Servitization, Services and Managing Complexity
Representation of Services in Contractual Agreements

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Servitization, services and managing complexity: re-presentation of services in contractual agreements

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Abstract

This paper explores how seemingly complex servitized solutions can become tradable in a customer–supplier relationship by objectification and abbreviation. The key argument is that the complexity of product-service solutions can be reduced by abbreviation of the reality in written form of contracts and agreements that allow for customization while making the offer more comprehensible for customers and more manageable for suppliers. Preliminary results from an exploratory case study are presented.

Keywords: Servitization, Solutions, Customer-Supplier Relationships

Introduction

Western manufacturers increasingly face commoditization and challenges from competitors who are able to produce equipment cheaper (Matthyssens & Vandenbempt, 2008). As a consequence there may be a need to outsource, differentiate and add more value to products (Battisti et al., 2014). In order to counter such effects, firms may adopt a “servitization” strategy (Vandermerwe & Rada, 1989) or service infusion (Kowalkowski et al., 2012), whereby services are added to existing products. Such an approach provides the potential to increase revenue, enter new markets as well as develop closer and longer-term relationships with customers (Ostrom et al., 2010; Neely, 2008; Matthyssens & Vandenbemt, 2008).

The range of potential services a product manufacturer can provide is fairly broad from installation, calibration and repair services to knowledge intensive engineering services. Such services may be bundled (Johnson et al., 1999; Stremersch & Tellis, 2002) and formalized in service agreements and contracts, allowing companies to structure their offer. Though, manufacturers may experience difficulties given the heterogeneity and *soft* nature of services stated in agreements (Homburg et al., 2003). This is not least due to the complexity and dynamics of customer-supplier relationships.

Whilst there is currently a growing literature on servitization, a lack of research that accounts for management tools allowing companies to market and manage services and products interdependently remains. Defining the specific nature of services and making them tradable is a key issue for manufacturers in succeeding establishment of a market for services. While this transformation of services into objectified things seems to be crucial for manufacturers attempting to succeed with services, it has received little attention in the servitization and operations' management literature (Ostrom, 2015).

This paper seeks to contribute to the service and operations management literature by visualizing how contractual agreements can have this ability. The aim of this paper is to explore the application of agreements and contracts in operations management as a representation of services in effort to reduce complexity and increase tradability of services between supplier and customer. This paper further argues that written agreement is a management tool that can support firms in their servitization strategies.

The paper is structured as follows: firstly, the authors briefly introduce the literature of servitization and marketing contributions on supplier-customer relationships that imply a high degree of complexity. Secondly, authors discuss the service tradability and role of contracts and service agreements in reducing the seemingly complex product-service systems. Thirdly, research methodology and case company are introduced, and lastly, preliminary findings and conclusions are presented.

Servitization

The notion of servitization has become a very current topic within operations management literature (Baines et al., 2009). It is a concept that has made manufacturers rethink their strategy and business models in order to compete. It entails developing new capabilities to offer services and solutions in addition to manufactured products. Servitization is defined by Neely (2008, p. 107) as "*the innovation of an organization's capabilities and processes to better create mutual value through a shift from selling product to selling Product-Service Systems*." A frequently cited example in the literature is that of Rolls-Royce 'Power-by-the-Hour' offer where Rolls-Royce does not sell its manufactured aero engines, but has instead established long-term contracts with customers. Consequently, a customer pays for the actual use of the engine per every flight hour and receives up to 20 years of maintenance and support from Rolls-Royce included in the initial price. The equipment is so sophisticated that by the time an airplane has landed, ground technicians know whether the engine should be repaired or it is ready to fly straight away. It is possible due to special monitoring sensors sending vast amounts of data in-flight back to engineers ready to take action (Baines & Lightfoot, 2013).

However, not all companies provide service offerings and solutions of such sophistication. Some may only recently have undertaken the task of adding services to their product offer. There are examples of companies that have always provided some kinds of services, for example, maintenance and repair, but it has been more based on an inquiry from a customer rather than a proactively developed and marketed offer. For manufacturers with extensive product knowledge but limited knowledge of service delivery, questions start to rise: How to deliver a service? What does the customer expect to receive? How to price it? Would our technicians be suitable to have interaction with the customer? Do we provide enough value? etc. These questions are highly essential in managing service operations, which often proves to be harder than anticipated during the actual implementation. It is argued that services do not hold characteristics of a product and involve high proximity to the customer (Grönroos, 1998) making it highly complex. The following issue becomes central, *how can suppliers reduce the complexity of products and service processes that are unfolding over time and turn them into manageable and tradable objects?*

Customer-supplier relationships

Trading involves a customer and a supplier, and the process of selling creates a relationship, and the marketing literature elucidates what is found to be important. According to Ulaga & Chacour (2001) customer perceptions differ depending on the market segment. In their case, in food production segment the ability of a supplier to deliver consistent product as well as fast and reliable services is highly valued. It shows that customers have certain priorities for both products and services, some might value price more than quality. Value creation can vary highly between customers if suppliers delivers to different markets which complicates the marketing of solutions.

Supplier capability to innovate and ability to integrate systems can also play an important role in choosing a supplier (Davies et al., 2007). The aforementioned illustrates the complexity of value that customer would consider highly relevant when choosing a supplier. Value creation from supplier's perspective is determined by direct (volume, profit, safeguard) and indirect (innovation, market, scout, access) functions contributing to the value perceived by the supplier (Walter, Ritter & Gemünden, 2001). It visualizes not only the short-term benefits as volume and profit, but also the long-term opportunities as growth of market, prospects for more offerings etc. Ulaga (2003) identifies eight dimensions that drives value; product quality, service support, delivery, supplier know-how, time-to-market, personal interaction, direct product costs (price) and process costs. Value creation depends on both the '*hard*' factors such as price and quality and the seemingly '*soft*' factors such as know-how and relationship.

The multitude and the different configuration options of these factors are thus further complicated by the contextual dependency. The literature on customer and supplier relationships exemplifies the complexity of what is considered to be important in a relationship and how complex it can get when so many factors are considered from both parties in a relationship. The factors differentiating one supplier from another are not limited to the quality hardware or the lowest price. Support available after the purchase is also significant, not to mention the aforementioned factors that are harder to measure, such as quality of communication. Suppliers also evaluate the short-term and long-term opportunities that a relationship might bring. It demonstrates the complexity of a service offer and suggests the reason why it may be challenging for manufacturers to market services (Brax, 2005).

Service as a product

Araujo & Spring (2006) have addressed this issue of services being distinct from products. In a literature analysis they conclude that there are not entirely particular factors distinguishing products from services. They propose that "*products and services should be regarded as different types of intermediaries requiring stabilization and objectification to be transacted*" (p. 803). While it has been argued that intangibility, heterogeneity, inseparability and perishability make services distinct from product marketing (Zeithaml, Parasuraman & Berry, 1985; Fisk et al., 1993) Spring and Araujo (2009) show how these characteristics can be misleading. Instead they propose three logics of service, that of the request for intervention (i.e. as in car repair), the right to use a capacity (i.e. as a hotel room) and performance (i.e. a theatre performance). Manufacturers that have traditionally had a main emphasis on producing and marketing products can find the marketing of services particularly challenging. As the qualities of services are not readily observable when being transacted the exchange of a service requires a qualification (Callon, 2002). It implies that the complex reality of service delivery, operations and supplier-customer relationships have to stabilized in some way to become tradable. Callon & Muniesa (2005) state that "*a service, even when it has no physical reality, can be the object of a market transaction if it has first been transformed into a thing*" (p. 1233). Consequently, it is important for managers to find a management tool that would transform services in solution offers into a tradable and specified format.

Making services tradable

The paper builds on Cooper's (1992) work of formal organization as representation to discuss the need for abbreviation. Cooper uses information technology to shed light on three themes of representation – remote control, displacement and abbreviation. Abbreviation is particularly interesting and relevant for its ability to reduce complexity from representing the real world. It is '*intrinsic to the economy of convenience and control that representation embodies* (Cooper, 1992, p. 263).' Abbreviation represents the reality in a smaller form so that it becomes comprehensible and easier to work with. It allows mobilizing information in a form that is light and convenient, and by transforming reality into a structured form, clarity can be created. In this case, service offer is taken from a three dimensional space in the real world and transformed to be a representation of reality in a form of description or two dimensional picture. The benefit is easier processing of the transformed representation because the absorption of complex reality out in the environment is simpler from a small and pliable piece of paper. With a systematic procedure of abbreviation, a '*packed*' version of the size and mass of reality can be made.

Cooper emphasizes the need for compressed information as a demand from administration. Management is more interested in fast 'at a glance' information as it saves time. From an observation in companies, the higher the level of management the more compressed the information is demanded. Concrete numbers, results and value of information represent further abstraction and abbreviation. Similar to an 'elevator speech', the time to present a product or its value to a person requires the information to be condensed to an extent that it is a representation and an abbreviation of the real 'thing'.

It is a challenge both for the supplier and customer to reduce complexity of the real world and still maintain some level of complexity to enable solution flexibility. A recent empirical study has shown that the level of complexity should not be higher than a customer can absorb. Human cognitive capacities are limited; therefore, managers should simplify the reality to an extent where they think it is appropriate for the concrete customer to comprehend. The complexity level also relates to customer satisfaction and loyalty intentions (Mikolon et al., 2015). This is particularly relevant for sales processes when the information is adjusted to each customer and the contact person representing the customer's business. The engineering perspectives may, for instance, be too technical for purchasing employees. In such scenarios service providers may have to find a balance between different logics by using abbreviation to represent the reality of service delivery in a customised way. Written documents bridge such differences by stating how the supplier-customer relationship is to function. Representation of reality in an abbreviated form enables the transaction of service to happen. The service delivery negotiation is thus implicitly simplified, when the service process is written or visualised to some degree. Contracts and service agreements serve as the necessary management tools by representing the complexity of product-service systems.

Written contracts and agreements as re-presentations of servitization

The role of contracts and agreements in customer-supplier relationships requires further research, especially when in relation to goods-services solutions and the complexity that comes with them (Ostrom et al., 2015). Service agreements and contracts are legally binding documents that are mutually negotiated between the customer and the service provider. They may include several variables specifying obligations and expectations within the relationship, such as price, urgency of customer support, servicing guarantees, uptime, etc. (Lee & Natan, 2002; Johnston & Benyon, 2006). This paper argues that a service agreement is a representation of the reality, which in its abbreviated form facilitates the understanding and ultimately the implementation of a service delivery. From this information both actors need to find common ground by manipulating the represented information until a feasible service offer has been found. By the time a service agreement is constructed and finalized it is a customized and manipulated construction, a representation of reality.

Agreements can help align the service delivery with customer needs (Hiles, 2002) and assist companies in overcoming challenges of systematically planning and operating a service delivery. Manufacturers have numerous customer segments that demand different levels of service. Some may value maintenance one time per year, while others might request more resourceful services, e.g., 24/7 customer service and on-site maintenance. Different levels of service agreements can assist in differentiating and customizing the level of service depending on specific needs. A service agreement can be used as a management tool to operationalize service delivery because it is crucial for manufacturers to define services in order to establish a market. Well-constructed agreements and service contracts may provide opportunities to increase revenue from service business. If customers recognize a strong value proposition in services provided, they may be more likely to renew a contract. Written or visual forms of agreements or contracts can furthermore be used internally at the supplier's organization and externally towards the customer. The visual representations are mediators between the two parties showing value of product-service systems in a concise manner (Figure 1).

Figure 1 – Contracts as mediators in supplier-customer relationships

Contracts and agreements are at times complicated by conflicting requirements. On one hand, they are to ensure that service delivery parameters are present. On the other hand, they have to abbreviate the real world and reduce the complexity up to the point where customers can comprehend the information. Managers in service supplier organizations have to face this dilemma of reducing the complexity of service delivery to a form where customer can understand the value offered and, at the same time, leave in complexity to specify the service delivery and responsibilities of each actor. Contractual agreements can embody extensive information including service list, delivery time, price, quality and penalties of not complying with the agreement. Agreements may also be customizable and flexible because customer needs can change as well as company internal standards and external environment (IT systems). As Araujo and Spring (2006) summarize "as long as services can be bounded, objectified, clearly specified and scripted into socio-technical capacities they can be transacted just like products" (p. 801). As a management tool, contractual agreements: a) objectify; b) specify and c) simplify a service offer and its delivery process to an extent that a service can become tradable.

To sum up, a service agreement and a contract has the potential of objectifying a service product in a written form. They incorporate dimensions of service characteristics that both actors in a relationship agree to receive and fulfil. Compliance with the agreed terms and delivery of agreed quality services could bring in more satisfied customers, increase contract renewal rate and lead to service business becoming more resilient. It is, therefore, an important topic for closer exploration in servitization literature.

Methodology

The authors adopted an inductive exploratory case-based research approach (Barratt et al., 2011; Saunders et al., 2016; Yin, 2009) to investigate this underexplored phenomenon of contractual agreements within a servitization context. Exploratory research allows researcher to identify a problem within the narrowed scope to find a gap by reviewing academic literature and examine case company challenges (Saunders et al., 2016).

To this end, the authors have collected data in a high tech equipment manufacturing company to gain insights on how the company pursues servitization strategy and what challenges it faces in the process. Data includes: observations, workshop, internal documentation and 16 semi-structured interviews with managers from various levels and units within the organization lasting 60 minutes on average. Using multiple sources it is likely to increase the reliability of the data (Barratt et al., 2011). It is somewhat limiting to have a study of a sole firm, but the insights gained can provide more in-depth information especially in a longitudinal research (Voss et al., 2002). The information was gathered from November 2014 to July 2015 with more interviews to come. All data was transcribed, coded and analyzed using Nvivo software with interview guide as the initial template (Bazeley, & Jackson, 2013; King, 2004). Interviews with industry professionals aided to identify a problem that was interesting to explore from an academic and practical point of view. Within the servitization context importance of contracts in customer-supplier relationships emerged as a pattern during the coding process. Further interviews will aid in supplementing the current results.

Case company

The case company is a multinational high-tech equipment manufacturer with strong focus on R&D, producing equipment and software, as well as different solutions for worldwide markets. Being market leader in the field, its technology has proven to be the most reliable and innovating. The company's customers demand the highest quality and performance products, therefore, paying a premium price. The company offers various services including specialist training, installation, calibration, maintenance and repair as well as data analysing software and various service and support contracts. Services are vital in ensuring quality of the equipment allowing customers to trust the hardware and software provided results. The company has two business models where one is CAPEX based and mostly sales of hardware products with maintenance and calibration, and the other is more OPEX based where services and solutions play a more prominent role than products.

Preliminary findings

The initial interviews suggested that bundling of services to formulate contractual agreements is an emerging challenge for a company whose modus operandi has been to manufacture and provide products. Investment in talent acquisition was necessary as means to develop the necessary capabilities to start a service organization. For the highly knowledgeable organization that excelled through producing and marketing products, this meant venturing into an unfamiliar territory. The company has excelled through being knowledgeable of producing and marketing products, yet service infusion was a new domain. One of the strategic priorities became developing customized solutions by configuring the products and services in customer centric bundles.

Customer segmentation was employed to guide where and how the key resources were allocated, when product-service bundles were configured. The company's focus shifted more towards the biggest customers with the highest revenues, which in turn required contracts to become increasingly more complex. The higher level of customization continuously requires greater attention from all the stakeholders and can become time consuming and taking up more resources within the company, compared to standardized product offers.

The servitization aspect complicates an already existing product-service relationship with more dimensions. The internal and external negotiations require alignment of complicated technical product expertise in relation to services in the solution offer. Furthermore, the customized solution is further adjusted through dialogue with the customer in order to solve the actual customer needs. There have been instances where the sales organization has approached solution selling similarly to product selling, which negatively impacted the relationship with particular customers. The solution selling engineers are now expected to take into consideration all the terms and obligations that customer might bring forward.

If certain customers within a segment choose a standardized solution and require simple product and service configuration availability online, there is an underappreciated task of showing the value in a way that is both comprehensive and simplified to minimize the interaction with sales engineers. The importance is not only within the contract negotiation part but also beforehand showing the right value for the right customer segment in the best possible way. Challenges in conveying the right value can reflect in representation of the company in customers' logic.

It takes a certain degree of expertise to objectify services when servitizing business is not the company's core competence. In order to prioritize, it is necessary to have solution thinking to solve the customer problems with not only the product, but also with service.

When the involved parties and managers failed to pay their much needed attention to services, some customers experienced shortcomings in past service delivery. Missing the opportunity to provide an integrated solution also makes it harder to convince the particular customer about the value of a service contract investment. Communicating the value of service contracts is a perennial challenge when re-negotiating contracts. Ultimately, they drive the company in becoming more resilient. Letting down customers' trust is likely to have long term implications, especially if quality has been the reason to choose the service supplier in the first place.

Discussion and Conclusions

Manufacturers are increasingly becoming interested in generating new revenue streams by complementing existing products with value generating services. In doing so, product manufacturers venture beyond their traditional areas of expertise, which encompasses the marketing and delivery of products. Product and service bundles require new capabilities and operational adjustments.

Likewise, the complexity of solution based contracts increases, compared to standardized product delivery contracts. The configuration and customization of solution to the specific customer needs will thus require new competencies to systematically develop non-standardized contracts. Contracts and agreements also function as the needed management tools during the servitization process, as well as the starting points in the implementation of servitization strategy, because they represent one of the first contact points with the customer. As the servitizing company acquires new competencies, adjusts work processes, aligns the technical and business expertise and coordinates the cooperation between the involved function, the solution based contracts serve as a representation of the whole business.

Written agreements reflect the maturity of the business that is pursuing the servitization strategy. One aspect being the communication of value proposition and product-service bundling that manages complexity. Internal coordination and alignment is a prerequisite in delivering complex product-service solutions and requires increased efforts in organizing. Offering integrated product-service bundles with the high variety and combinations has opened a new level of complexity that has to be managed.

Companies may overlook the possibilities and limitations that written communication can provide. The role information technology plays in designing product-service contracts, and the extent it can find the right degree of complexity for each customer segment remains a highly interesting and relevant topic for future studies.

References

Araujo, L., & Spring, M. (2006). Services, products, and the institutional structure of production. *Industrial Marketing Management*, Vol. 35, No 7, pp. 797-805.

Baines, T. S., Lightfoot, H. W., Benedettini, O., & Kay, J. M. (2009). The servitization of manufacturing: A review of literature and reflection on future challenges. *Journal of Manufacturing Technology Management*, Vol. 20, No. 5, pp. 547-567.

Baines, T., & Lightfoot, H. (2013), *Made to serve: how manufacturers can compete through servitization and product service systems*, John Wiley & Sons, United Kingdom

Battisti, G., Swivedi, K. Y., Kuah, T. H. A., Lages, C. R. (2014), "Service Measurement and Definition: Challenges and Limitations" in Haynes, K., Grugulis, I. (Ed.), *Managing Services: Challenges and Innovations*, Oxford University Press. New York, pp. 7 – 20.

Bazeley, P., & Jackson, K. (2013), *Qualitative data analysis with NVivo,* Sage Publications Limited.

Brax, S. (2005). A manufacturer becoming service provider-challenges and a paradox. *Managing Service Quality: An International Journal*, Vol. 15, No. 2, pp. 142-155.

Callon, M., & Muniesa, F. (2005). Peripheral vision economic markets as calculative collective devices. *Organization studies*, Vol. 26, No. 8, pp. 1229-1250.

Callon, M., (2002). "Writing and (re)writing devices as tools for managing complexity," in Law, J., Mol, A. (Ed.), *Complexities: Social Studies of Knowledge Practices*, pp.191-218.

Cooper, R. (1992), "Formal organization as representation: remote control, displacement and abbreviation" in Reed, M. I, Hughes M. (Ed.), *Rethinking Organization: new directions in organization theory and analysis,* Sage, London, pp. 254-272.

Davies, A., Brady, T., & Hobday, M. (2007). Organizing for solutions: Systems seller vs. systems integrator. *Industrial marketing management*, Vol. 36, No. 2, pp. 183-193.

Fisk, R. P., Brown, S. W., & Bitner, M. J. (1993). Tracking the evolution of the services marketing literature. *Journal of Retailing*, Vol. 2, No. 1, pp. 61-103.

Grönroos, C. (1998). Marketing services: the case of a missing product. *Journal of business & industrial marketing*, Vol. 13, No. 4/5, pp. 322-338.

Hiles, A. (2002), *E-Business Service Level Agreements: Strategies for Service Providers, E-Commerce and Outsourcing*, Rothstein Associates Inc.

Homburg, C., Fassnacht, M., & Guenther, C. (2003). The role of soft factors in implementing a service-oriented strategy in industrial marketing companies. *Journal of Business to Business Marketing*, Vol. 10, No. 2, pp. 23-51.

Johnson, M. D., Herrmann, A., & Bauer, H. H. (1999). The effects of price bundling on consumer evaluations of product offerings. *International Journal of Research in Marketing*, Vol. 16, No. 2, pp. 129-142.

Johnston, R., & Benyon, R. (2006), *Service Agreements-A Management Guide*, Van Haren.

King, N. (2004), "Using templates in the thematic analysis of texts," in Cassell, C., & Symon, G. (Ed.), *Essential guide to qualitative methods in organizational research*, SAGE Publications Limited, pp. 256-270.

Kowalkowski, C., Kindström, D., Alejandro, T. B., Brege, S., & Biggemann, S. (2012). Service infusion as agile incrementalism in action. *Journal of Business Research*, Vol. 65, No. 6, pp. 765-772.

Lee, J., & Ben-Natan, R. (2002). *Integrating Service Level Agreements: Optimizing Your OSS for SLA Delivery*. John Wiley & Sons.

Matthyssens, P., & Vandenbempt, K. (2008). Moving from basic offerings to value-added solutions: Strategies, barriers and alignment. *Industrial Marketing Management*, Vol. *37*, No. 3, pp. 316-328.

Mikolon, S., Kolberg, A., Haumann, T., Wieseke, J. (2015). The Complex Role of Complexity: How Service Providers Can Mitigate Negative Effects of Perceived Service Complexity When Selling Professional Services*. Journal of Service Research,* Vol. 18, No. 4, pp. 513-528.

Neely, A. (2008). Exploring the financial consequences of the servitization of manufacturing. *Operations Management Research*, Vol. 1, No. 2, pp. 103-118.

Ostrom, A. L., Bitner, M. J., Brown, S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., Rabinovich, E. (2010). Moving forward and making a difference: research priorities for the science of service. *Journal of Service Research*. Vol. 13, No. 1, pp. 4 - 36

Ostrom, A. L., Parasuraman, A., Bowen, D. E., Patrício, L., Voss, C. A., & Lemon, K. (2015). Service research priorities in a rapidly changing context. *Journal of Service Research*. Vol. 18, No. 2, pp. 127-159.

Saunders, M., Lewis, P., & Thornhill, A. (2016), *Research methods for business students, 7th ed.*, Pearson Education Limited, Harlow

Spring, Martin, and Luis Araujo. 2009. “Service, Services and Products: Rethinking Operations Strategy.” *International Journal of Operations & Production Management* 29 (5): 444–467.
Ulaga, W. (2003). Capturing value creation in business relationships: A customer perspective. *Industrial marketing management*, Vol. 32, No. 8, pp. 677-693.
Ulaga, W., & Chacour, S. (2001). Measuring customer-perceived value in business markets: a prerequisite for marketing strategy development and implementation. *Industrial marketing management,* Vol. 30, No. 6, pp. 525-540.
Vandermerwe, S., & Rada, J. (1989). Servitization of business: adding value by adding services. *European Management Journal*, Vol. 6, No. 4, pp. 314-324.
Walter, Achim, Thomas Ritter, and Hans Georg Gemünden. (2001). Value creation in buyer–seller relationships: Theoretical considerations and empirical results from a supplier's perspective. *Industrial marketing management,* Vol. 30, No. 4, pp. 365-377.
Yin, R. K. (2009), *Case study research: Design and methods*, Sage publications.
Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1985). Problems and strategies in services marketing. *The Journal of Marketing*, 33-46.