

Procurement of Advanced Services Within the Domain of Servitization: Preliminary Results of a Systematic Literature Review



Oliver Stoll , Shaun West , and Lars Hennecke

Abstract The development of smart services for business to business applications enabled by digital technologies is on the rise. Services can become very complex in industrial applications; many actors are involved in their development, and value propositions often reflect complexity by addressing many beneficiaries. The challenge of pricing services is still prioritized in service-science because services are often intangible, therefore not as easy to price. With complex value systems emerging from advanced services, it is even harder to describe their value. When developing services, strong emphasis is put on understanding ecosystems and customer needs to create compelling value propositions. The key question for service sales is how much value the offering should capture? The pricing of services can be cumbersome and should be consistent with the value proposition: the promise to solve the customer's defined problems. To maximize value for the customer, the offering should not be under- or over-scoped with features of limited usefulness. Every actor in the buying process has a different view on value, and different situations create different amounts of value. For sales, this is where a careful analysis is essential. But how are the services for industrial applications bought, and how is the value of a service assessed by a customer? Are there any differences between the stated value proposition and the perceived value proposition? This paper aims to investigate models and concepts from literature on assessing the value of services from the buyer's perspective, comparing them to existing sales models.

Keywords Servitization · Advanced services · Service purchasing

O. Stoll (✉) · S. West (✉)

Lucerne University of Applied, Sciences and Arts, 6048 Horw, Switzerland

e-mail: oliver.stoll@hslu.ch

S. West

e-mail: shaun.west@hslu.ch

L. Hennecke

Ace Advisor Services Limited, Mid Levels Crossmoor Road Axbridge, Somerset BS26 2DY, UK

e-mail: larshennecke@aceadvisorservices.com

1 Introduction and Background

Servitization in manufacturing is a mature research field (Kowalkowski et al. 2017) which investigates how manufacturers move from selling products to selling “bundles” of products and services (Vandermerwe and Rada 1988). In some of these manufacturing firms these service offerings have become dominant, a shift described by Vandermerwe and Rada (1988) as the “servitization of business”. Servitized manufacturing firms with up to 3,000 employees are more profitable than traditional firms (Neely 2008). The impact and the prospect of outperforming competitors through services (Neely 2008; Schmenner 2009; Vandermerwe and Rada 1988) can be a strong motivation for firms to participate in servitization. During the period 2000–2010, servitization led manufacturers to innovate and move from selling products to selling integrated product-service offerings that deliver value in use (Baines et al. 2009). The shift to value-added services and value in use business models (Baines and Lightfoot 2014; Gebauer et al. 2017; Kohtamaki et al. 2019; Raddats et al. 2015) has driven servitization to a more customer-centric approach compared to the tactic of gaining dominance over the customer through servitization (Schmenner 2009). Another emerging approach for assessing the value of services is service-dominant logic (SD logic) (Vargo and Lusch 2008). This concept has emerged more recently in the research field of servitization (Stoll et al. 2020a; S. West et al. 2018a). Putting smart services enabled by digital technologies into an SD logic perspective (value co-creation) may be considered a path to explain the value of smart services (Stoll et al. 2020b; West et al. 2018b). Smart services can be seen as an enabler for advanced service (Baines and Lightfoot 2014), because digital technologies enable firms to provide capability, availability or performance contracts (Kohtamaki et al. 2019).

In servitization, pricing (capturing value) is a recurring topic that presents many challenges (Kindstrom and Kowalkowski 2014; Raja et al. 2020; West et al. 2016). Within marketing literature, Anderson and Narus (1998) provided a useful framework to identify, create and deliver value in B2B environments. Within SD logic literature, Vargo and Lusch (2008) offer a framework to support value identification based around the “value in use” rather than the approach of “value in exchange” from a goods-dominant logic paradigm. There appears to be a limited amount of literature that links value capture with revenue models pragmatically, nor is there significant literature on the fair sharing of value between parties in a value co-creation and co-delivery situation. Some of the recent research proposes to assess the value of smart services (West et al. 2018a) through the lens of SD logic (Vargo and Lusch 2008) and an approach to value capture (West et al. 2018b).

Procurement in firms has been professionalized over the past 30 years, resulting in commoditization of the buying process, which in turn has cut costs in external purchases (Anderson and Katz 1998; Rehman Khan and Yu 2019). The use of alliance agreements in two different markets (Murthy et al. 2016) has shown that a move to different procurement approaches supports situations where collaborative value creation is occurring, still neither provide objective views on the appropriate level of the value share between the two firms.

A recently published paper describing the commercialization of smart services coming from a Digital Twin (Stoll et al. 2020) revealed that the customer's purchasing department was considered a barrier for selling the services. Moreover, Stoll et al. (2020) proposed to investigate further how customers buy services because the tools and mechanisms for buying products cannot be applied to purchasing services (van der Valk 2008). Therefore, this paper aims to investigate: *“how are smart services purchased according to existing theoretical frameworks within the research field of servitization?”* To answer the research question, a systematic literature review was conducted.

2 Methodology

The methodology has been designed to answer the research question by investigating the literature of servitization. In this context, a semi-structured literature review (Snyder 2019) was performed to understand the state of knowledge about purchasing services in this particular research field. Figure 1 shows the procedure followed by the researchers. The search was conducted in the Web of Science (WoS) database and the servitization research area.

The data set was built by searching WoS with the following keywords: TS = (servitization AND purcha*) OR TS = (servitization AND sourcing) OR TS = (Servitization AND “sourcing strategy”) OR TS = (Servitization AND procurement) and refined by: WEB OF SCIENCE CATEGORIES: (management or engineering multidisciplinary or business or engineering industrial or engineering mechanical or engineering manufacturing or operations research management science or computer science software engineering or computer science information systems or economics or computer science artificial intelligence or computer science interdisciplinary applications). Data cleaning was done by reading the titles and abstracts. Analysis and validation of the results were conducted by each author individually. This allowed the authors to get unbiased results, and having the data analyzed by practitioners and academics enabled practical and theoretical implications to be derived from the study.

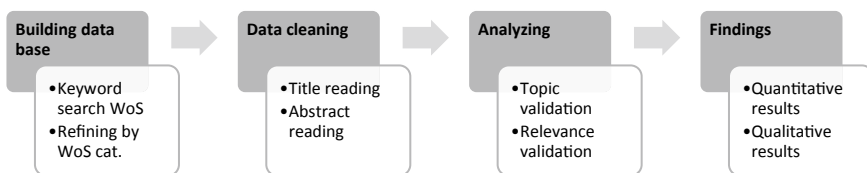


Fig. 1 Process followed by the researchers

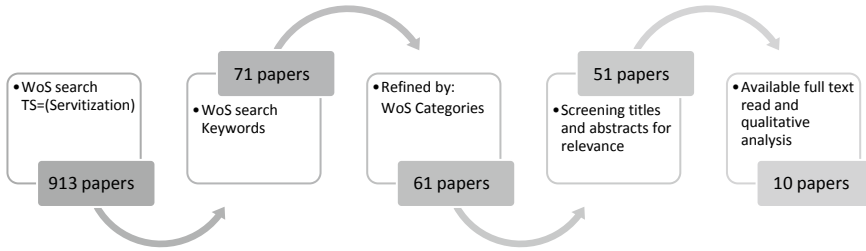


Fig. 2 Results of the systematic review

3 Results

The data set for “servitization” consists of 913 papers published in journals and conferences. The keyword search (see Fig. 2) returned 71 matches. After refining according to the WoS categories 61 references were left. The initial screening process of reading the titles and abstracts lead to rejecting 50 papers as not being relevant and 1 where the full text was not available.

The final set of full texts were read by the three authors independently to assess the relevance of the papers’ content to the research question. Table 1 shows the identified papers and the ratings from a consensus score, for the rating a 5 point Likert Scale was used where each author specified his agreement for the relevance of the paper ((1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree).

4 Discussion

Since the impact and the prospect of outperforming competitors through services (Neely 2008; Schmenner 2009; Vandermerwe and Rada 1988) is considered a strong motivation to participate in servitization, it has been surprising that within the servitization research community, minimal studies have been conducted investigating how firms buy advanced services. In the literature, van der Valk (2008) emphasizes that buying goods or services are substantially different processes. Further, that buying services may even be more complicated than buying goods and that the ‘interactive character of advanced services has so far largely been neglected in published studies. van der Valk (2008), Liu (2014), Liu and Song (2014), Maiwald et al. (2014) and Tunisini and Sebastiani (2015) however, do highlight the importance of investigating servitization from the buyer’s perspective. The authors consider that currently the work of (Liu 2014); Liu and Song (2014) can be considered the leading investigation of the buyer’s perspective of servitization.

In this study, after the full reading by the authors, only four papers out of almost 1000 were found to be relevant to answering the research question. Three of the

Table 1 Results from the analysis of full papers

Title of paper	Combined score	Reasoning for score
Towards an operations strategy for product-centric servitization (Baines et al. 2009)	1	Limited links to research question
Making a profit with R&D services - The critical role of relational capital (Kohtamaki et al. 2013)	2	The focus on R&D limits its transferability
Will User Involvement Always be the Case? The Effect of Service Procurement on Customer Perceived Value in Servitization (Liu 2014)	4	Provides insights from a buyer's point of view
Service Outsourcing and Procurement in Service Supply Chain: Perspective of Service Buyers (Liu & Song, 2014)	3	Provides a framework to describe the interactive nature of services and its implication for procurement
The dark side of providing Industrial Product-Service Systems - perceived risk as a key challenge from a customer-centric point of view (Maiwald et al. 2014)	3	Provides insights to procurement and purchasing behaviors
Innovative and networked business functions: customer-driven procurement (Tunisini and Sebastiani 2015)	4	Insights to the role procurement could play
Should everybody be in services? The effect of servitization on manufacturing firm performance (Crozet and Milet 2017)	1	Limited link to research question
Supply Chain Management Integration in Maintenance and Repair Services Sector (deSouza and Haddud 2017)	2	Limited link to research question
Territorial servitization: Exploring the virtuous circle connecting knowledge-intensive services and new manufacturing businesses (Lafuente et al. 2017)	1	Limited link to research question
Capturing and enhancing provider value in product-service systems throughout the lifecycle: A systematic approach (Matschewsky et al. 2020)	2	Limited link to research question

publications are conference proceedings, and one is a paper in a journal. The two publications from Liu were published in the proceeding of the 13th Wuhan International Conference on E-Business. The work of Liu has gained little to no attention since the citation count on WoS is zero. However, the authors consider Liu's work as relevant for this study because the author covers SD logic through the characterization of services and emphasizes the importance of the procurement role. To that, a critical view on co-creation (user involvement) is provided, examining the importance of collaboration and interaction needed from procurement (Tunisini and Sebastiani 2015) for buying services.

The third publication from Maiwald et al. (2014) was published in the proceedings of the 6th CIRP Conference on Industrial Product-Service Systems and has been cited five times, according to WoS. The work provides a different view on how customers perceive risks associated with purchasing product-service systems. This contribution has not been considered directly relevant to answering the research question, but the risk perception of such offerings may be a relevant aspect to consider when researching the purchasing of services. When viewed together it starts to highlight the research gap here, and the importance of linking procurement with the selling of advanced services.

The paper written by Tunisini and Sebastiani (2015) is the only relevant paper published in the Journal of Business & Industrial Marketing. It attempts to describe the role of procurement and how customers' procurement drives client value. Also, the growing integration of procurement and sales was discussed, and how the procurement process starts to interact with the clients business.

4.1 Academic Implications Business

Based on this literature review, there is a research gap on how firms purchase advanced services in the field of servitization. Examining this topic could improve understanding of how to sell services in this context and add to the knowledge base on servitization and value.

4.2 Practitioner Implications

Procurement plays a vital role in many organizations; in some, it has high strategic relevance. With increasing service offerings, the opportunities for firms are growing. However, services cannot be bought in the same way as products.

The procurement process for servitized offers will need to address the interactive nature of services. It may require a higher degree of collaboration of buyer and seller, come with an increased risk of supplier dependency, or require flexibility to address future needs.

Therefore, buying services requires enhanced procurement strategies and capabilities to define, evaluate and drive operational collaboration between buyer and seller to maximize the advantage of a purchased service.

5 Conclusion and Recommendations

This systematic literature review shows that within the research field of servitization, there are no explicit frameworks supporting the procurement of this type of advanced services. The vast majority of the work focuses on the development and sales of advanced services. However, evidence was found that procurement practices differ for services and products. Some aspects of these differences are presented in the papers found. The impact of these papers is meager, either indicating a lack of interest in the servitization research community, or that this study searched in the wrong community. This paper is limited by focusing on servitization literature and WoS as a database, or possibly the keywords used for the search may be incomplete.

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