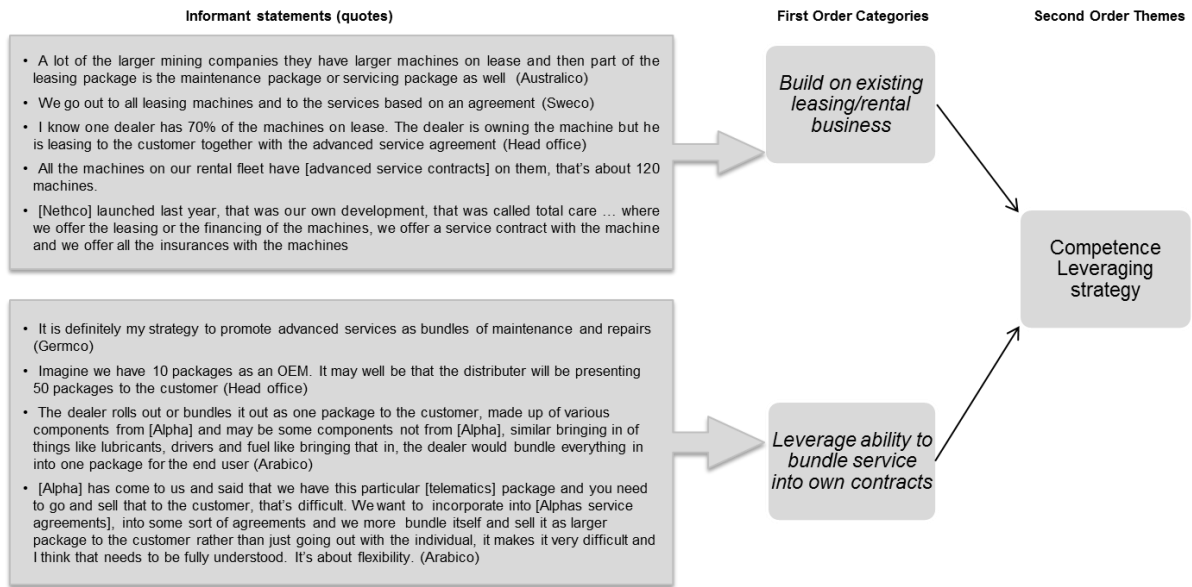


Figure 1: Data analysis example

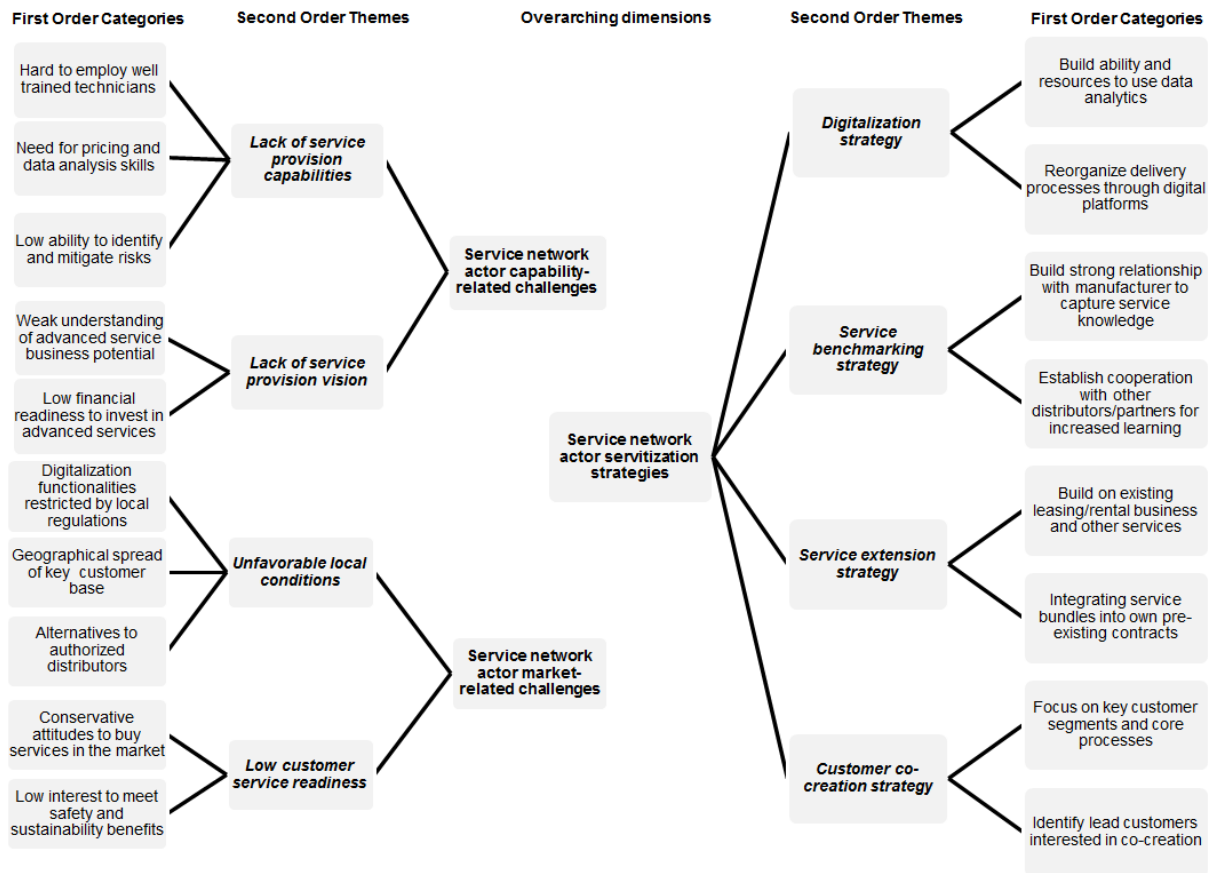


Figure 2. Data structure

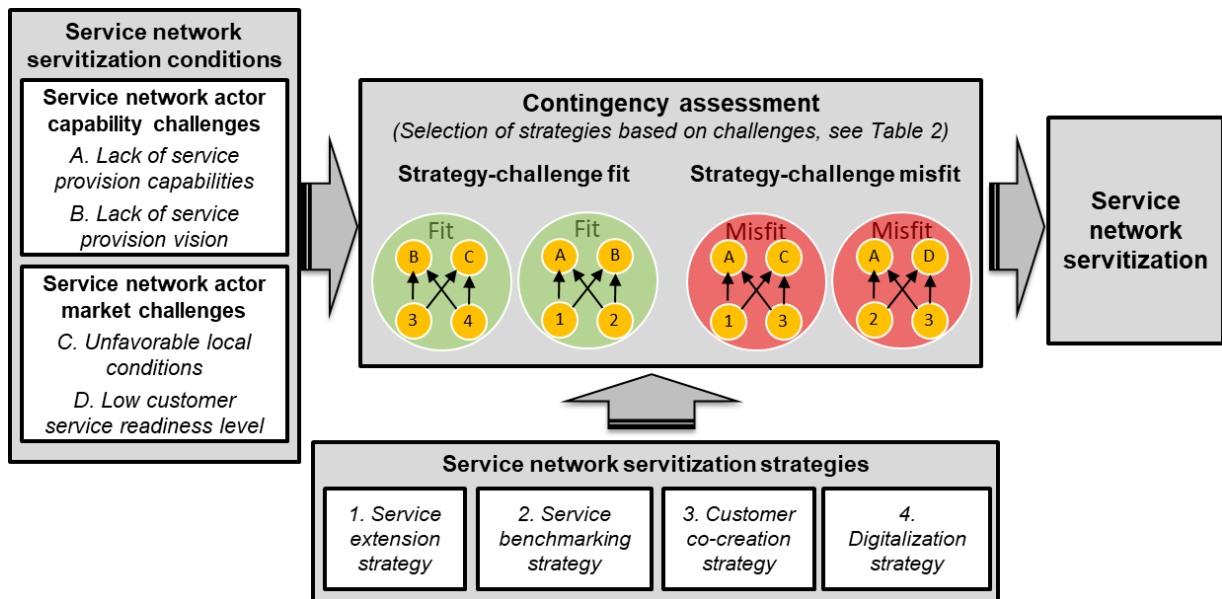


Figure 3. Contingency framework for understanding service network actor servitization

Table 1. Descriptive data for each distributor

Distributor pseudonym	Geographical coverage	Ownership	Maturity category	Advanced service offerings	Interviewees
<i>Africo</i>	West Africa, Congo, Algeria, Nigeria	External (350 employees)	Doubter	Care inspections, Extended warranties	Service manager (Africo); Regional manager EMEA; Global product manager telematics
<i>Arabico</i>	UAE, Saudi Arabia, Oman, Qatar	External (210 employees)	Pragmatist	Maintenance contracts, Leasing, Rental	General manager—Aftersales (Arabico); Regional manager for EMEA; Product manager for EMEA; Global technology director
<i>Argentico</i>	Argentina	Internal (80 employees)	Doubters	Maintenance agreements (without contract)	Regional manager (South America); Global manager attachments; Global manager telematics
<i>Australico</i>	Australia	External (500 employees)	Pragmatist	Extended warranty, Maintenance contracts	Service manager (Australico); Regional manager for Oceania; Global soft product planner
<i>Germco</i>	Germany	Internal (470 employees)	Pragmatist	Extended warranty, Maintenance contracts	Service manager (Germco); Regional manager for Germany/Switzerland; Global product manager extended warranties
<i>Nethco</i>	Netherlands	External (300 employees)	Enthusiast	Total care solutions, Maintenance contracts	CEO (Nethco); Regional manager for Benelux; Manager of global distributor development
<i>Sweco</i>	Sweden, Baltic countries	Internal (600 employees)	Pragmatist	Extended warranty, Maintenance contracts	CEO; Service delivery manager (2); Key account manager (Sweco); Regional manager for Hub North; Nordic sales and marketing manager
<i>UKco</i>	UK	External (420 employees)	Enthusiast	Extended warranty, Maintenance contracts, Proactive maintenance	Service development manager (UKco); Uptime Solutions Coordinator (UKco); Regional manager for Hub North; Global manager of customer support agreement

Table 2. A contingency assessment of service network servitization strategies and challenges

Service network servitization strategies/challenges	<i>1. Service extension strategy</i>	<i>2. Service benchmarking strategy</i>	<i>3. Customer co-creation strategy</i>	<i>4. Digitalization strategy</i>
<i>A. Lack of service provision capabilities</i>	**	**	*	***
<i>B. Lack of service provision vision</i>	**	***	***	*
<i>C. Unfavorable local conditions</i>	*	*	**	***
<i>D. Low customer service readiness</i>	***	*	**	*