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# Value in servitization: From dyad to network level

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## Abstract

Servitization implies a customer-centred approach, where value is enhanced through communication and interaction between the parties. The creation, delivery and capture of value in servitization have been widely analyzed within the supplier-customer dyad. However, when moving to a multi-actor level, a gap has been found regarding the challenges that the embedded context in which servitization takes place can have over the distribution and capture of part of the value created.

**Keywords:** Servitization, Value, Network

## Introduction

New technologies are leading the path towards customers' empowerment making traditional organizational strategies based on cost-price trade off no longer effective (Prahalad and Ramaswamy, 2004). The boundaries between buyers and sellers have become blurred as customers are no longer receptors of value, but participants of its creation within interconnected boundary less markets.

The need for organizational change and flexibility for successful value creation in dynamic environments is increasingly recognized (Prahalad and Ramaswamy, 2000, Payne et al., 2008, Eloranta and Turunen, 2016). Among the diverse market responses to these dynamic market conditions, servitization offers an alternative option to product-centred strategies through the introduction of advanced services, especially in the manufacturing industry (Baines et al., 2009). It requires close customer relationships to understand how customer expectations can be met through product-service offerings.

Network theory argues that business relationships must be understood in the broad context in which they are embedded (Anderson et al., 1994). According to this view, the value creation process in servitization requires a deep understanding of all the actors involved. However, investigations have mainly focused on simplified (two-actor)

supplier-customer relationships, suggesting a gap in our understanding of the actual (multi-actor) value creation process in servitization.

To address this gap, the paper aims to provide an assessment of the current understanding of value architecture – creation, delivery and capture – in servitization when the research focus expands from a two-actor to a multi-actor context. The study sets out to clearly identify “*which are the main research gaps regarding value in servitization in a multi-actor context?*”. To do so, a systematic literature review is developed, drawing on Chandler & Vargo’s (2011) context classification as a guiding structure for an expanded conceptualization of value in servitization.

The work is structured as follows: first, servitization, network theory – including levels of analysis –, and value architecture are discussed; second, the methodology used to conduct the systematic literature review is outlined; finally, the findings are presented and discussed in relation with their implication for the servitization literature and its future research.

### Servitization

In simple terms, servitization can be defined as transitioning from products to services (Alghisi and Saccani, 2015); a closer look suggests that it represents a holistic organizational transformation where service becomes an array of competences and processes, that complement the physical product and are defined in terms of customer’s desired benefit (Vargo and Lusch, 2008). Often these competences and processes are acknowledged as advanced services (Baines et al., 2013), which are meant to complement and fit each customer’s processes in a way that satisfies their unique needs beyond a physical product. These product-service offerings are designed and delivered through long-term commitment and interactive relationships. In sum, servitization implies a change of mind set, where organizations shift from product focus towards customer focus activities, enhancing communication and interaction between the parties.

*Table 1 – Servitization: perspectives and its research implications (own authorship)*

<b>Perspective</b>	<b>Main Authors</b>	<b>Research Implications</b>
Service-dominant logic (S-D logic)	Vargo & Lusch, 2008 Vargo & Lusch, 2011	- Context: dyad, network & system - Service: group of competences for the benefit of the entity itself or of another entity - Value creation and consumption are not separable
Service logic	Grönroos, 2011 Aarikka-Stenroos & Jaakkola, 2012	- Context: dyad - Service: interactive processes leading to an outcome - Customer is the only creator of value
Service science	Wieland, Polese, Vargo & Lusch 2012 Alghisi & Saccani, 2015	- Context: network & system - Service system: configurations of people, technology, value propositions and shared information - Value co-creation embedded in network relationships

The relevance of this strategy has increasingly attracted scholars, who have been investigating servitization from different perspectives (Alghisi and Saccani, 2015, Lofberg et al., 2015, Vendrell-Herrero et al., 2017, He et al., 2016). This multiple perspectives on servitization, involving several schools of thinking as well as business fields, have led to diverse conceptualizations. To avoid confusion, a summary of frequently used perspectives is provided in Table 1. It is of interest to observe how Vargo & Lusch’s (2011) service-dominant logic incorporates both dyadic and multi-actor considerations; whereas service logic and service science focus on one type only.

The following section introduces the relevance the network has for understanding value in servitization, through a systems-theoretical lens.

### General Systems Theory and levels of analysis

General Systems Theory (GST) (Von Bertalanffy, 1972) originated as an answer to the need of a general structure for science, to allow experts from different fields and backgrounds to communicate and exchange information. In GST a system refers to a set of elements standing in interrelation among each other and with the environment, and it has been taken as the structure present in all segments from natural to social sciences.

Network theory can be understood as the application of the GST framework to the study of organizations. According to (Cannon and Perreault Jr, 1999), business markets are led by connections among actors that emerge through information exchange, operational linkages, legal bonds, cooperative norms and buyer-seller adaptation processes. These connections comprise business networks, where a network can be defined as “*an aggregated system of participating organizations in a time and spacebound technosocial system*” (Möller and Halinen, 1999). In this interrelated context, each participating organization’s actions can have an effect on each other’s as well as on the overall network’s value.

In servitization, there has been an increasing interest towards the need of taking an integrative view of processes and activities, moving from the supplier-customer relationship towards the network theory approach (Lusch et al., 2010). Chandler & Vargo’s (2011) classification of contexts provides a basis for categorizing the servitization literature across different levels of analysis (see Table 2). The following section expands these levels of analysis through a focus on value architecture.

Table 2 – Servitization: levels of analysis (from Chandler & Vargo (2011))

Classification	Chandler & Vargo (2011)	Level of analysis
Micro-context	Two unique actors are joined by a service-for-service exchange link	Dyad
Meso-context	Two actors indirectly serve one another by serving the same actor	Triad
Macro-context	Synergies of multiple simultaneous direct and indirect service-for-service exchanges	Network
Meta-context	Covers all the levels of service-for-service exchanges; it represents its evolution	System

### Value Architecture

The value architecture aligns an organization’s value proposition with its strategy and objectives. A value proposition captures the main points that deliver the greatest value for the customer to persuade them to choose their offering over their competitors’ (Anderson et al., 2006). Thus, the value architecture sets the directions for the value creation, delivery and capture (Al-debei and Avison, 2010). Value creation describes the way organizations meet customers’ expectations (Lepak et al., 2007); value delivery describes the way an organization understands customers’ needs to provide them with the necessary tools to experience the value that has been created (Slater, 1997); and value capture represents the benefit that organizations obtain when retaining part of the value that is created, which implies economic contributions (Lepak et al., 2007) as well as non-monetary outcomes (Reypens et al., 2016).

In terms of business value, an economic perspective is widely adopted, where value is measured in terms of discounted cash flows (Chatterjee, 1986, Radhakrishnan et al., 2008). A relational view on value argues that instead of cost and revenues, value is

measured according to the strength and trust of actors' relationships beyond the economic exchange (Matinheikki et al., 2016). Thus, this perspective focuses on alignment and collaboration between organizations as sources of value creation.

Descriptions of value in servitization align with Vargo and Lusch's (2008) definition of being “*always intangible, heterogeneously experienced, co-created, and potentially perishable*”. From this perspective value is no longer linked to a physical output, but to the usage process involving each actor's subjective perceptions. Besides, value appears to require joint co-creation efforts, where interaction and relationships become crucial. Thus, value in servitization is approached from a relational point of view setting itself apart from the mainstream economic attachment of a goods centred approach.

## **Methodology**

A systematic literature review has been selected as research method to identify the gaps of value in servitization in a multi-actor context. Such a review form is known to collect evidence-based research that fits within a pre-established criteria to help reviewers taking informed decisions about specific research questions (Tranfield et al., 2003). Thus, the approach taken is meant to identify the aspects and implications of value creation, value delivery and value capture in the servitization literature through the classification of specific articles according to the levels of analysis outlined above.

The execution of the review started with the search for articles from Web of Science and EBSCO databases (following (Lightfoot et al., 2013, Baines et al., 2017, Grubic, 2014). A list of keywords was drawn from the “Servitization” and “Value architecture” literature (“*servitization OR S-D logic OR service logic OR service science*” AND “*value OR value creation OR value co-creation OR value capture OR value delivery*”). The search focused on article abstracts to ensure that any article whose topic was related to value in servitization would come up in the search.

According to Liberati et al. (2009), researchers should evaluate the strength of the empirical data, the rationale of the theories, and the unique context of the studies to be included in order to minimise the risk of bias when developing a systematic literature review. Following this premise, the initial pool of articles was narrowed down to only those belonging to 3, 4, and 4\* journals from the ABS Academic Journal Guide 2015 (Chartered Association of Business Schools 2015). The guide not only classifies articles through average metrics, but through a rating based on the considerations of the editors, a scientific committee, expert peers and scholarly associations in business and management fields. The abstracts of the resulting 603 articles were examined in detail and further 579 articles were discarded for having a field of study different from servitization; a focus on other aspects of value than value architecture; and for being literature reviews.

The analysis of the literature started with a categorization of articles according to their level of analysis and value architecture component focus as shown in Table 3. The evaluation of papers under each level of analysis was performed through comprehensive reading in order to understand commonalities on their –“perceptions of value”– and –“value architecture processes”–. The last step was based on interpreting research outcomes, clustering their conclusions along the value architecture processes at each level, to show where the gaps on value in servitization were most prominent. Table 3. below shows the final selection of articles included classified according to their level of analysis and value architecture component.

Table 3 – Literature classification according to level of analysis and value architecture component (own authorship)

	Value creation	Value delivery	Value capture
<b>DYAD</b>	Ballantyne & Varey 2006; Payne, Storbacka & Frow 2008; Vargo & Lusch 2004; Vargo & Lusch 2008; Grönroos 2011; Aarikka-Stenroos & Jaakkola 2012; Grönroos 2012; Grönroos & Voima 2013; Kohtamäki & Partanen 2016; Sjodin, Parida & Wincent 2016	Macdonald, Wilson, Martinez & Toossi 2011; Song, Cadeaux & Yu 2016	Kohtamäki, Partanen & Möller 2013
<b>TRIAD</b>			Vendrell-Herrero, Bustinza, Parry & Georgantzis 2016
<b>NETWORK</b>	Vargo, Maglio & Akaka 2008; Lusch, Vargo & Tanniru 2010; Chandler & Vargo 2011; Jaakkola & Hakanen 2013; Lacoste 2016	Alghisi & Saccani 2015; Lofberg, Witell & Gustafsson 2015	
<b>SYSTEM</b>	Edvardsson, Tronvoll & Gruber 2011; Wieland, Polese, Vargo & Lusch 2012; Maglio & Spohrer 2013; Meynhardt, Chandler & Strathoff 2016		

## Discussion

The discussion focuses on the context under which each level of analysis takes place and relates the findings to the concepts of value in servitization.

### *Summary of findings: value in the DYAD*

The dyad level of analysis in servitization represents the biggest portion of the literature. Under this level, research focuses on the supplier-customer relationship context where the subjective and experiential character of value in servitization has led to studies focusing on either value for the supplier (Kohtamaki et al., 2013, Kohtamaki and Partanen, 2016) or value for the customer (Macdonald et al., 2011, Song et al., 2016). From the supplier side, researchers mainly refer to the economic benefit for the supplier, referred as *supplier profit performance* (Kohtamaki et al., 2013). From the customer side, value goes beyond the economic aspect, including technical goals and relational aspects (Song et al., 2016) that are cumulatively achieved through customer's experiences over time (Grönroos and Voima, 2013).

### *Summary of findings: value in the TRIAD*

The triad level of analysis appears to be less popular among scholars as only one article was found within this category. Under this level, research assumes the context boundaries of the relationship between secondary connected actors, which may or may not have direct contact with the customer. Taking the study of Vendrell-Herrero et al. (2017) on digital servitization in the publishing industry, their method is based on the triad formed by the customer (central link), the publisher (upstream firm) and the retailer (downstream firm). In this case, value is looked at as a trade-off between the abilities of publisher and retailer to capture part of the value that is created with the digital servitization strategy.

### *Summary of findings: value in the NETWORK*

This level of analysis represents the next step in the inclusion of actors in the servitization research, with the network as research context. Lusch et al.'s (2010) concept of network stands as a widely accepted definition, considered as “a spontaneously sensing and responding spatial and temporal structure of largely loosely coupled value proposing social and economic actors interacting through institutions and technology”. Value in the network includes the economic as well as relational aspects of value present in the dyad, but those become contingent upon the interconnectedness of a multi-actor context, where strong bonds and adaptation are crucial (Jaakkola and Hakanen, 2013).

### Summary of findings: value in the SYSTEM

The last level of analysis is characterized by including a dynamic perspective. A system represents the evolution of networks, defined in the literature as dynamic value co-creating configuration of resource-integrating actors internally and externally connected through service exchanges (Wieland et al., 2012). In other words, each network is characterised by specific conditions that determine which and when actors and resources will or will not be valuable, provoking tensions at the dyad and triad levels that lead to the transformation of the network boundaries (Chandler and Vargo, 2011). The system as the context boundaries for research assumes that value is not constant but changing over time, according to the network reconfigurations of people, technologies, organizations, and information (Maglio and Spohrer, 2013).

### Comparisons between levels of analysis

Overall Table 4. shows the differences found between levels of analysis regarding value aspects in servitization. It shows how value types, servitization perspectives and value architecture processes vary depending on the context boundaries portrayed in the research, from dyads and triads, to networks and systems.

Table 4 – From dyad to system: Context boundaries, value types and value architecture processes (own authorship)

Level of Analysis	Context Boundaries	Type of value	Servitization perspective	Value creation	Value delivery	Value capture
DYAD	Supplier ↕ Customer	Value-in-use	S-D logic	Encounter sphere: needs, expectations & product-service offering fit	Encounter sphere: implementation of product-service offering	Supplier sphere: supplier profit performance, value dependent
			Service logic	Customer sphere: individual product-service offering experience	Encounter sphere: exchanges of information and resources	Supplier sphere: supplier profit performance, value dependent
TRIAD	A ← → B ↕ Customer	Indirect value	S-D logic	-	-	Triad sphere: distribution and capture of dyadic value-in-use by actor A and B
NETWORK	<p>*Example</p>	Value-in-context	S-D logic	Encounter spheres: integration of resources by the multiple actors associated with the exchange	Encounter sphere: exchanges between actors	??
SYSTEM	Network t1 ↓ Network t2  *t1, t2: time periods	Evolution of value	S-D logic	Dyad and triad changes leading to the transformation of network composition	??	??
			Service Science			

### Type of value

The systematic literature review has shown four different types of value, which depending on the level of analysis originate and evolve according to different actors and processes. Within the dyad, *value-in-use* focuses on the customer's usage processes through the application of the resources available (Vargo and Lusch, 2004). In other words, value is understood as the customer's satisfaction of own goals through product-service usage. A completely different approach is shown in the triad, where the focus is on *indirect value* arising from relationships that intermediate towards the product-service exchange (Vendrell-Herrero et al. 2016).

Moving on to the inclusion of the environment in the multi-actor context, the network focuses on *value-in-context* as value becomes contingent on the integration of resources which are contextually and phenomenologically determined (Vargo et al., 2008). Finally, *value in the system* takes *value-in-context* to the next step, where

network configurations evolve to fit the context dependency that rules the effectiveness and efficacy of interactions (Wieland et al., 2012). Expressed differently, *value in the system* can be conceptualised as the ability of actors and resources to adapt over time.

#### *Value creation*

Moving on to the value creation process, differences have been identified in the ways it is understood and conceptualised under each level of analysis. It is important to mention three main spheres – supplier, customer and encounter – where value creation, delivery and capture can take place (Grönroos, 2011, Macdonald et al., 2011, Grönroos and Voima, 2013). Starting with the supplier sphere, it includes the design and development of the product-service offering, as well as any other activity required to transform initial inputs into outputs. Then, the customer sphere includes the customer's usage process that leads to value-in-use. And lastly, the encounter sphere includes the supplier and customer interactions in each other's processes.

Under S-D logic, when supplier and customer have active roles as co-creators, value creation will take place within the encounter sphere (Aarikka-Stenroos and Jaakkola, 2012, Sjödin et al., 2016). As argued by Ballantyne and Varey (2006) knowledge is crucial for value co-creation, which is shared and renewed through dialogue between supplier and customer. Thus, value creation depends on the quality of supplier-customer interactions. However, under service logic when customers are considered the only creator of value, this process will take place within the customer sphere (Grönroos, 2011, Grönroos, 2012). Hence, value creation depends on the customer's individual usage experience and perceptions. This consideration acquires a holistic view when moving to the context boundaries of a network.

Value creation in the network may involve as many encounter spheres as relationships needed to satisfy the servitization value proposition, link that connects actors in the network value co-creation (Lusch et al., 2010, Lacoste, 2016). When considering the dynamic aspect of the system, value creation originates from the tensions occurring in dyads and triads challenging the current network order parameters and hence, leading to new network boundaries (Meynhardt et al., 2016) and value propositions (Maglio and Spohrer, 2013). Essentially, the system's adaptation to changes at the lower levels of analysis reflects its ability to survive and thus, to create value over time.

#### *Value delivery*

The value delivery process seems to have more commonalities in the servitization literature among levels of analysis. Even though this process is usually referred to in an indirect manner, it is possible to identify how scholars agree that value delivery occurs during the encounter phase based on resource exchange. In words of Payne et al. (2008) – S-D logic dyad research – supplier-customer interactions are aimed at customer being able to deploy supplier's resources better, showing how value is delivered by the supplier assisting on the implementation of product-service offerings.

Likewise, value delivery in the network will happen between actors' exchanges, but in this case scholars have pointed out the importance of alignment. In order to ensure network cooperation and commitment in the delivery of value, all participant actors need to know which product- service offerings must be provided as well as the internal role of these provisions (Alghisi and Saccani, 2015, Lofberg et al., 2015). However, within the system level, the way actors' resource exchanges evolve over time and how it is reflected in the value delivery has not been addressed.



### *Value capture*

Value capture appears to be the least investigated component of the value architecture in servitization literature. Within the dyad context, value capture is considered from the economic side only (Kohtamaki & Partanen, 2016), remaining within the supplier sphere as it is the only actor accountable for the achievement of monetary benefits. Thus, value capture is directly dependent on value creation as the higher the cumulative value perceived by customers the higher the financial value that can be generated by the supplier, and vice versa.

When opening the context to the triad, this process becomes the focus of attention, as the main objective is to analyse how part of the value-in-use created is then distributed when more than one actor compete to capture it. In Vendrell-Herrero et al. (2016), it is possible to observe how the actor having a direct relationship with the customer – dyad – has in turn higher impact over the value-in-use created by the customer, and therefore, higher opportunities to capture the indirect value that is distributed among external actors – triad –. Thus, value capture will be directly related to the type of relationship that the actor in consideration has with the customer.

However, even though the relevance that the inclusion of actors can have over the value capture process, research at the network and system levels of analysis seem to have neglected this component in particular. The dyadic context limited the challenges that could occur when a large number of actors would compete for the benefits created through the exchange. According to Lepak et al. (2007), value created by one actor or at one level of analysis may be captured at another. Likewise, Edvardsson et al.'s (2011) application of social construction approach to S-D logic mentions how service exchange within the wide social context can lead to opportunistic behaviours of actors derived from asymmetrically distributed information. Thus, there is a need for further research regarding how value is distributed in the network, where competing forces will act to capture part of that value. Also, knowing about the evolution of those forces over time would help practitioners to early identify changes in order to adapt to the new value capture mechanisms in the system.

### **Conclusion**

The most significant gap regarding value in servitization in a multi-actor context relates to the process of value capture. Supplier-customer research obviates the challenges that the embedded context in which servitization takes place can have over the distribution and capture of part of the value-in-use created.

This article is not exempt of limitations. Even though the selection of articles has been made through reliable sources and high quality criteria, it is possible that relevant literature has not been included in the analysis. Likewise, the evaluation and understanding of value aspects may be bias by personal interpretation; however, the analysis has been made in constant comparison between articles and the theoretical framework to avoid any subjective evaluation.

Findings show how there is a need for further research on how value in both network and system multi-actor contexts is captured by the different actors participant in the exchange. The goal is to provide practitioners and scholars with an initial research agenda that allows multi-actor research to inform servitization literature at the same level as the current research on dyads. We hope that the identification of the research will provide a guide for future research in this area.

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