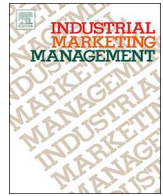




ELSEVIER

Contents lists available at ScienceDirect

Industrial Marketing Management

journal homepage: www.elsevier.com/locate/indmarman

Firm boundaries in servitization: Interplay and repositioning practices

 Tuomas Huikkola^{a,*}, Rodrigo Rabetino^a, Marko Kohtamäki^a, Heiko Gebauer^{b,c}
^a University of Vaasa, School of Management, PO Box 700, FI-65101 Vaasa, Finland

^b Digital Project Group Data, Linköping University, Department of Management and Engineering, SE-581 83 Linköping, Sweden

^c Fraunhofer Center for International Management and Knowledge Economy IMW, 04109 Leipzig, Germany


ARTICLE INFO

Keywords:

 Servitization and digital servitization
 Product-service systems (PSS)
 Firm boundaries
 Repositioning
 Case study
 Business ecosystem and interorganizational networks

ABSTRACT

The present study analyzes how servitization delineates a manufacturer's boundaries. Based on interviews with 57 senior managers and extensive secondary data collected from four global solution providers, this study contributes by revealing how servitization shapes firm boundary decisions and repositioning practices. First, the results demonstrate that servitization changes a manufacturer's a) identity from technology-focused to customer-centric, b) capabilities to integrate technology development with customer value understanding, c) power position in the manufacturing ecosystem from upstream to downstream, and d) efficiency logic toward a service factory logic. Second, this study describes the interplay among these boundary lenses in servitization. The developed framework can assist managers in their strategy implementation when moving toward servitization.

1. Introduction

Servitization has become a primary source of competitive advantage for several established manufacturers, such as GE, Rolls-Royce, and Caterpillar (Auguste, Harmon, & Pandit, 2006; Brax, 2005; Davies, 2004; Gebauer, Gustafsson, & Witell, 2011; Vandermerwe & Rada, 1988; Visnjic, Jovanovic, Neely, & Engwall, 2017). This transition to selling fuller market packages or “bundles” of customer-focused combinations of goods, services, support, self-service, and knowledge (Vandermerwe & Rada, 1988) has led manufacturers to redefine their identity (Vaara & Tienari, 2011), reposition themselves in the ecosystem (Wise & Baumgartner, 1999), realign their capabilities (Ulaga & Reinartz, 2011), and reassess decisions concerning whether some activities should be performed in-house (a hierarchical mechanism), outsourced (a market mechanism) (Salonen & Jaakkola, 2015) or implemented through partnerships (Kohtamäki, Partanen, & Möller, 2013). Although the servitization literature has been expanding (Rabetino, Harmsen, Kohtamäki, & Sihvonen, 2018; Raddats, Kowalkowski, Benedettini, Burton, & Gebauer, 2019), there is a need to understand better how servitization drives manufacturers' repositioning strategies (Gebauer, Ren, Valtakoski, & Reynoso, 2012; Santos & Eisenhardt, 2005).

The existing servitization literature has acknowledged that manufacturers can apply different strategies when attempting to find the best positions in their industries. For instance, Baines, Lightfoot, and Smart

(2011) show that manufacturers use alternative repositioning practices, such as focusing on product-related services while keeping a foothold in production operations or combining original equipment manufacturing (OEM) and product-related services. Davies, Brady, and Hobday (2007) suggest the following two distinct ways to operate within an industry: 1) becoming a vertically integrated *system seller* (insourcing) or 2) becoming a *system integrator* (outsourcing) that organizes the integration of modular parts supplied by third parties. However, this change is profound and requires interdisciplinary research based on general management theories; Gebauer et al. (2012: 127) suggested that “[servitization] can be considered from the perspective of the boundary of the firm”. Accordingly, the influence of servitization on firm boundaries needs to be examined while accurately analyzing the impact on both firms' scope and practices used to reposition companies within the value system (Gebauer, Edvardsson, Gustafsson, & Witell, 2010). Thus, the implementation of this new strategy requires firms to redefine their horizontal and vertical organizational boundaries (Chesbrough & Rosenbloom, 2002; Teece, 2007), which can be defined as “the scope of product/markets addressed” and “the scope of activities undertaken in the industry value chain”, respectively (Santos & Eisenhardt, 2005: 492).

The present study extends recent research concerning firm boundaries in servitization (Kohtamäki, Parida, Oghazi, Gebauer, & Baines, 2019; Rabetino & Kohtamäki, 2013; Rabetino & Kohtamäki, 2018; Salonen & Jaakkola, 2015) by addressing the following question: “How

* Corresponding author.

E-mail addresses: tuomas.huikkola@univaasa.fi (T. Huikkola), rodrigo.rabetino@univaasa.fi (R. Rabetino), marko.kohtamaki@univaasa.fi (M. Kohtamäki), heiko.gebauer@imw.fraunhofer.de (H. Gebauer).

<https://doi.org/10.1016/j.indmarman.2020.06.014>

Received 22 October 2018; Received in revised form 11 June 2020; Accepted 27 June 2020

0019-8501/ © 2020 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

does servitization drive a manufacturer to realign its boundaries when repositioning in the industrial ecosystem?” We use a multiple-case study to analyze the servitization of four global companies that created value by implementing servitization. Building upon the selected firm boundary lenses (Bäck & Kohtamäki, 2015; Barney, 1999; Coe, Dicken, & Hess, 2008; Santos & Eisenhardt, 2005), the contribution of the study is two-fold: We 1) demonstrate how servitization shapes manufacturers' firm boundaries through identity, capability, power, and efficiency lenses, and 2) show the importance of the dynamic interplay among these lenses when manufacturers are steered toward servitization. Additionally, we present a managerial framework to guide firm boundary delineation in servitization.

2. Theoretical framework

2.1. Defining servitization

Servitization has gained academic attention (Baines et al., 2017; Rabetino et al., 2018; Raddats et al., 2019) and is acknowledged as a central means to explain how a firm can strategically differentiate by bundling products, services, and software to generate competitive advantage (Kowalkowski, Kindström, Alejandro, Brege, & Biggemann, 2012; Ulaga & Reinartz, 2011; Vandermerwe & Rada, 1988). Servitization is typically described on a continuum ranging from a purely product-focused company to a purely service- and customer-focused company (Martinez, Neely, Velu, Leinster-Evans, & Bisessar, 2017; Shah, Rust, Parasuraman, Staelin, & Day, 2006). This strategic transition is not smooth and requires a wide array of changes in the company, such as changes in organizational capabilities, structures, offerings, and processes (Kohtamäki et al., 2019; Raja, Chakkol, Johnson, & Beltagui, 2018). Managers have adopted different frameworks and models to manage this repositioning (Bustinza, Vendrell-Herrero, & Baines, 2017; Rabetino, Kohtamäki, & Gebauer, 2017). However, only a few servitization studies (Kohtamäki et al., 2019; Rabetino & Kohtamäki, 2013; Salonen & Jaakkola, 2015) have adopted the firm boundary lens (Santos & Eisenhardt, 2005, 2009) despite its obvious potential to provide an alternative narrative for the servitization literature (Luoto, Brax, & Kohtamäki, 2017).

2.2. Servitization as a driver of firm boundary decisions

In servitization, manufacturers should adopt a broader view of their industry and reconsider their position within the value system (Gebauer, Paiola, & Saccani, 2013). This move requires firms to develop new capabilities (Davies, 2004; Huikkola, Kohtamäki, & Rabetino, 2016; Kindström, Kowalkowski, & Sandberg, 2013; Ulaga & Reinartz, 2011; Worm, Bharadwaj, Ulaga, & Reinartz, 2017) and value propositions while learning to provide services (Lusch, Vargo, & Tanniru, 2010; Storbacka, Windahl, Nenonen, & Salonen, 2013). Repositioning may take alternative forms. Manufacturers can either focus on product-centric services while remaining involved in production operations or combine original equipment manufacturing (OEM) and product-centric services (Baines et al., 2011). For instance, system integration allows manufacturers to “shape their boundaries and their position in an industry value stream” while “enabling them to decide who to compete with, who to collaborate with, what to make in-house, and what to outsource” (Hobday, Davies, & Prencipe, 2005: 1136). Firm boundary decisions are central in shaping the business ecosystem (Adner, 2016; Jacobides, Cennamo, & Gawer, 2018; Kohtamäki et al., 2019; Möller & Halinen, 2017).

2.3. Firm boundaries in servitization

Repositioning involves boundary (re)definition (Chandraprakash, Baines, Lim, & Sakburanapech, 2010), which in the context of servitization may involve the design of a proper product-service offering and

decisions regarding which value-adding activities should be performed internally and which should be outsourced to suppliers, partners, distributors, and/or customers (Baines, Kay, Adesola, & Higson, 2005; Salonen & Jaakkola, 2015). Understanding the delineation of firm boundaries requires the simultaneous use of multiple interdependent, complementary and synergetic theoretical lenses (Brahm & Tarzijan, 2012; Schilling & Steensma, 2002; Yang, Lin, & Lin, 2010). Following Santos and Eisenhardt (2005), this study applies the conceptual perspectives of power, efficiency, competence, and identity to analyze the redefinition of firm boundaries resulting from the establishment of servitization strategies.

2.3.1. Servitization shapes a firm's identity

According to Tuli, Kohli, and Bharadwaj (2007: 1), “customer solutions embody the new service dominant logic”. Manufacturers must reconsider almost every aspect of how they do business (Brady, Davies, & Gann, 2005) to facilitate the creation of value-in-use for customers (Baines et al., 2007; Johnstone, Dainty, & Wilkinson, 2009). Thus, the shift toward a service- and customer-centric logic (Galbraith, 2002) forces manufacturers to redefine their identity (Jacobides & Winter, 2005), which was originally defined by how organizational members answer questions, such as “Who are we as an organization?” and “What type of organization is this?” (Albert & Whetten, 1985; Livengood & Reger, 2010). When firms offer customer solutions, answering such questions may require them to balance elements from both a goods- and a service-dominant logic (Töytäri et al., 2018; Windahl & Lakemond, 2010).

Because “identity emerges from the process of organizing”, in which multiple identities are simultaneously involved (Clegg, Rhodes & Kornberger, 2007: 497), the impact of servitization on organizational identity is unpredictable. At the initial stage, servitization will at least redefine the corporate identity, which is often expressed in public and accessible forms and can be defined as the “identity attributed to an organization” by corporate management (Rodrigues & Child, 2008: 886). Strategically redefining a firm's corporate identity engenders significant organizational changes (Clark, Gioia, Ketchen, & Thomas, 2010) that involve the redefinition of firm boundaries. Although this type of transformation typically begins with a new strategic vision/mission (Vaara & Tienari, 2011), “top managers may try to foster an organizational culture that lends credibility to their desired corporate identity” (Rodrigues & Child, 2008: 890). Because strategy reflects a firm's identity as defined by its boundaries (Kogut, 2000), a manufacturer must achieve the required consistency between the new “identity of the organization and its activities” in servitization (Santos & Eisenhardt, 2005: 500). Therefore, a new identity results in crucial strategic boundary choices, such as “whether to make an acquisition, enter a new market, or divest a division” (Tripsas, 2009: 441).

2.3.2. Servitization shapes a firm's capabilities

To effectively execute servitization strategies, manufacturers must move downstream closer to the end customers (Wise & Baumgartner, 1999) while leveraging a set of extant and additional capabilities (Hobday et al., 2005; Ulaga & Reinartz, 2011) and balancing between generic and specialized capabilities (Ceci & Masini, 2011). Naturally, technological capabilities are a necessary condition for the provision of complex solutions (Ceci & Prencipe, 2008; Davies & Brady, 2000). Moreover, servitization calls for new capabilities, such as capabilities in system integration, project management, IT systems, consulting, financial competences, delivery, and postsales service (Baines et al., 2011; Brady et al., 2005; Davies, 2004; Huikkola et al., 2016; Osegowitsch & Madhok, 2003; Prencipe, 2003), along with capabilities in coordinating with suppliers (Ceci & Prencipe, 2008; Huikkola & Kohtamäki, 2017), capabilities in facilitating learning in customer partnerships (Bäck & Kohtamäki, 2015; Shepherd & Ahmed, 2000; Tuli et al., 2007) and relational capabilities (Kohtamäki et al., 2013; Kowalkowski, Witell, & Gustafsson, 2013; Matthyssens &

Vandenbempt, 2010). Occasionally, servitization calls for capabilities to conduct a customer's existing operations effectively. For instance, in O&M (operations and maintenance) solutions and performance-based contracts (Visnjic et al., 2017), the manufacturer needs to build these types of capabilities, which may cause conflicts in dedicated customer groups.

Following the Resource-Advantage theory, Raddats, Burton, and Ashman (2015) suggest that firms develop capabilities that enable successful services through resource reconfigurations. Ulaga and Reinartz (2011) conclude that to leverage these unique resources, successful firms must build capabilities related to service-related data processing and interpretation, risk assessment and mitigation, design-to-service, and hybrid offering sales and deployment. According to Mathieu (2001), the development of the required capabilities may occur within a range that includes internalization, partnering, and outsourcing. Among the benefits of collaborative forms, Paiola, Saccani, Perona, and Gebauer (2013: 395) highlight “sharing risks, accessing essential resources and skills in building a competitive advantage, and moderating the political costs of entering the service business”. From this viewpoint, firm boundaries are “dynamically determined by matching organizational resources with environmental opportunities” (Santos & Eisenhardt, 2005: 497).

2.3.3. Servitization shapes a firm's power position

While extending product offerings by adding services, manufacturers must move vertically (Davies, Brady, & Hobday, 2006; Hax & Wilde II, 1999; Wise & Baumgartner, 1999) to protect their strategic domain (Cacciatori & Jacobides, 2005). A certain degree of control over the service value chain is required if complex services are to be offered successfully (Raynor & Christensen, 2002). Providing solutions successfully also requires manufacturers to ensure certain product specifications and system compatibility and performance (Osegowitsch & Madhok, 2003; Visnjic et al., 2017) while adjusting services to meet customers' needs (Davies, 2004; Nordin & Kowalkowski, 2010). These crucial concerns highlight the relevance of controlling how subsystems are coupled and related processes are organized (Baines et al., 2011). Because vertical integration is a method used by manufacturers to guarantee that product specifications and services can be adjusted to diverse customer needs (Davies, 2004), manufacturers commonly use mergers and acquisitions (M&A) to retain downstream control (Huikkola et al., 2016; Osegowitsch & Madhok, 2003). However, manufacturers can also effectively internalize uncertainty and govern the value system without full ownership by employing alliances, joint ventures, and licenses to retain flexibility (Harrigan, 1984; Mahoney, 1992; Porter, 1980). Moreover, following Mathieu (2001), Paiola et al. (2013) suggest that the use of collaborative options when manufacturers enter the service business may moderate the political cost among partners, customers, traditional service providers, and other manufacturers.

To employ specific control mechanisms and understand the sources of industry control, one must accurately analyze the distribution of power (McGahan, 2000) to identify profitable industry “bottlenecks” (Grant, 2010). Within such an approach, questions such as how the value system is governed (Adams & Brock, 1982) and how the interfirm division of labor is organized within the value system (Gereffi, Humphrey, & Sturgeon, 2005) must be addressed. Achieving industry dominance requires a redefinition of roles and responsibilities through an examination of other players' needs and the implementation of a less replaceable bottleneck (Jacobides, 2011). While companies move within the industry value system to increase their governance of strategic relationships, knowledge (Garud & Kumaraswamy, 1993), and resources, firm “boundaries determine the sphere of organizational influence, including its degree of industry control and its power over the external forces” (Santos & Eisenhardt, 2005: 491).

2.3.4. Servitization shapes a firm's efficiency logic

The efficiency concept is rooted in a transaction-cost economics (TCE) approach that evaluates the costs of coordination mechanisms, i.e., whether it is reasonable for a firm to conduct operations inside the corporation (a hierarchical structure), purchase outcomes from external firms (a market mechanism), or ally with external partners (a collaborative mechanism) (Williamson, 2008). The previous literature has acknowledged that hierarchical governance is used to mitigate the effects of behavioral uncertainty, whereas the market mechanism is primarily used to maintain flexibility (Dyer, 1996). The efficiency approach thus attempts to maximize the firm's long-term savings and minimize its governance costs (e.g., negotiation and monitoring costs). Thus, firms typically need to cope with the contradictory goals of simultaneously sourcing cheap and building trust (Vesalainen, Valkokari, & Hellström, 2017).

In servitization, a manufacturer typically outsources its noncore and upstream activities (e.g., operations that occur during the raw material and production stages) to external partners and internalizes the most strategic downstream activities (e.g., operations that occur during the distribution phase and involve entities closest to the end customer) to retain customer intimacy (Huikkola et al., 2016). Information asymmetries between parties are particularly likely to increase governance costs and shape boundary decisions (Zou, Brax, Vuori, & Rajala, 2019). Emerging transaction costs can be decreased by building trust, personal relationships, and mutual commitment (Dyer, 1997; Huikkola, Ylimäki, & Kohtamäki, 2013). Table 1 outlines selected firm boundary theories and their linkage to servitization.

3. Research methodology

3.1. Research strategy and case selection

We use a multiple-case study to analyze how four servitized global companies headquartered in Finland changed their boundaries for repositioning. The case study is a suitable choice when studying questions that have not been studied comprehensively (Yin, 1994), and they are justified if the study intends to explore and describe in further detail the presence of an important phenomenon and its driving forces under uncommon and difficult-to-replicate conditions (Dubois & Gadde, 2002; Eisenhardt & Graebner, 2007; Siggelkow, 2007).

Purposeful sampling (Patton, 2002) was chosen as the case selection method. As the main selection criteria, we focused on manufacturers that 1) are further ahead in servitization (proven track record in generating financial value from services), 2) moved along the value system while continuously changing their boundaries (firms' top management publicly stated that their firms underwent strategic transitioning toward services), and 3) offer their customers different types of solutions (e.g., turnkey projects, O&M solutions, maintenance and repair services, and long-term service agreements). Therefore, the solutions provided involve a wide range of activities that support the development of a customer's business productivity.

3.2. Data collection

We conducted 57 interviews with the firms' executives between 2010 and 2017 (Table 2). The respondents were selected based on their senior management positions, experience in developing service and solution businesses, and responsibility for developing a particular business unit, product/service line, or business relationship. Fifty-two internal respondents (focal companies' managers) and five external respondents (focal companies' strategic customers' and suppliers' managers) were interviewed because of the need to triangulate the data to increase reliability and accuracy. The interviews ranged from 40 to 105 min, and all interviews were audiotaped and transcribed verbatim with the interviewees' permission, resulting in approximately 900 pages of transcribed text. Additionally, extensive secondary data collection

Table 1
Selected firm boundary theories and their linkage to servitization.

Concept	Theoretical premise	Key question	Key objective	Linkage between servitization and firm boundary theories	Implications
Capabilities	Resource-based theory (RBT), dynamic capabilities (DC)	What are the most strategic assets for the firm? How do capabilities evolve?	Maximizing the value of the most valuable resources Minimizing the possession of noncore/decaying resources	Building the resources needed in servitization Leveraging existing technological resources in new service offerings Releasing noncore resources to build new resources and leverage existing ones	Servitization requires reconfiguration of the manufacturer's capabilities
Power	Industrial organization (IO)	How can the firm be protected from external competitive forces?	Maximizing the control of the most strategic resources to protect from external forces Minimizing the effects of external forces	Outsource activities at the upstream end when there is little dependency on external partners Internalize activities at the customer end when there is too much dependency on external partners	Servitization requires a stronger position at the customer end
Identity	Managerial cognition	How can we make sense of "who we are as an organization"?	Maximizing mutual understanding of the firm's identity Minimizing inertia regarding the firm's identity	Emphasize the importance of customer-oriented culture Diminish the dominance of product logic	Servitization requires a change in a manufacturer's identity (who we are as an organization)
Efficiency	Transaction-cost economics (TCE)	Should we make, buy, or ally?	Maximizing future savings Minimizing the cost of governance	Mitigate the effects of behavioral uncertainty Use market mechanisms to maintain flexibility	Servitization calls for the use of different governance mechanisms in upstream and downstream activities

was conducted, including an analysis of public presentations, annual reports, press releases, and firm histories, to cover, complement, and support issues that were not addressed during the interviews. Table 2 describes the general information of the studied cases and respondents and the data utilized in the analysis in the study. In summary, the studied firms were relatively large manufacturers, and on average, the respondents had almost 20 years of work experience in related business fields (median 19 years; no work experience information was available for six interviewees).

3.3. Analysis process

Content and thematic pattern matching (Yin, 1994) were employed to analyze the data. The coauthors of this article read and discussed the data to discover patterns and identify differences across the cases. First, a within-case analysis of each corporation was constructed to understand how each corporation's economic performance developed during the investigated time-period (2000–2014). In these analyses, although not explicitly reported in this manuscript due to word-count limitations, a detailed analysis of how a company's financial numbers, service business, installed base of products, and number of employees evolved during the corresponding period was performed. Additionally, a spreadsheet program was used to list all corporations' reported investments, divestments, joint ventures, acquisitions, stake-ins, alliances, and license agreements based on public information (mainly annual reports and press releases). Then, an analysis of how each corporation's identity, efficiency, power, and capabilities changed during the study period was conducted. Second, a cross-case analysis was constructed to discover patterns and variety across the cases in terms of identity, efficiency, power, and capabilities (Beverland & Lindgreen, 2010; Eisenhardt, 1989; Huberman & Miles, 1994). In this analysis, selected boundary theories (i.e., identity, capabilities, power, and efficiency) were used as the main categories when trying to identify how servitization drives firm boundary delineation. We coded the interviews based on respondents' answers regarding logic change from products to solutions. These codes were compressed into first-order items that describe the language used by the respondent in the interviews (Nag, Corley, & Gioia, 2007). The next phase focused on the analyses of first-order items, thus representing second-order items. The final step included third-order items that reflect the most abstract analysis dimension. The qualitative content analysis technique was utilized in the data analysis, which helped the researchers convert the empirical interview content into the four firm boundary lenses. Fig. 1 describes the study's general coding and reasoning process, proceeding from the language used by the respondents on the left side to the most abstract and theoretical phenomena on the right side.

4. Primary drivers for repositioning and firm boundary realignment in servitization

The case companies focus on system integration, which entails assembling and testing systems while outsourcing subsystems and component manufacturing. Although this process is typically the first step toward customer solutions, alliances and joint ventures are common coordinating mechanisms in the upstream end that simultaneously allow focal companies to minimize transaction costs and exploit potential localization advantages in cost-competitive countries (Fig. 2).

Although it is becoming a strategic focus area, procurement was centralized to strategic suppliers. Because this situation may increase subsystem suppliers' bargaining power, case companies should develop a strong supply base while finding mechanisms to limit suppliers' bargaining power and cope with dependence and transaction costs. The trend seems to be to adopt a hybrid form between a vertically integrated system seller and an agnostic system integrator that combines the benefits of both models (Davies et al., 2007). However, it was also possible to give more power to the strategic suppliers because of closer

Table 2
Sample description and sources of information.

	CASE A	CASE B	CASE C	CASE D
Turnover € (2014)	4.7 billion €	1.4 billion €	2 billion €	7 billion €
Service share	41%	36%	42%	45%
Industry	Energy	Mining	Heavy industry	Construction
Net profit % (5-year average)	11.34%	8.72%	8.36%	13.7%
ROI% (5-year average)	21.28%	20%	19%	34.5%
Core products	Propulsion systems and power plants	Minerals and metals processing technology	Industrial cranes and lifting systems	Lifting equipment
Core services	Integrated solutions, service agreements, spare parts, maintenance, O&M, modernization, smart solutions	Turnkey solutions, spare parts, maintenance, O&M, modernization	Service contracts, spare parts, maintenance, modernization, smart solutions	Service contracts, modernization, turnkey solutions, maintenance, spare parts, people flow analyses
Archival data	1 (CEO)	1 (CEO)	2 (CEO)	2 (CEO and Chairman of the Board)
- Presentations in investor meetings	1 history (311 pages)	900 pages of annual reports	2 histories (676 pages)	4 histories (1593 pages)
-Histories	1 (VP, Service Unit)		403 documents of press releases	273 documents of press releases
-Press releases	20 documents of press releases		1.388 pages of annual reports	1037 pages of annual reports
-Annual reports and financial statements (2000–14)	2533 pages of annual reports			
Number of interviews and pages of transcripts	21 interviews (280 pages)	16 interviews (328 pages)	14 interviews (247 pages)	6 interviews (88 pages)
Examples of respondents' positions	Sourcing Director, Maintenance Director, General Manager, Sales Director, Business Development Director, Marketing Director, Digitization Director, Solutions Director, Service Unit Director, Technology Management Director, VP/Solutions, Director of Finance	Site director, VP/Sales, Global Service Operations Director, VP/Strategy, SVP/HR, Head of Services, VP/Services, VP/Regional Services, VP/Operations and Process Development, Service Business Manager, Marketing Director	Service Director, Area Manager, District Manager, Product and Service Development Director, Global Category Manager, Innovation Director, CDO, Regional Sales Director, Product Manager, Global Key Account Manager	Service Manager, Area Manager, Head of Service Business, Service Development Director, Purchasing Director, Key Account Manager
Average and median work experience in the industry (in years)	20.74 years (mean) 19 years (median)	16.64 years (mean) 16 years (median)	22.7 years (mean) 22.7 years (median)	20 years (mean) 18.5 years (median)

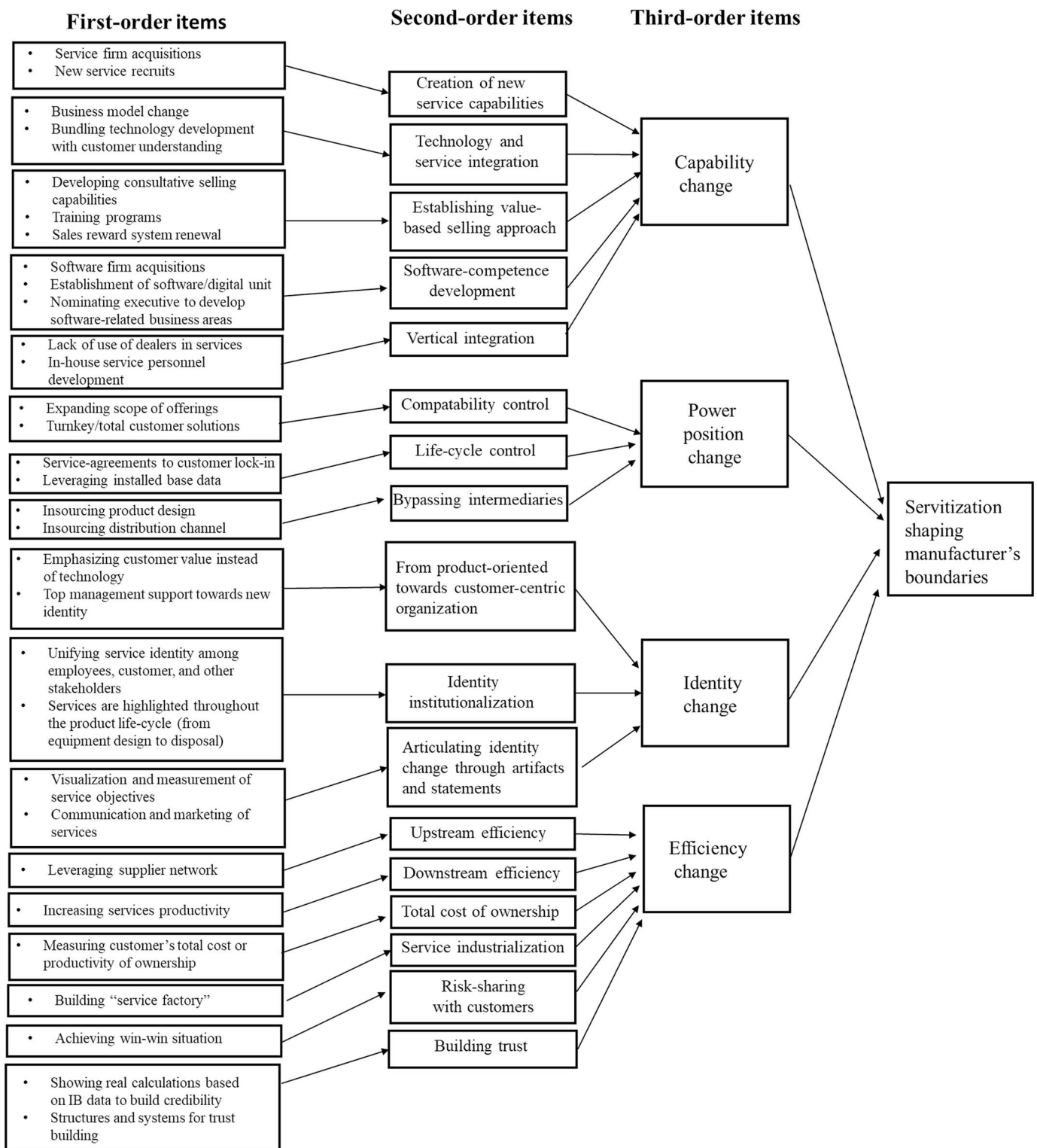


Fig. 1. Illustration of the data structure.

interaction with customers, enabled by digital technologies such as the Internet of Things (IoT). Otherwise, giving control to the upstream would have created too many dependencies between upstream providers and focal companies. The respondents reflected that their industries are likely to follow the patterns occurring in other industries.

It's going to happen, as in the car industry in the beginning of the 70s. The car industry began to purchase and create system suppliers, and they continued to develop it (Director, Case A).

Some initiatives implemented by the analyzed companies include expert heuristics, such as a rule stipulating that a given supplier's sales to the company can account for only 20–50% of its total sales, and other practices, such as the facilitation of the development of key suppliers or the use of a dual-sourcing policy for critical components. In all cases, companies have to safeguard intellectual property rights mainly to protect their profitable and vital spare parts business.

I don't think that that has been a strategy to purchase part providers.

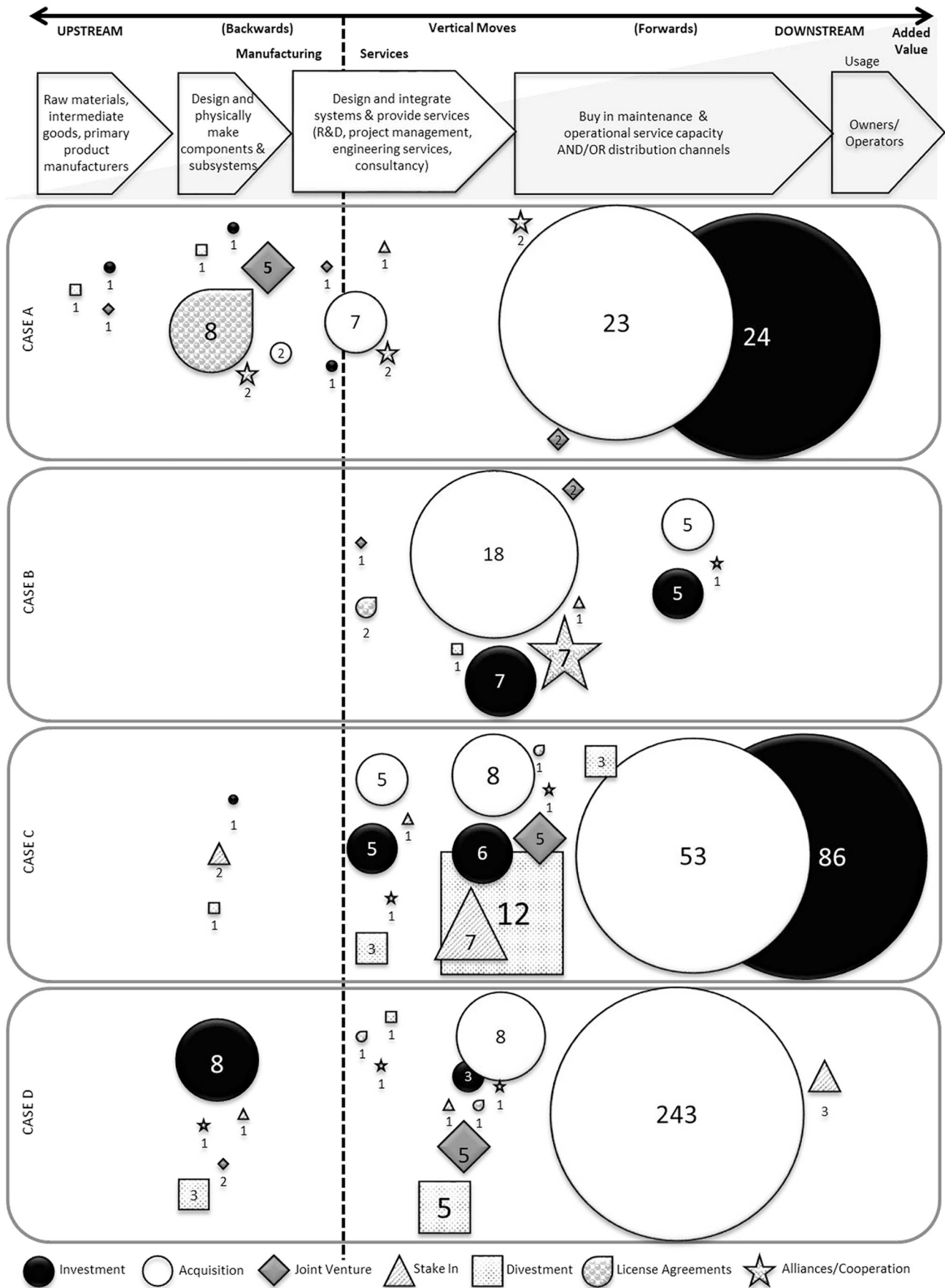


Fig. 2. Number of repositioning moves throughout the value system (2000–2014).

Table 3
Illustrative proof quotes.

	Case A	Case B	Case C	Case D
<p>Servitization shaping a firm's identity (1. From product-oriented to customer-centric firm; 2. Identity institutionalization; 3. Artifacts and statements)</p>	<p>1. "We aimed to really get the message through the organization and get everybody to become customer-focused, creative, innovative rather than only technically focused. (VP service unit)</p> <p>2. "It [brand] is a combination of a company's reputation and identity. Our reputation comes from making promises and keeping them. We optimize lifecycle value through efficient, flexible and environmentally sound power solutions on land and at sea. Our roots are in engines and engineering, ships and power plants. We are passionate about technology and willing to go to great lengths to ensure that our solutions work as they should. We focus on maximizing the customer benefits of our products and services through environmentally and economically sustainable measures. (Website)</p> <p>3. "That's why I like yesterday's statement very much from the CEO about entrepreneurship. You need to go back a little bit to entrepreneurship. You need to look upon what the customer really needs, and you need to have an organization that is flexible and entrepreneurial enough to be able to put that package and the solution together." (Director)</p>	<p>1. "We used to say [for kicks] that we sold the project, and that's it. We delivered the project and forgot the customer." (VP, Sales)</p> <p>2. "One of the focus areas for 2011 has been defined as the strengthening and unification of our identity. After several changes and acquisitions, there is a need to focus on common goals, operating methods, and practices based on the company's values and principles. The strengthening of a common identity and smooth cooperation throughout." (Case B's Annual Report, 2010: 50)</p> <p>3. "Thus, in all communication and all marketing really, that stuff, it's there and visual, the top management has done well, they have highlighted how important the services are quite thoroughly and consistently for several years, so people have started to understand that it brings value to the company." (Head of Services)</p>	<p>1. "The content of the contract [in smart solutions] will become more strategic for the customer, and you will not be competing with pure maintenance firms anymore. You're not in the same area with them anymore, and you'll be at the same level as Ferrari. Both you and the customer know that you're not competing with the masses, but differentiation really occurs. We can really be distinctive with our services.... Basically, everything changes—business model, workings and global processes. We move from greasing to data management to optimize life-cycle costs. This is already extremely difficult, and this wouldn't be possible without support of top management." (Head of Business Development)</p> <p>2. "Case C moved from selling products to selling solutions some time ago. We're now taking this process one step further and selling smart solutions that include software and automation to give customers the highest life-cycle value." (Case C's Annual report 2009: 27)</p> <p>3. "Top managers' job is to think about how to make a product desirable, how it solves customers' problems and how it will be presented to the customer in a way that is interesting and easy to understand. Top managers need to show an example and infect personnel around them with enthusiasm for marketing and sales." (CEO, Case C)</p>	<p>1. "Our unambiguous goal was to transform a traditional product-focused company into a customer-centric company." (CEO)</p> <p>2. "Services used to be mandatory, something that allowed us to sell hardware and products. We had to provide services to keep the product on track. This was the situation 15–20 years ago. Today, the role of services is emphasized, and people understand the importance of life-cycle costs and how important services are for product sales. Today, the service business is our key business." (Area manager)</p> <p>3. "We regularly describe in our personnel magazine which countries have best achieved their financial goals in service business and adopted our best practices." (CEO)</p>
<p>Servitization shaping a firm's capabilities (1. Creation of new capabilities through MR&As; 2. Integration of technology and services; 3. Developing a value-based approach to selling; 4. Creating software competencies; 5. Vertical integration in services)</p>	<p>1. "There was a time when we acquired a service company every week or month. That's why we started to acquire our own maintenance base all over the world." (Director)</p> <p>2. "Our strategy is based on technology, customer, and digitization. It's much about changing your business model and developing your customer interaction. Digitization is a pretext for this." (Director, Solutions)</p> <p>3. "It's not only sanctions but also bonuses. We should get bonuses if we do a better job. For instance, we guarantee 97% usability to our customer in this industry." (General Manager, Asset Performance Optimization)</p> <p>4. "This acquisition supports our growth and strengthens our digital offerings and competencies, in particular in areas of data analytics, modelling, and performance optimization." (Press release)</p> <p>5. "... We have more than 180 different locations, so it really means that Case A is very local and is fully owned by Case A, so they are not agents or dealers. They are our own people, and there are more than 10,000 people in</p>	<p>1. "We made this acquisition that complements our technology, but it gives us also a strong service business. In addition to service companies, we have screened companies that develop digital services and smart solutions." (Head of Services)</p> <p>2. "Pure products can be copied. Competing products may not be technologically that good, but the difference is smaller and not so crucial. That's why we need to provide also services that give added value to the customer." (Head of Services)</p> <p>3. "I have seen many good engineers that are good at talking about product features and functionalities. But they don't understand that solution sales are about consulting the customer. I use the term consultative selling. It's real solution sales – a different style to sell." (VP)</p> <p>4. "We had this acquisition that complemented our technology offerings... We haven't made any decisions, but we are attempting to make acquisitions related to smart services and digitization." (Director, Global Service Operations)</p>	<p>1. "With every acquisition comes a piece of unique knowledge. Even more important, through our maintenance activities, we get a lot of input information for our R&D." (Case C's Annual report, 2001: 6)</p> <p>2. "We try to combine our maintenance and remote data. The next step is to achieve benefits through integration of remote and service know-how." (Head of Business Development)</p> <p>3. "When we begin to provide total solutions to our customers, we need to understand their business environment extremely well. When we go to talk to our customers and provide for example outsourcing services, we need to have many competencies even before we even begin to negotiate with them." (Manager)</p> <p>4. "The Case C automation and software development unit was founded to further utilize the scale of Case C's business and better develop software products for all business lines." (Case C's Annual report 2010: 5)</p> <p>5. "We have to have personnel who are inside the factory, our own men, our own maintenance</p>	<p>1. "We have made more than 20 acquisitions each year to increase our maintenance base." (CEO)</p> <p>2. "We are technology experts. But we need to integrate that into our service business and understanding customer value and being humble in the customer work. I'm glad we have been able to find that kind of person." (Area Manager)</p> <p>3. "Quantifying customer value during the sales phase is crucial. We need to increase our productivity in the field and capture and verify the real value for the customer." (Area Manager)</p> <p>4. "The CIO position offers a vantage point across the whole company. I cannot think of any other role in which you get to work with every single function." (CIO)</p> <p>5. "We have our own technical school where we train our people and subcontractors. It's continuous training. We are a global company and we acquire a lot of information that we share through these trainings." (Area Manager)</p>

(continued on next page)

Table 3 (continued)

	Case A	Case B	Case C	Case D
Servitization shaping a firm's power position (1. Compatibility control of components; 2. Life-cycle control; 3. Taking over intermediaries)	<p>services, so that's maybe the biggest difference. Our competitors, they don't really have this wide global network of their own people's companies. That's probably our biggest competitive edge." (VP)</p> <p>1. "Last summer we acquired this [software] company that has increased our scope of offerings. Today we can say that we have the most extensive offering in the industry." (CIO)</p> <p>2. "If you are an integrator you get the standard product of an engine, and you have to put them together without matching the performance; this means that it's a disaster—you can still sometimes have two different suppliers, and you have to match them, meaning that there is a lot of work with drawings and this and that.... Of course, we can promise better warranty terms because we have control over the whole thing..." (General Manager)</p> <p>3. "When the customer presents us with an inquiry, the dialogue has been going on for some time already. The concepts are more or less ready, and it's difficult to influence. You can do this somewhat, but five, six years ago, we thought, 'how can we change this?' And we saw that ship designers are always early because that's before you go to the yard, and you need to have a design of what kind of ship. That's why we acquired several ship design companies back then ... so today, we have 400 people roughly working on ship designs. These people are involved with ships owners in really early phases, developing..." (VP)</p> <p>1. "I don't necessarily mean that we are going to develop all this, but we probably have our solutions for engines and propellers and thrusters and maybe electrical motors. Then, we need to connect this to some external third-party partners who then maybe come with weather routing or whatever it is. But we are maybe the integrator... we provide all this variable information, and we put together these performers' guarantees, but then we work with some other providers." (Director, Maintenance)</p> <p>2. "We have been able to bundle these technologies into performance-based contracts. Our customers pay for the cost savings that are enabled by our new technology." (Manager, Strategic Alliances)</p> <p>3. "...The customer is prepared to buy design from us and he is prepared to buy all the machinery for his ten vessels, and he is already considering to sign a five- or ten-year-long service agreement so this is where we come into</p>	<p>5. "Our service has mostly been about advisory-type of provision to the customer. This enables us to obtain better margins. Of course, we don't have full responsibility for the factory's maintenance in this case either." (Director, Site Services)</p> <p>1. "Last year we had one equipment delivery under negotiation. We got the deal...because we understood to provide O&M solution early enough. Our total solution was more expensive, but we got the deal because we made promises to the customer about usability etc." (Director, Global Service Operations)</p> <p>2. "When we sell these kinds of long-lasting products, we have to give a picture that we can control the product during the whole life-cycle. Now this is not happening." (Sustainability Manager)</p> <p>3. "...We are selling to engineering companies, and the engineering companies are selling to the end customer. And the engineering companies are not interested in buying services from us. Thus, how are we able to connect with the end customer and at the same time to sell products to the engineering company? This is the way we are moving, to take the EPC and EPCM role, so we wouldn't need engineering companies, but maybe we would use them as subcontractors, not vice versa." (Head of Services)</p>	<p>people...who have been trained to do that maintenance job." (Area Manager)</p> <p>1. "One interesting path would involve taking full responsibility for the entire lifting process. We do a lot of work with this issue." (Director, Operations Development)</p> <p>2. "Our prediction is based on historical data. We have also gained data through remote services about what the change intervals and calculatory lifetimes have been for some critical components. These have been strategic decisions for some specific products." (VP)</p> <p>3. "Our position in Finland is very strong. I don't see that we would progress with the distributors here, but distributors are very important when entering new countries." (VP, Business line)</p>	<p>1. "The firm has full responsibility for its product for its customers - even from the areas it's not working on itself." (CEO)</p> <p>2. "Today, customers understand the importance of life-cycle costs well. Life-cycle evaluations and services are an important part of hardware sales today." (Area Manager)</p> <p>3. "A fifth important development area in China is to develop the service business. In China, the market structure is different, as distributors play an important role in selling the equipment." (CEO)</p>
Efficiency (1. Upstream efficiency; 2. Downstream efficiency; 3. Total Cost of Ownership (TCO); 4. Service industrialization; 5. Mutual risk-sharing; 6. Trust building)	<p>1. "I don't necessarily mean that we are going to develop all this, but we probably have our solutions for engines and propellers and thrusters and maybe electrical motors. Then, we need to connect this to some external third-party partners who then maybe come with weather routing or whatever it is. But we are maybe the integrator... we provide all this variable information, and we put together these performers' guarantees, but then we work with some other providers." (Director, Maintenance)</p> <p>2. "We have been able to bundle these technologies into performance-based contracts. Our customers pay for the cost savings that are enabled by our new technology." (Manager, Strategic Alliances)</p> <p>3. "...The customer is prepared to buy design from us and he is prepared to buy all the machinery for his ten vessels, and he is already considering to sign a five- or ten-year-long service agreement so this is where we come into</p>	<p>1. "We decrease the number of suppliers because we want to collaborate more with them. That's our primary goal. By centralizing purchases, it's possible to achieve cost benefits." (CPO)</p> <p>2. "Our target is [to] obtain cost-savings through cost-efficiency... we make a profit and loss account and choose our target for the bottom line. We often have a target price, which is linked to the customer's production's output. We attempt to obtain lower costs than that. Bonus sanctions are also utilized to get the job done. Furthermore, measures such as quality, used capacity, and the number of malfunctions are measured to ensure that we are going in the right direction." (Service Director)</p> <p>3. "...However, we say that we are cheaper in terms of life-cycle costs because we have such a damn good service organization... in the end, the life-cycle cost is lower and remote supports all of this." (Remote Service Product Manager)</p> <p>4. "The key driver was to achieve large volumes, created through e-mails, SMS or extranet</p>	<p>1. "We have this kind of idea that the customer doesn't have to transfer all of his risks to us, but he can keep part of the risk himself and move another part to us" (Service Manager)</p> <p>6. "We need face-to-face services. We need meetings to build trust. That trust is not created through e-mails, SMS or extranet</p>	<p>1. "We have focused on improving quality issues and productivity [in services]." (Service Development Director)</p> <p>3. "But for the lifetime, yes [it's cheapest] ... normal lifetime expectancy is 15 years on a cruise ship, and we're way past that, still running." (Head of Services)</p> <p>4. "We have to achieve faster response times with lower costs. We have to utilize the density of our installed base. We need to optimize the work we are doing." (Area Manager)</p> <p>5. "... We have this kind of idea that the customer doesn't have to transfer all of his risks to us, but he can keep part of the risk himself and move another part to us" (Service Manager)</p> <p>6. "We need face-to-face services. We need meetings to build trust. That trust is not created through e-mails, SMS or extranet</p>

(continued on next page)

Table 3 (continued)

Case A	Case B	Case C	Case D
<p>the picture. Thus, as such, in life-cycle solutions, they don't develop something by themselves." (Director, Maintenance)</p> <p>4. "In our strategy, we have three issues: 1) efficiency, 2) environment, and 3) life-cycle... We develop technologies that enable the creation of customer benefit." (Director, Solutions)</p> <p>5. "Part of what we need are new tools to put us in a situation where we really can guarantee some performance. And the pricing is then maybe pretty much accordingly, provided that we achieve this performance... if it's less, I'm prepared to share that risk, then you're going to pay me less. But in the best case, if we actually manage to exceed the target level and if that increases customer's income, I want part of that as some sort of bonus then." (Director, Maintenance)</p> <p>6. "A product owner might be working in all the major hubs all over the world, and then it's for sure a big advantage if you could have a service provider like us who you can trust." (Director, Maintenance)</p>	<p>customers increasingly want us to model and commit to certain level of efficiency. And they pay for it" (VP, Services)</p> <p>6. "We have to go to the direction that we talk about our customer's strategy. This means that there has to be trust. We have a very structured system how we manage our customer relationships." (VP, Sales)</p>	<p>even though we spent lot of money on this [digital service development]... In a high-volume business, we need to achieve extremely low unit costs." (Head of Business Development)</p> <p>5. "We have moved to an insurance-based model. In that model, we take the risk and share it with the customer." (Head of Business Development)</p> <p>6. "Customers can see the real-time data. We have created different models, but we try to support our customer through the equipment data. Our service people can see the information, and the customer has possibility to see the information too." (Category Manager)</p>	<p>services. Trust is created face-to-face and through services. We need to go through issues, and we have systems that support this trust building." (Area Manager)</p>

It has been more to outsource. Of course, this can be a problem. Thus, we are using other suppliers, too [dual sourcing]... so there's a contract with a supplier, and they have to sign for the intellectual property rights (Director, Case A).

In contrast, the level of vertical integration increases at the downstream end. The companies do not use alliances, licensing agreements, or joint ventures. Instead, new investments, acquisitions, and stake-ins are the preferred strategic practices to acquire the service-related knowledge and operative capacity required for service delivery while building a proper service network (Fig. 2). Our data demonstrate not only the need to diversify the industry risk, expand the installed base, and become closer to customers while packaging services for higher margins but also the attempt to safeguard the strategic domain and leverage capabilities that lead the case firms to shift to vertical integration (Cacciatori & Jacobides, 2005; Davies et al., 2006; Hax & Wilde II, 1999; Wise & Baumgartner, 1999). Table 3 provides quotes illustrating how servitization shapes manufacturers' boundaries.

Through acquisitions, Case B strives to increase its sales, strengthen its market position, add resources and know-how and expand its technology and service offerings. Furthermore, acquisitions can be focused on areas that reduce Case B's sensitivity to fluctuations in the mining and metallurgical industries (Annual report, Case B).

4.1. Reconfiguring corporate identity as a solution provider

Organizational identity answers questions such as who we are as an organization. While challenging the existing business logic, mindset, and corporate identity, the service transition involves a change in companies' identity along with a reconsideration of the scope of their vertical positioning. The interviewees had many ways to describe the change in their corporate identity from a product and technology organization to a customer solution provider. Commonly, they concluded that the change was intense and that it influenced offerings, processes, structures, and organizational culture such that they found a balance between efficiency-centered manufacturing values and service-oriented values, which are based on customization and flexibility (Gebauer, Fleisch, & Friedli, 2005). The interviewees indicated that their organizational identity did not completely change and that the service identity was built on top of the firm's technological heritage. In addition, the shift in corporate identity has been institutionalized to an extent, with examples found in annual reports, official documents, and our interviews.

...It's a fundamental change to really only think about the technology, the hardcore equipment to start thinking of all the services related to that, and the customer from a different perspective and angle... (Head of Services, Case B).

Defined as the "general expression of the overall purpose of the organisation, which, ideally, is aligned with the values and expectations of major stakeholders and concerned with the scope and boundaries of the organisation" (Johnson, Scholes, & Whittington, 2008: 10), a company's mission constitutes an essential part of its core organizational ideology (Collins & Porras, 1996). The corporate identity attached to an organization by its executives can be imperfectly projected in objective public documents and mission statements (Rodrigues & Child, 2008). Although not an entirely accurate image, examining how their missions have evolved can be an imperfect but still suitable illustration and reflection of the evolution of the firm's identity (Vaara & Tienari, 2011; see Table 4).

Although altering the organizational identity through a new mission and vision statements is an important tool (Clark et al., 2010), managers' articulation of the company vision was identified as a fundamental step in determining the formation process (Gioia, Price, Hamilton, & Thomas, 2010). According to Rodrigues and Child (2008: 890), "top managers may try to foster an organizational culture that

Table 4
The evolution of companies' identities during service transition.

Case	Mission/Vision/Strategy Intent		
Case A	2000–2002 Case A develops efficient and sustainable equipment and services.	2003–2004 Case A develops efficient, reliable, and sustainable solutions.	2005–2014 Case A develops sustainable and complex lifecycle solutions
Case B	2007–2014 Case B offers cutting-edge, innovative, and sustainable solutions to process industries.		
Case C	2003–2005 Case C develops and provides cutting edge technical solutions and associated maintenance services that offer the lowest cost of ownership and maximize uptime.	2006–2010 Case C offers customer services to improve customers' performance and their entire businesses .	2011–2014 Case C offers productive and safe operations and improves customers' entire businesses through real-time data.
Case D	2006–2007 Case D contributes to the core of the customer's system .	<u>2008</u> Case D contributes to the fluid movement of citizens and materials.	2012–2013 Case D's strategy is to deliver a performance edge for B2B customers by offering innovative, cost-competitive, and sustainable solutions .

SOURCE: Authors' summaries and interpretations based on companies' annual reports and other public materials. Original quotes have not been used to secure companies' anonymity (original meaning remains).

lends credibility to their desired corporate identity”, as shown in the interviewees' accounts.

Modifying corporate identity does not imply an instantaneous change in organizational identity and culture. Such a change takes a long time to institutionalize. While hiring new people with different attitudes and mind-sets was used “as [a] boundary mechanism to re-shape identity” (Santos & Eisenhardt, 2005: 503), identity change has also increased the need to acquire new knowledge (Nag et al., 2007) and control industry bottlenecks (Jacobides, 2011) to create and implement innovative solutions while assuring system reliability and profitability (Salonen, Gabrielsson, & Al-Obaidi, 2006) and guaranteeing life-cycle performance (Rabetino, Kohtamäki, Lehtonen, & Kostama, 2015). Overall, every case firm began to emphasize its customers' productivity gains as a part of their organizational purpose, as evident in Table 4.

4.2. Developing new capabilities for going downstream

Shifting toward a customer-centric organization increases the need to develop new capabilities to deliver novel solutions to different customers (Brady et al., 2005; Ceci & Masini, 2011; Penttinen & Palmer, 2007). Notably, the case firms obtained new service-related capabilities through acquisitions, as acquisitions enable firms to obtain service competencies rapidly.

...We made a lot of acquisitions—I think almost 10 acquisitions that are more or less service related. That has been a quick way to get services-oriented people with a service-mindset in the company. (Head of Services, Case B).

The studied companies considered customer solutions a potential competitive advantage source that would require some reconfiguration of resources and the actualization of processes. The respondents highlighted the importance of developing capabilities to bundle products and services into effective solutions. All case firms acknowledged that the performance edge depends on how technology and services are intertwined:

You won't be successful at selling pure technology, because everybody can do it, probably even cheaper than you can do it. Thus, technology itself cannot be your competitive advantage. Competitive advantage emerges from your ability to transform technology into services. (Product manager, Case C).

The transformation from products to customer solutions intersects with strategic capabilities by providing opportunities to develop new capabilities while establishing expectations about capability development to cocreate and capture value from solutions. The interviewees emphasized several capabilities that are central to integrated solutions,

such as solution selling capabilities.

One of our strategic development programs is to develop sales competencies. Selling solutions, selling value and quantifying the delivered value during the sales process are our focus areas. (Area manager, Case D).

Additionally, all studied corporations invested in building software capabilities, which are primarily related to remote services and automation. The transition from manufacturing-based to digitally enabled business strategies requires new types of capabilities and investments. Simultaneously, this transition creates a significant challenge for the organizational identity as executives must consider whether they are software companies or technology companies.

... If I look at the bigger attempt that we made [in terms of acquisitions], sometimes, it might be something more than just physical products or conventional industrial services. It might be things like software. Now these optimizers and condition-based monitoring are so important for us that we might even need software products or some kind of...software as a service capability (Director, Case A).

Furthermore, the interviewees stressed the importance of building a global network for achieving the required field service capacity to deliver solutions. Moving downstream requires firms to develop competencies related to network management. The capability of orchestrating the supplier network was reminiscent of the “system-integrator” strategy, while the capability of orchestrating the fleet or customer network was considered as an adoption of a “system-seller” strategy.

In the 90s, we started to understand that in the upstream, we had to work closely with the most advanced partners. Developing and learning jointly with these component and module suppliers, it was possible to build competitiveness and differentiate ourselves (CEO, Case D).

4.3. Shifting positions to increase the bargaining power in the ecosystem

Repositioning can be analyzed by examining the different mechanisms developed during the establishment of the customer solutions strategy. Based on their acquisitions and investments, the case companies moved downstream not only to gain bargaining power vis-à-vis intermediate and end customers but also to control compatibility and technical aspects in the systems to warrant a performance threshold.

Delivering customer solutions requires companies to address specific customer preferences and required technical features simultaneously, which are two critical dimensions explaining manufacturers' need to control how components and subsystems are coupled when providing complex solutions (Baines et al., 2011). Thus, because

solution providers must guarantee system compatibility based on certain specifications to offer a threshold level of performance and customized services (Davies, 2004), servitization calls for a specific governance structure to coordinate activities within the ecosystem (Osegowitsch & Madhok, 2003). Product control becomes essential when a manufacturer becomes responsible for a product's functionality or produced outcomes (e.g., in O&M agreements).

The service business enables us to manage and control the product and customer through the product life-cycle. This enables us to know how our products function during the life cycle and what is required at different stages. Additionally, this enables us to understand our customers' requirements and needs better. This is the benefit of services. (Area manager, Case D).

Although the studied firms used to operate as subsystem providers, they found it challenging to access end-users because third parties controlled such access. For the case companies, the fact that current customers blocked them from selling integrated solutions to their customers' customers presented a significant challenge. When product systems are sold to intermediate customers because of scale benefits, service agreements should be separately sold to the system end-users to obtain a direct connection to them. To overcome industry bottlenecks and sell products and services simultaneously, the case companies had to change their position and move downstream, closer to the end customers. As suggested by Pil and Holweg (2006), the analyzed companies attempted to find permeable penetration points within the value system to influence end-users' demands. This effort was validated by the interviewees and multiple strategic actions, such as acquisitions and the establishment of strategic alliances. Although distributors/dealers may be beneficial when scaling the product business, they may hinder future service sales. In particular, Case D acquired some distributors to get access to end customers and retain service control. Furthermore, manufacturers attempted to find different ways to decrease the power of engineering companies in the value system, as they hindered service sales to end-customers. One practice used to overcome this positioning challenge was to bypass the engineering companies and build deep and direct relationships with (end) customers, as occurred in Case B:

...We are selling to engineering companies, and they are selling to the end customer. And, the engineering companies are not interested in buying services from us. Thus, how are we able to connect with the end customer and at the same time to sell products to the engineering company? This is the way we are moving, to take the EPC and EPCM role, so we wouldn't need engineering companies, but maybe we could use them as subcontractors, not vice versa. To do that, you need to take a lot more risk. (Head of services, Case B).

4.4. Increasing efficiencies by selling customer solutions

Focusing deliveries on a smaller number of system integrators can also decrease transaction costs by reducing the parties with whom the customer needs to negotiate, although these changes add complexity to certain manufacturer-customer relationships. In the long term, extending the transition to full-fledged customer solutions could decrease the transaction costs by transferring the focus from complex technical systems to the produced outcomes. Thus, transaction costs can be decreased in both upstream and downstream ends by increasing the size of supplies from the system suppliers, by bundling individual products and services into total solutions, or by building mutual trust and commitment. In the upstream, the studied solution providers reported that collaborating with many suppliers would increase their transaction costs and inefficiency. Hence, alliances and joint-ventures are key coordinating practices in the upstream that help companies to minimize their transaction costs. Studied companies centralized purchases to fewer system suppliers to generate efficiency benefits. The downside of this action was the loss of control, which was replaced by a deeper collaboration with customers enabled by smart solutions.

If suppliers are responsible for bigger entities, they have better opportunities to affect their own costs. When they can better direct their own businesses, they have better possibilities to develop it. (CPO, Case C).

The initial idea behind providing a solution is that one plus one is more than two (Ulaga & Reinartz, 2011). Therefore, suppliers should generate efficiency benefits through bundling separate offerings into larger packages, and customers should obtain either direct or indirect cost-savings through centralization benefits. In the solution business, the goal is rarely to split the pie but instead to make a bigger pie (Kowalkowski & Ulaga, 2017). To better control these life-cycle costs, studied companies relied on strategic practices such as acquisitions, new investments and stake-ins in the downstream end. Subsequently, the respondents highlighted the need to emphasize the life-cycle costs of the customer. Thus, the respondents highlighted the importance of evaluating and verifying the equipment's total cost of ownership (TCO), which required substantial changes in routines.

I prefer talking about the total value of ownership rather than the total cost of ownership. Our customers can generate more money when they use our technology. We have to ensure that we can get added value and additional price for our solution. (VP/Sales, Case C).

The interviewees emphasized the importance of trust among the dyads for increasing efficiency in the upstream and downstream. Building trust was seen as essential to providing services that enabled customers to increase their productivity.

This is a very complicated model, but your credibility increases remarkably when you can show professional reports to the customer. You can show fact-based numbers and calculations. (Head of Business Development, Case C).

4.5. Interplay between identity, power, capabilities, and efficiency

The decision to servitize is made to decommo-ditize products and create higher value through differentiation by integrated solutions. Servitization changes the manufacturer's logic regarding its identity, power, capabilities, and efficiency. The opportunities generated by servitization should not be evaluated only by utilizing single lenses; the interplay among the lenses should also be considered.

This study underlines the effect of power, how servitization is utilized as a strategic choice, and the means of differentiation to increase manufacturers' power in the market by increasing the attractiveness of their offerings. This increase in power can facilitate the internal transition toward servitization, as power rhetoric can be utilized to persuade organizational members to accept servitization as the new organizational identity. However, a stronger servitization identity may enable more effective strategy implementation, further increasing a manufacturer's capacity to use power at the microlevel, e.g., in solution sales processes. A stronger service identity also seems to facilitate capability development. A well-visualized servitization strategy signals a firm's capability development requirements and supports capability development from the microlevel to personnel development discussions in which competence development targets are established. In some case companies (particularly A and B), the top management board established strategic initiatives to improve the status of services in-house, attempting to improve the service's reputation by nominating (future) talents to run services. In contrast, developing servitization capabilities also shapes the organizational identity toward servitization.

A well-defined service identity may also decrease the transaction costs caused by selling solutions because a firm's objectives related to the development of services are more evident to customers. A stronger service identity facilitates a firm's productization of services, further generating efficiency benefits. Furthermore, a stronger service identity provides the necessary commitment and stability to develop exchange processes together with the customer. That said, the complexity of

solution sales may increase doubts about the servitization process regardless of whether customer solutions can be sold and delivered efficiently.

An improved power position in the downstream facilitates servitization capability investments, which, in turn, may support risk-taking when making the investment decisions required for new capability development. Nevertheless, strengthening capabilities may also improve the manufacturer's power position in contrast to market competition. In particular, firms A and B implemented strategic initiatives to bypass engineering companies (the bottlenecks) and sell more service to end-customers. The question of power versus capabilities is reminiscent of the chicken-and-egg dilemma, which makes it challenging to scrutinize whether power or capabilities were first to drive (re)positioning.

Increases in power enable the manufacturer to steer relational development and improve relational efficiencies by lowering transaction costs. Sharing the benefits between the manufacturer and the customer incentivizes development, whereas using power exclusively to benefit the manufacturer may increase the costs of customer interactions in the long term, reminding us of the logic of a zero-sum game. Power against capabilities is a double-edged sword. While the focal company may become more powerful than its customers through its solutions, it simultaneously becomes more dependent on both suppliers' and customers' competencies and commitment. Capabilities enable the development of relational exchange processes enabling transactional efficiencies. Additionally, the improvement of exchange routines should free resources for more creative development tasks in the relationships.

In the long run, the case companies could create a virtuous cycle for solution business development. Although the firms experienced setbacks during their servitization journeys, their overall performance in services has been outstanding. This strategic transition required the simultaneous development of a strong service identity, a more powerful ecosystem position, new capabilities, and efficiency in transactions and relationships. These changes have been interlinked. Consequently, boundary movements must be concurrently analyzed through all of these lenses. These simultaneous alterations explain how servitization shapes a firm's boundary decisions, leading to repositioning moves and generating various effects as conceptualized by the firm boundary lenses and their dynamic interplay (Fig. 3).

5. Conclusions

5.1. Theoretical contribution

The present study examines four leading manufacturer boundary delineations to address the question of strategic repositioning and firm boundaries in servitization. The contributions of this article are twofold, as this study 1) demonstrates how servitization shapes manufacturers' firm boundaries through the identity, capability, power, and efficiency lenses, and 2) shows the importance of the dynamic interplay among these lenses when manufacturers are steered toward servitization. Additionally, we crafted a managerial framework to facilitate firm boundary delineation in servitization.

Regarding the first theoretical contribution, the four proposed firm boundary lenses provide complementary explanations for the repositioning in servitization. Servitization involves an explicit redefinition of a company's corporate identity, which affects the organizational culture (e.g., because of the coexistence of different organizational cultures inside the organization), with no single organizational identity but many identities across the business units. During the transition, rather than following a pure product or service logic, manufacturers balance between product and service identities while adopting both logics simultaneously (Ceci & Masini, 2011; Davies et al., 2007). Therefore, the question of identity can take the form of "Who are we as a unit in the organization?", "What type of unit is this in the organization?" or "How do we contribute to our organization's overall purpose?" Top management should consider these different subidentities

and make sense of the whole corporation's mission and identity.

While changing the organizational identity is not straightforward, servitizing manufacturers must move downstream closer to the end-users to establish a position as a solution provider. Repositioning involves the need for using specific mechanisms to gain bargaining power vis-à-vis intermediaries (e.g., bypassing intermediaries) and control compatibility and technical aspects in the systems to warrant a performance threshold. These moves not only directly imply reshaping firm boundaries (e.g., through mergers, acquisitions, or direct investments to sell services directly to end customers) but also trigger additional boundary reshaping instances because of the need for developing new capabilities in the customer interface and areas, such as software development (Raja et al., 2018; Sklyar, Kowalkowski, Tronvåll, & Sörhammar, 2019; Töytäri et al., 2018).

Efficiency also emerges as driving boundary changes in servitization. Although procurement was often centralized to a few system suppliers, the case companies have had to develop a reliable supply base while finding mechanisms to cope with dependence and transaction costs. Therefore, in addition to centralizing purchases to fewer system suppliers at the upstream, companies developed not only mechanisms to assure deeper collaboration and trust among the dyads and increase efficiency but also certain rules, such as a dual purchasing policy, to limit dependence. Alliances and joint ventures are common coordinating mechanisms in the upstream end that simultaneously allow companies to minimize the transaction costs and exploit potential localization advantages in cost-competitive countries, whereas acquisitions, new investments and stake-ins are preferred practices in the downstream end to ensure better life-cycle control.

Regarding the second theoretical contribution, this study exposes the dynamic interplay of firm boundary theories in servitization. Instead of focusing only on a single theory, the present study concentrated on the interplay among different perspectives (Bäck & Kohtamäki, 2015). This requirement is reminiscent of a domino effect. For instance, servitization may push the firm to establish a stronger position on the customer end. To achieve such a position, the firm must obtain, acquire, and develop new capabilities to sell and deliver services to its clients (Danneels, 2011; Kindström et al., 2013). During capability evolution, the firm should reconstruct the organizational identity toward a more customer-centric approach. Finally, during the lengthy process, the firm should also change its efficiency logic by introducing service elements into its product and manufacturing operations while introducing production elements into its service operations (Kohtamäki, Einola, & Rabetino, 2020; Spring & Araujo, 2013). All these boundary decisions can occur simultaneously and require top management attention. The idea of interplay supports the concept of equifinality, i.e., multiple paths can lead to a common end state (Sjödin, Parida, & Kohtamäki, 2016). These paths can assume different forms and orders in terms of boundary lenses.

5.2. Managerial implications

The redefinition of firm boundaries is an essential consideration when planning and implementing servitization and should not be neglected by managers. For companies preparing for servitization, the study conceptualizes a framework to manage servitization in practice. The framework presents possible practices that can be utilized to strategically reposition a company, analyze repositioning moves in the value system (for instance, competitors' moves or other firms' moves within the ecosystem), or benchmark these moves against manufacturers that successfully underwent this strategic transition. The framework may help managers answer questions, such as "What strategic practices should be utilized in our servitization initiative?" "How should our identity be changed?" "How should our organizational capabilities be altered?" "How should we position ourselves in the markets?" and "What governance mechanism should be employed in different parts of the value system?" Based on analytical reasoning and

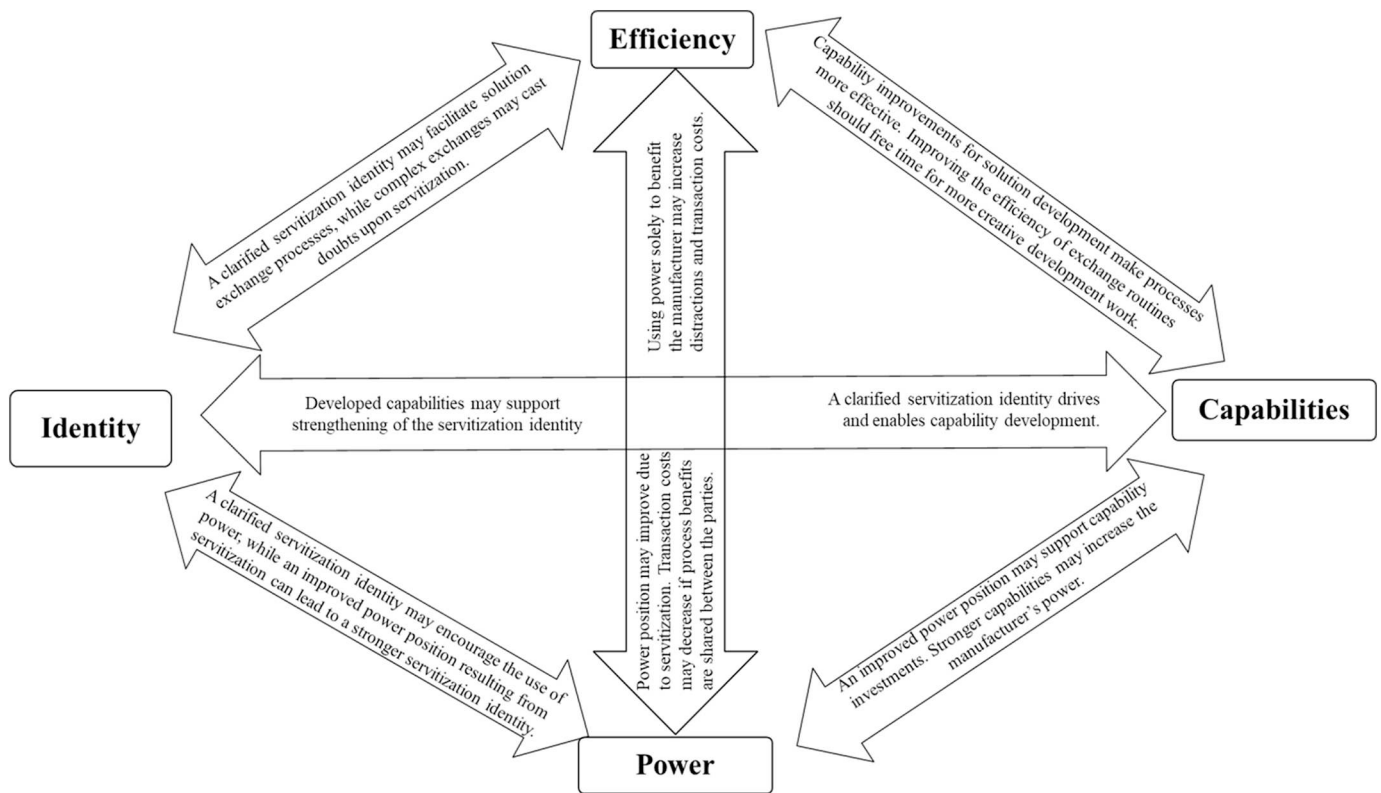


Fig. 3. Interplay among identity, power, capabilities, and efficiency in servitization.

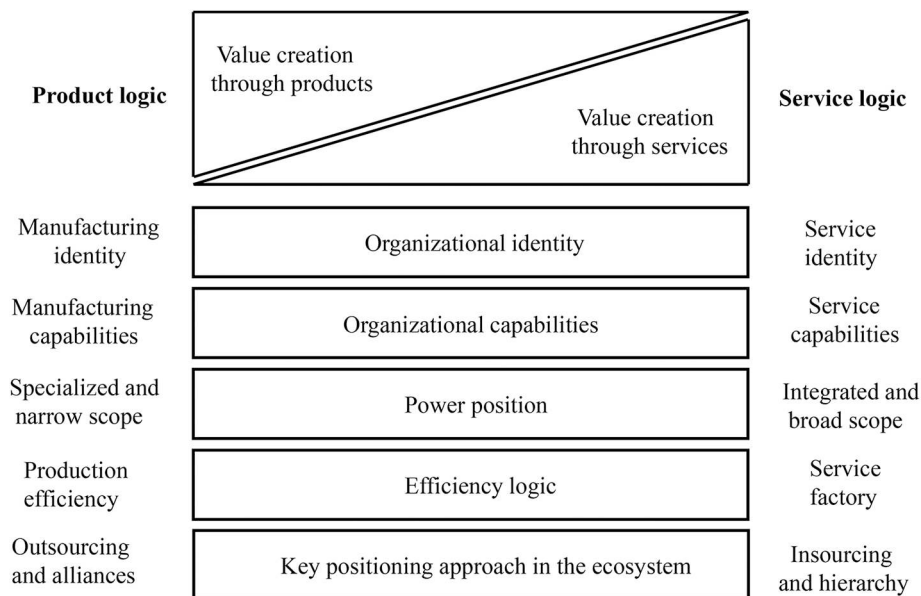


Fig. 4. Boundary dichotomies and delineations in servitization.

experiences in the markets, managers can stipulate a rule of thumb to (re)direct the firm in practice through expert heuristics (Bingham & Eisenhardt, 2011), i.e., create rules-of-thumb to manage that change in practice. Fig. 4 illustrates the dichotomies between the product and service logics in terms of the firm boundary lenses.

5.3. Limitations and suggestions for further research

This article compares leading cases, and although far-reaching generalizations cannot be made because of qualitative nature of the

study and the studied firms' geographical and cultural scopes, it nonetheless offers insights into the redefinition of firm boundaries in servitization. Because the present study utilized four firm boundary lenses to discuss their complementary effects and, thus, cannot conduct an in-depth analysis of the use of any single theory, further in-depth empirical research is required to explore both the positioning and organizational identity perspectives. In particular, the study of mergers and acquisitions as a tool for servitization is an unexplored research area (Kowalkowski, Gebauer, & Oliva, 2017) that could provide valuable information on how executives try to steer a firm's direction.

Although research concerning capabilities in servitization is extensive, future studies can focus on the microlevel practices of resource reconfigurations. Additionally, servitization is heterogeneous across industries and service offerings, and consequently, different firm boundary configurations may be needed for manufacturers' product-service offerings (Bustinza, Lafuente, Rabetino, Vaillant, & Vendrell-Herrero, 2019). Thus, there is room to study how different servitization strategies and the associated business models and business innovation practices shape firm boundary decisions. Future studies may focus on the processual aspect to study boundary changes over time, focusing on several boundary lenses simultaneously, as previous studies have typically focused on investigating change processes from single theoretical lenses, such as studies focusing on identity (Corley & Gioia, 2004; Vaara & Tienari, 2011) and capability alterations (Danneels, 2011), when firms undergo strategic change.

As this study investigated firm boundaries from the focal company perspective, future research could study competitive dynamics in solution provision and the effects of these dynamics on the boundaries of individual enterprises and the ecosystem's structure. Finally, the increasing adoption of digital technologies opens an important window for studying firm boundaries in the context of digital servitization and the platform economy, utilizing a process-based research method.

References

- Adams, W., & Brock, J. W. (1982). Integrated monopoly and market power: System selling, compatibility standards, and market control. *The Quarterly Review of Economics and Business*, 22(4), 29–42.
- Adner, R. (2016). Ecosystem as structure: An actionable construct for strategy. *Journal of Management*, 43(1), 39–58.
- Albert, S., & Whetten, D. A. (1985). Organizational identity. In L. L. Cummings, & B. M. Staw (Eds.). *Research in organizational behavior* Greenwich, CT: JAI Press p. 7: 263–295.
- Auguste, B. G., Harmon, E., & Pandit, V. (2006). The right service strategies for product companies. *Mckinsey Quarterly*, 1(1), 40–51.
- Bäck, I., & Kohtamäki, M. (2015). Boundaries of R&D collaboration. *Technovation*, 45–46 November–December, 15–28.
- Baines, T., Ziaee Bigdeli, A., Bustinza, O. F., Shi, V. G., Baldwin, J., & Ridgway, K. (2017). Servitization: Revisiting the state-of-the-art and research priorities. *International Journal of Operations and Production Management*, 37(2), 256–278.
- Baines, T. S., Kay, G., Adesola, S., & Higson, M. (2005). Strategic positioning: An integrated decision process for manufacturers. *International Journal of Operations & Production Management*, 25(2), 180–201.
- Baines, T. S., Lightfoot, H. W., & Smart, P. (2011). Servitization within manufacturing: Exploring the provision of advanced services and their impact on vertical integration. *Journal of Manufacturing Technology Management*, 22(7), 947–954.
- Baines, T. S., Lightfoot, H. W., Steve, E., Neely, A., Greenough, R., Peppard, J., ... Wilson, H. (2007). State-of-the-art in product-service systems. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 221(10), 1–11.
- Barney, J. (1999). How a firm's capabilities affect boundary decisions. *Sloan Management Review*, 40(3), 137–146.
- Beverland, M., & Lindgreen, A. (2010). What makes a good case study? A positivist review of qualitative case research published in industrial marketing management, 1971–2006. *Industrial Marketing Management*, 39(1), 56–63.
- Bingham, J. B., & Eisenhardt, K. M. (2011). Rational heuristics: The “simple rules” that strategists learn from process experience. *Strategic Management Journal*, 32, 1437–1464.
- Brady, T., Davies, A., & Gann, D. M. (2005). Creating value by delivering integrated solutions. *International Journal of Project Management*, 23(5), 360–365.
- Brahm, F., & Tarzijan, J. (2012). Boundary choice interdependency: Evidence from the construction industry. *Industrial and Corporate Change*, 22(5), 1229–1271.
- Brax, S. A. (2005). A manufacturer becoming service provider – Challenges and a paradox. *Managing Service Quality*, 15(2), 142–155.
- Bustinza, O. F., Lafuente, E., Rabetino, R., Vaillant, Y., & Vendrell-Herrero, F. (2019). Make-or-buy configurational approaches in product-service ecosystems and performance. *Journal of Business Research*, 104, 393–401.
- Bustinza, O. F., Vendrell-Herrero, F., & Baines, T. S. (2017). Service implementation in manufacturing: An organisational transformation perspective. *International Journal of Production Economics*, 192, 1–8.
- Cacciatori, E., & Jacobides, M. G. (2005). The Dynamic Limits of Specialization: Vertical Integration Reconsidered. *Organ. Stud.* 26(12), 1851–1883.
- Ceci, F., & Masini, A. (2011). Balancing specialized and generic capabilities in the provision of integrated solutions. *Industrial and Corporate Change*, 20(1), 91–131.
- Ceci, F., & Prencipe, A. (2008). Configuring capabilities for integrated solutions: Evidence from the IT sector. *Industry & Innovation*, 15(3), 277–296.
- Chandraprakasik, W., Baines, T. S., Lim, R. Y., & Sakburanapech, A. (2010). Success factors in a forming strategic positioning of manufacturing operations within global supply chains. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 221(10), 1–11.
- Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529–555.
- Clark, S. M., Gioia, D. A., Ketchen, D. J., & Thomas, J. B. (2010). Transitional identity as a facilitator of organizational identity change during a merger. *Administrative Science Quarterly*, 55(3), 397–438.
- Clegg, S. R., Rhodes, C., & Kornberger, M. (2007). Desperately seeking legitimacy: Organizational identity and emerging industries. *Organization Studies*, 28(4), 495–513.
- Coe, N. M., Dicken, P., & Hess, M. (2008). Global production networks: Realizing the potential. *Journal of Economic Geography*, 8(3), 271–295.
- Collins, J. C., & Porras, J. I. (1996). Building your company's vision. *Harvard Business Review*, 74(5), 65–77.
- Corley, K. G., & Gioia, D. A. (2004). Identity ambiguity and change in the wake of a corporate spin-off. *Administrative Science Quarterly*, 49(2), 173–208.
- Danneels, E. (2011). Trying to become a different type of company: Dynamic capability at smith Corona. *Strategic Management Journal*, 32(1), 1–31.
- Davies, A. (2004). Moving base into high-value integrated solutions: A value stream approach. *Industrial and Corporate Change*, 13(5), 727–756.
- Davies, A., & Brady, T. (2000). Organisational capabilities and learning in complex product systems: Towards repeatable solutions. *Research Policy*, 29(7–8), 931–953.
- Davies, A., Brady, T., & Hobday, M. (2006). Charting a path toward integrated solutions. *MIT Sloan Management Review*, 47(3), 39–48.
- Davies, A., Brady, T., & Hobday, M. (2007). Organizing for solutions: Systems seller vs. systems integrator. *Industrial Marketing Management*, 36(2), 183–193.
- Dubois, A., & Gadde, L. E. (2002). Systematic combining: An abductive approach to case research. *Journal of Business Research*, 55(7), 553–560.
- Dyer, J. H. (1996). Does governance matter? Keiretsu alliances and asset specificity as sources of Japanese competitive advantage. *Organization Science*, 7(6), 649–666.
- Dyer, J. H. (1997). Effective interim collaboration: How firms minimize transaction costs and maximise transaction value. *Strategic Management Journal*, 18(7), 535–556.
- Eisenhardt, K. M. (1989). Building theories from case study research. *The 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.
- Galbraith, J. R. (2002). Organizing to deliver solutions. *Organizational Dynamics*, 31(2), 194–207.
- Garud, R., & Kumaraswamy, A. (1993). Changing competitive dynamics in network industries: An exploration of sun Microsystems' open systems strategy. *Strategic Management Journal*, 14(5), 351–369.
- Gebauer, H., Edvardsson, B., Gustafsson, A., & Witell, L. (2010). Match or mismatch: Strategy-structure configurations in the service business of manufacturing companies. *Journal of Service Research*, 13(2), 198–215.
- Gebauer, H., Fleisch, E., & Friedli, T. (2005). Overcoming the service paradox in manufacturing companies. *European Management Journal*, 23(1), 14–26.
- 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., Paiola, M., & Saccani, N. (2013). Characterizing service networks for moving from products to solutions. *Industrial Marketing Management*, 42(1), 31–46.
- Gebauer, H., Ren, G.-J., Valtakoski, A., & Reynoso, J. (2012). Service-driven manufacturing: Provision, evolution and financial impact of services in industrial firms. *Journal of Service Management*, 23(1), 120–136.
- Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12(1), 78–104.
- Gioia, D. A., Price, K. N., Hamilton, A. L., & Thomas, J. B. (2010). Forging an identity: An insider-outsider study of processes involved in the formation of organizational identity. *Administrative Science Quarterly*, 55(1), 1–46.
- Grant, R. M. (2010). *Contemporary strategy analysis*. Wiley, Seventh Ed.
- Harrigan, K. R. (1984). Formulating vertical integration strategies. *Academy of Management Review*, 9(4), 638–652.
- Hax, A. C., & Wilde, D. L., II (1999). The delta model: Adaptive management for a changing world. *Sloan Management Review*, 19(4), 11–28.
- Hobday, M., Davies, A., & Prencipe, A. (2005). Systems integration: A core capability of the modern corporation. *Industrial and Corporate Change*, 14(6), 1109–1143.
- Huberman, M., & Miles, M. (1994). Data management and analysis methods. In N. Denzin, & Y. Lincoln (Eds.). *Handbook of qualitative research* (pp. 428–444). London: Thousand Oaks.
- Huikkola, T., & Kohtamäki, M. (2017). Solution Providers' strategic capabilities. *Journal of Business and Industrial Marketing*, 32(5), 752–770.
- Huikkola, T., Kohtamäki, M., & Rabetino, R. (2016). Resource realignment in servitization. *Research-Technology Management*, 59(4), 30–39.
- Huikkola, T., Ylimäki, J., & Kohtamäki, M. (2013). Joint learning in R&D collaborations and the facilitating relational practices. *Industrial Marketing Management*, 42(7), 1167–1180.
- Jacobides, M. G. (2011). Strategy bottlenecks: How TME player can shape and win control of their industry architecture. *Telecom & Media Insights*, 1–11 Issue 63, Capgemini.
- Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, 39(8), 2255–2276.
- Jacobides, M. G., & Winter, S. G. (2005). The co-evolution of capabilities and transaction cost: Explaining the institutional structure of production. *Strategic Management Journal*, 26(5), 395–413.
- Johnson, G., Scholes, K., & Whittington, R. (2008). *Exploring corporate strategy*. Pearson Education, Essex: FT Prentice Hall Eighth.

- Johnstone, S., Dainty, A., & Wilkinson, A. (2009). Integrating products and services through life: An aerospace experience. *International Journal of Operations & Production Management*, 29(5), 520–538.
- Kindström, D., Kowalkowski, C., & Sandberg, E. (2013). Enabling service innovation: A dynamic capabilities approach. *Journal of Business Research*, 66(8), 1063–1073.
- Kogut, B. (2000). The network as knowledge: Generative rules and the emergence of structure. *Strategic Management Journal*, 21(3), 405–425.
- Kohtamäki, M., Einola, S., & Rabetino, R. (2020). Exploring servitization through the paradox lens: Coping practices in servitization. *International Journal of Production Economics*. <https://doi.org/10.1016/j.ijpe.2020.107619> In Press.
- Kohtamäki, M., Parida, V., Oghazi, P., Gebauer, H., & Baines, T. (2019). Digital servitization business models in ecosystems: A theory of the firm. *Journal of Business Research*, 104, 380–392.
- Kohtamäki, M., Partanen, J., & Möller, K. (2013). Making a profit with R&D services — The critical role of relational capital. *Industrial Marketing Management*, 42(1), 71–81.
- Kowalkowski, C., Gebauer, H., & Oliva, R. (2017). Service growth in product firms: Past, present, and future. *Industrial Marketing Management*, 60, 82–88.
- Kowalkowski, C., Kindström, D., Alejandro, T. B., Brege, S., & Biggemann, S. (2012). Service infusion as agile incrementalism in action. *Journal of Business Research*, 65(6), 765–772.
- Kowalkowski, C., & Ulaga, W. (2017). *Service strategy in action: A practical guide for growing your B2B service and solution business*. Publisher: Service Strategy Press.
- Kowalkowski, C., Witell, L., & Gustafsson, A. (2013). Any way goes: Identifying value constellations for service infusion in SMEs. *Industrial Marketing Management*, 42(1), 18–30.
- Livengood, R. S., & Reger, R. K. (2010). That's our turf! Identity domains and competitive dynamics. *Academy of Management Review*, 35(1), 48–66.
- Luoto, S., Brax, S. A., & Kohtamäki, M. (2017). Critical meta-analysis of servitization research: Constructing a model-narrative to reveal paradigmatic assumptions. *Industrial Marketing Management*, 60(1), 89–100.
- Lusch, R. F., Vargo, S. L., & Tanniru, M. (2010). Service, value networks and learning. *Journal of the Academy of Marketing*, 38(1), 19–31.
- Mahoney, J. T. (1992). The choice of organizational form: Vertical financial ownership versus other methods of vertical integration. *Strategic Management Journal*, 13(8), 559–584.
- Martinez, V., Neely, A., Velu, C., Leinster-Evans, S., & Bisessar, D. (2017). Exploring the journey to services. *International Journal of Production Economics*, 192(October), 66–80.
- Mathieu, V. (2001). Service strategies within the manufacturing sector: Benefits, costs and partnership. *International Journal of Service Industry Management*, 12(5), 451–475.
- Matthyssens, P., & Vandenbempt, K. (2010). Service addition as business market strategy: Identification of transition trajectories. *Journal of Service Management*, 21(5), 693–714.
- McGahan, A. M. (2000). How industries evolve. *Business Strategy Review*, 11(3), 1–16.
- Möller, K., & Halinen, A. (2017). Managing business and innovation networks—From strategic nets to business fields and ecosystems. *Industrial Marketing Management*, 67 (November), 5–22.
- 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.
- Nordin, F., & Kowalkowski, C. (2010). Solutions offerings: A critical review and reconceptualisation. *Journal of Service Management*, 21(4), 441–459.
- Osegowitsch, T., & Madhok, A. (2003). Vertical integration is dead, or is it? *Business Horizons*, 46(2), 25–34.
- Paiola, M., Saccani, N., Perona, M., & Gebauer, H. (2013). Moving from products to solutions: Strategic approaches for developing capabilities. *European Management Journal*, 31(4), 390–409.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage (Third Edit).
- Penttinen, E., & Palmer, J. (2007). Improving firm positioning through enhanced offerings and buyer-seller relationships. *Industrial Marketing Management*, 36(5), 552–564.
- Pil, F. K., & Holweg, M. (2006). Evolving from value chain to value grid. *MIT Sloan Management Review*, 47(4), 72–80.
- Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors*. The Free Press.
- Prencipe, A. (2003). Corporate strategy and systems integration capabilities: Managing networks in complex systems industries. In A. Prencipe, A. Davies, & M. Hobday (Eds.), *The business of system integration*. Oxford: Oxford University Press.
- Rabetino, R., Harmsen, W., Kohtamäki, M., & Sihvonen, J. (2018). Structuring servitization related research. *International Journal of Operations and Production Management*, 38(2), 350–371.
- Rabetino, R., & Kohtamäki, M. (2013). System integration, integrated solutions and industry organization: A value system approach. *IMP 2013*, Atlanta.
- Rabetino, R., & Kohtamäki, M. (2018). To Servitize is to (re)position: Utilizing a Porterian view to understand Servitization and value systems. In M. Kohtamäki, (Ed.), *Practices and tools for Servitization* (pp. 325–341). Palgrave-MacMillan.
- Rabetino, R., Kohtamäki, M., & Gebauer, H. (2017). Strategy map of servitization. *International Journal of Production Economics*, 192(October), 144–156.
- Rabetino, R., Kohtamäki, M., Lehtonen, H., & Kostama, H. (2015). Developing the concept of life-cycle service offering. *Industrial Marketing Management*, 49, 53–66.
- Raddats, C., Burton, J., & Ashman, R. (2015). Resource configurations for services success in manufacturing companies. *Journal of Service Management*, 26(1), 97–116.
- Raddats, C., Kowalkowski, C., Benedettini, O., Burton, J., & Gebauer, H. (2019). Servitization: A contemporary thematic review of four major research streams. *Industrial Marketing Management*. <https://doi.org/10.1016/j.indmarman.2019.03.015>.
- Raja, J., Chakkol, M., Johnson, M., & Beltagui, A. (2018). Organizing for servitization: Examining front- and back-end design configurations. *International Journal of Operations & Production Management*, 38(1), 249–271.
- Raynor, M. E., & Christensen, C. M. (2002). *Integrate to innovate: The determinants of success in developing and deploying new services in the communications industry*. New York.
- Rodrigues, S., & Child, J. (2008). The development of corporate identity: A political perspective. *Journal of Management Studies*, 45(5), 885–911.
- Salonen, A., Gabriellson, M., & Al-Obaidi, Z. (2006). Systems sales as a competitive response to the Asian challenge: Case of a global ship power supplier. *Industrial Marketing Management*, 35(6), 740–750.
- Salonen, A., & Jaakkola, E. (2015). Firm boundary decisions in solution business: Examining internal vs. external resource integration. *Industrial Marketing Management*, 51, 171–183 November.
- Santos, F. M., & Eisenhardt, K. M. (2005). Organizational boundaries and theories of organization. *Organization Science*, 16(5), 491–508.
- Santos, F. M., & Eisenhardt, K. M. (2009). Constructing markets and shaping boundaries: Entrepreneurial power in nascent fields. *The Academy of Management Journal*, 52(4), 643–671.
- Schilling, M. A., & Steensma, H. K. (2002). Disentangling the theories of firm boundaries: A path model and empirical test. *Organization Science*, 13(4), 387–401.
- Shah, D., Rust, R. T., Parasuraman, A., Staelin, R., & Day, G. S. (2006). The path to customer centricity. *Journal of Service Research*, 9(2), 113–124.
- Shepherd, C., & Ahmed, P. K. (2000). From product innovation to solutions innovation: A new paradigm for competitive advantage. *European Journal of Innovation Management*, 3(2), 100–106.
- Siggelkow, N. (2007). Persuasion with case studies. *Academy of Management Journal*, 50(1), 20–24.
- Sjödin, D. R., Parida, V., & Kohtamäki, M. (2016). Capability configurations for advance service offerings in manufacturing firms: Using fuzzy set qualitative comparative analysis. *Journal of Business Research*, 69(11), 5330–5335.
- Sklyar, A., Kowalkowski, C., Tronvåll, B., & Sörhammar, D. (2019). Organizing for digital Servitization: A service ecosystem perspective. *Journal of Business Research*, 104, 450–460.
- Spring, M., & Araujo, L. (2013). Beyond the service factory: Service innovation in manufacturing supply networks. *Industrial Marketing Management*, 42(1), 59–70.
- Storbacka, K., Windahl, C., Nenonen, S., & Salonen, A. (2013). Solution business models: Transformation along four continua. *Industrial Marketing Management*, 42(5), 705–716.
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350.
- Töytäri, P., Turunen, T., Klein, M., Eloranta, V., Biehle, S., & Rajala, R. (2018). Aligning the mindset and capabilities within a business network for successful adoption of smart services. *Journal of Product Innovation Management*, 35(5), 763–779.
- Tripsas, M. (2009). Technology, identity, and inertia through the lens of “the digital photography company”. *Organization Science*, 20(2), 441–460.
- Tuli, K. R., Kohli, A. K., & Bharadwaj, S. G. (2007). Rethinking customer solutions: From product bundles to relational processes. *Journal of Marketing*, 71(3), 1–17.
- Ulaga, W., & Reinartz, W. J. (2011). Hybrid offerings: How manufacturing firms combine goods and services successfully. *Journal of Marketing*, 75, 5–23 November.
- Vaara, E., & Tienari, J. (2011). On the narrative construction of multinational corporations: An antenarrative analysis of legitimation and resistance in a cross-border merger. *Organization Science*, 22(2), 370–390.
- Vandermerwe, S., & Rada, J. (1988). Servitization of business: Adding value by adding services. *European Management Journal*, 6(4), 314–324.
- Vesalainen, J., Valkokari, K., & Hellström, M. (2017). *Practices for network management - In search of collaborative advantage*. Palgrave – MacMillan.
- Visnjic, I., Jovanovic, M., Neely, A., & Engwall, M. (2017). What brings the value to outcome-based contract providers? Value drivers in outcome business models. *International Journal of Production Economics*, 192, 169–181.
- Williamson, O. E. (2008). Outsourcing: Transaction cost economics and supply chain management. *Journal of Supply Chain Management*, 44(2), 5–16.
- Windahl, C., & Lakemond, N. (2010). Integrated solutions from a service-centered perspective: Applicability and limitations in the capital goods industry. *Industrial Marketing Management*, 39(8), 1278–1290.
- Wise, R., & Baumgartner, P. (1999). Go downstream: The new profit imperative in manufacturing. *Harvard Business Review*, 77(5), 133–142.
- Worm, S., Bharadwaj, S. G., Ulaga, W., & Reinartz, W. J. (2017). When and why do customer solutions pay off in business markets? *Journal of the Academy of Marketing Science*, 45(4), 490–512.
- Yang, H., Lin, Z., & Lin, Y. (2010). A multilevel framework of firm boundaries: Firm characteristics, dyadic differences, and network attributes. *Strategic Management Journal*, 31(3), 237–261.
- Yin, R. K. (1994). *Case study research: Design and methods*. Newbury Park, CA: Sage2nd.
- Zou, W., Brax, S., Vuori, M., & Rajala, R. (2019). The influences of contract structure, contracting process, and service complexity on supplier performance. *International Journal of Operations and Production Management*, 39(4), 525–549.