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Servitization in Manufacturing: a Business Model Perspective

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Abstract

The current research on Business Models (BMs) in servitization tends to focus on either identifying the key components of relevant BMs or examining the challenges of introducing such BMs. The creation of a BM is not a discrete event, but the result of a long-term continuous refinement effort. Redirecting the servitization research from concentrating on successful service-focused BMs to focusing on the process of developing such models is critical for servitization theory and practice. This paper, therefore, sets out to shed light on the development and refinement of the service-focused BMs in the manufacturing context.

Keywords: Servitization, Advanced Services, Business Model

Introduction

A wide range of manufacturers is actively exploring the opportunities of a service-focused business model (BM). They are inspired by successful examples such as the 'Power-by-the-Hour', which demonstrates how Rolls Royce has shifted from providing gas turbine engines as a product to providing 'thrust' as a service proposition. This transformation is widely termed as 'servitization' (Vandermerwe and Rada, 1988) where a manufacturer develops BMs based on the capability provided by the product instead of the sale of product alone (Baines and Lightfoot, 2013).

Descriptions of the servitization transformation provide important insights of the potential these service-focused BMs have for manufacturers (Baines et al., 2009a, Martinez et al., 2010) as well as the intricacies, challenges, and barriers manufacturers face in the development of these BMs (Raddats et al., 2015, Story et al., 2016, Baines et al., 2017). However, the current research offers limited insights on the pathway these manufacturers have taken to eventually arrive at a position where the service-focused BM

has become a successful profitable operation (Dimache and Roche, 2013, Baines et al., 2017). Arguably, the creation of a BM is not a discrete event, but the result of a long-term on-going development efforts of which we know very little. Rolls Royce's 'Power-by-the-Hour' we refer to today was preceded by decades of experimentation, refinements and disappointments before shaping up as a successful service-focused BM that it is now (Alghisi and Saccani, 2015, Abramovici et al., 2014, Ng et al., 2012, Anderson, 1999).

The current research on BMs in servitization tends to focus on either identifying the key components of relevant BMs (see e.g. (Barquet et al., 2013, Storbacka, 2011, Kindström, 2010a, Lay et al., 2009), or exploring and examining the challenges of introducing such BMs (see e.g. (Alghisi and Saccani, 2015, Baines et al., 2009b). Redirecting the servitization research from concentrating on successful service-focused BMs to concentrating on the development and refinement of such models is critical for servitization theory and practice (Laudien and Daxböck, 2016). Service-focused BMs could be perceived as idiosyncratic transformations as they build up and co-develop with the distinct existing product-features, customer-base and capabilities attributable to specific manufacturing firms. Therefore, focusing on the process of developing service-focused BMs might provide more generalisable insights than investigating the diversity of resultant service-focused BMs.

Arguably, those manufacturers that have recently embarked on their transformation journey will be challenged with tight time frames for developing suitable service-focused BMs capable of leveraging return on the investments. While it might be helpful for senior executives and transformation managers to learn from successful BM examples to design their own, they will inevitably be faced by the question of 'how to get there?', taking the circumstances of their specific businesses into account.

This research is, therefore, motivated by these gaps in the literature and the managerial implications of the servitization process. It sets out to shed light on the development and continuous adjustment of the service-focused BMs in the manufacturing context, to understand the dynamics that underlies the formation and the efforts management engages in to continuously adapt the service-based BMs. These have led us to formulating the following research question: *how do the core components of a manufacturer's business model evolve as the organisation transform towards becoming an advanced services provider?*

Theoretical Background

Dynamic view of business model development

The identification of the conceptual core of BMs has been a focus of several dedicated literature reviews (Foss and Saebi, 2017, Adrodegari et al., 2017, Wirtz et al., 2016, Zott et al., 2011). A prominent definition is provided by Teece (2010, p. 191), who describes a BM as the 'management's hypothesis about what customers want, how they want it, and how the enterprise can organise to best meet those needs, get paid for doing so, and make a profit'. BM is not considered as a theory per se, but rather a concept, or a tool, which helps to describe a firm's economic activity (Lambert and Davidson, 2013). However, beyond this generic understanding, there is little agreement on the purpose and boundary of the notion of BM (Foss and Saebi, 2017).

Alongside this inconsistent use of the term, another challenge faced by both scholars and practitioners is the lack of consensus over the key components of a BM (Morris et al., 2005). This could be observed in the multiplicity of modular variation presented in the literature that addresses the 'static' perspective on the BM (Van Putten and Schief, 2013, Lindner et al., 2010). The 'static' view on a BM describes configurations of BM

components that enable successful functioning of the firm (Wirtz et al., 2016). It scrutinises the content-related aspects of BMs by drawing on structural aspects of a BM and its various components (Johnson et al., 2008), conceptualises different levels of abstraction by developing archetypes and architectures (Teece, 2010), depicts different tasks and processes supporting the content-related aspects (Zott and Amit, 2010).

The 'dynamic' view on a BM, on the other hand, aims to describe how the BM and its components evolve over time (Demil and Lecocq, 2010). It explores the potential relations between the elements or components (Casadesus-Masanell and Ricart, 2010), suggests internal and external environmental pressures that affect BMs and trigger changes (Voelpel et al., 2004), connects the notions of BM change and BM innovation (Cavalcante et al., 2011) and integrates organisational change management perspectives to explain typologies of BM change, for instance, whether change is emergent or voluntary (Wirtz et al., 2016, Demil and Lecocq, 2010).

By presenting this dichotomy of BM approaches, we do not argue that a BM cannot be 'static' (Achtenhagen et al., 2013), but instead, support the view advocated by Demil and Lecocq (2010), that both the 'static' and 'dynamic' view on a BM are valuable, but simply fulfil different functions. To reconcile these two views, this research draws on the RCOV framework developed by Demil and Lecocq (2010). The framework is grounded on Penrose's view, which postulates that a firm operates in a constant state of change resulting from the dynamic interaction between its business model's three core components (Demil and Lecocq, 2010, Penrose, 2009, Lecocq et al., 2006).

The proposed components here are defined as (i) *Resources & Competences*, which refers to the internal and external assets and staff; (ii) *Organisation*, which describes the internal and external activities the firm engages in to leverage its resources and competences; and (iii) *Value proposition* that describes a firm's products and services offered and delivered to the customer. These constitute the revenue source, which together with the cost expended form margin. Based on the RCOV framework, we adopt the view that each of the components is comprised of different elements. Focusing on only these three core components opens up opportunities for an inductive approach to identifying subsidiary BM elements which are specific to servitization.

Servitization transformation

A considerable number of studies have used the BM concept to analyse the way manufacturers develop and deliver services within the context of servitization. Servitization describes the transformation that manufacturers go through when extending their product offerings to include services (Raddats et al., 2016, Visnjic Kastalli and Van Looy, 2013). It is, generally, recognised as a complex shift or transition, which requires the development and alignment of diverse capabilities to creatively innovate service portfolio, but also effectively sell and deliver the offerings (Baines et al., 2011). The service business is largely neglected among manufacturers and is, traditionally, developed to support their product and production. Hence, considering the service as a focus of a business model is a significant step for manufacturers (Kindström and Kowalkowski, 2016).

Servitization literature puts a specific focus on the value proposition (see e.g. (Adrodegari et al., 2015, Dimache and Roche, 2013, Kindström, 2010b)). The essence of servitization is that the manufacturer extends its product-focused value proposition in order to develop service-focused value propositions, the base notion of the service-dominant logic (Ng et al., 2012, Windahl and Lakemond, 2010, Lusch et al., 2007, Vargo and Lusch, 2004). In this regard, Baines and Lightfoot (2014) distinguish the three principal types of services that manufacturers could offer, ranging from 'base' to

'advanced', suggesting differences in levels of engagement and dedication. Categorisation includes '*base services'* (e.g. spare parts, warranty, etc.) and *'intermediate services'* (e.g. condition monitoring, maintenance, repair, overhaul and remanufacturing).

Particularly wide-reaching transformation efforts are required for manufacturers that seek to offer *'advanced services',* which are also referred to as, for instance, capability contracts (Gebauer et al., 2011), performance based contracts (Kindström and Kowalkowski, 2014), or outcome based contracts (Kowalkowski et al., 2009). Overall, advanced services imply a bundling of products and services into complex offerings that frequently feature: (i) revenue payments structured around product usage; (ii) performance incentives (i.e. penalties for product failure when in service); (iii) long-term contractual agreements (e.g. spanning 5, 10 or 15 years) and cost-down commitments (Baines and Lightfoot, 2013). For manufacturers offering those 'advanced services' the organisational complexity and the need for aligning transformation efforts across various parts of the organisation are a lot higher, than for those that limit themselves to providing only base, or intermediate ones (Baines and Shi, 2015b, Baines et al., 2011, Oliva and Kallenberg, 2003).

Understanding the organisational transformation towards becoming an advanced services provider is a significant challenge facing both researchers and practitioners alike (Kowalkowski et al., 2017). Yet, there are only a few notable contributions to this topic (see (Martinez et al., 2017, Baines and Shi, 2015a, Kindström, 2010a), and research is generally fragmented and discursive (Bustinza et al., 2017). One of the most comprehensive frameworks on the transformation towards advanced services, to the best of our knowledge, is proposed by Bigdeli and Baines (2017). The authors demonstrated that manufacturers follow four distinct stages of maturity in their transformation including (1) *exploration*, which involves exploring the idea of advanced services and establishing the vision of how competing through these services may look like; (2) *engagement*, where the vision of competing through the advanced services gets accepted; (3) *expansion*, where the development and the implementation of advanced services for a wider market segment takes place at an increased speed, and (4) *exploitation*, where advanced services are integrated and form a basis of the competitive advantage.

In order to explain the evolution of a BM in servitization transformation, we need to start with focusing on the 'static' approach to identify the components of the BM and then, shift to the 'dynamic' approach, to see how those components evolve through time. To do this, the present study integrates the core components of the RCOV framework with the key stages of the framework of Organisational Transformation towards Servitization (Figure 1). This allows the examination of the evolution of the BM's components as manufacturers progress through the maturity stages to become an advanced services provider. Following on from this, we also focus on identifying the capability that allows the manufacturers to adjust their BM while sustaining competitive advantage. Demil and Lecocq (2010) termed this as *'dynamic consistency'* (p.230), while research outside of the BM domain, such as Tushman and O'Reilly (1996) work in organisational change, addressed the balance in this duality as 'organisational ambidexterity' (p. 24), or the ability of the organisation to simultaneously explore new opportunities and exploit current capabilities (Kindström and Kowalkowski, 2014, Turunen and Neely, 2012).

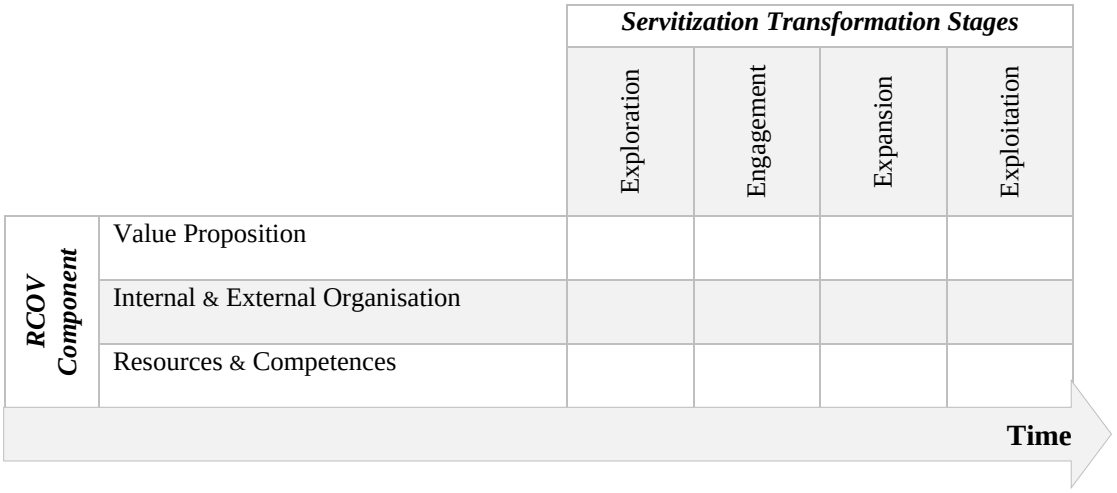

Figure 1 – Business Model evolution in servitization transformation

Research Method

In this research, we adopted a multiple case study approach (Bluhm et al., 2011, Yin, 2003) to investigate how core components of a manufacturer's BM evolve in the servitization process (Laudien and Daxböck, 2016). To conduct the case studies, we have followed a process research approach (Langley, 1999), which enables the analysis of sequences of events and activities that describe how elements of investigation change over time. A short-list of companies was formed and prioritised, and then companies were approached in that order. This relied on informal networks for introductions to key personnel. During the process, care was taken to avoid approaching competing companies since this would inhibit willingness to participate. Furthermore, in order to address the objectives of the research, we have had to engage with those companies, which were willing to (a) participate at a senior level, (b) take part in several rounds of interviews, meetings, etc., and (c) grant access to their manufacturing and development facilities for the researchers to observe the day-to-day operations. In all, two cases were identified and preliminarily engaged by January 2014; they were visited, and negotiations concerning access and confidentiality were undertaken. Finally, in reporting findings we must emphasise that our goal has been to gain a foundational understanding of the decision-making logic rather than critique individual organisations. We therefore protect the anonymity of all personnel and respect the confidentiality of contributors by referring to organisations simply as Manufacturer A (global tyre manufacturer) and Manufacturer B (global truck manufacturer).

The data was collected through semi-structured face-to-face and telephone interviews (Johnston et al., 1999), informal follow-ups through meetings, several rounds of observations, and archival data review (e.g. business plans and annual reports)(Bowen, 2009). As the key form of data collection, between January 2014 and March 2017, we conducted over 50 rounds of interviews with seven key stakeholders within Manufacturer A, and a comparable number of interview rounds with the stakeholders within Manufacturer B. The interviews lasted about 1-2 hours each; more than 100 hours of conversation were tape-recorded and transcripts prepared soon afterwards.

The data analysis was conducted in three main steps based on the guidance suggested by Miles and Huberman (1994). The first step of the analysis (data reduction (Bluhm et al., 2011) focused on coding the interview manuscripts and archival data. Three independent researchers conducted this step. Operational processes, organisational development phases, and changes in the firm's business models over time were identified

and assessed through content analysis of the transcripts. The data display (mapping) was then developed manually in the form of tables from the findings, which demonstrated the changes of the key components of the business models against the servitization transformation stages. Subsequently, in the second step, the researchers examined and cross-checked the observations data (e.g. informal meetings, notes, recordings, etc.). This facilitated the emergence of important patterns (Straus and Corbin, 1998) regarding the key decisions made by the senior managers. A circular relationship between data collection, analysis, and discussion has been required in the data analysis approach proposed by Miles and Huberman (1994). Therefore, as the third step, several iterations between the sources of data (i.e. interviews and observations) and their analyses were carried out. This, particularly, enabled the researchers to classify and examine the key decision(s) during each of the stages that impacts the changes of the key components of the business models.

Findings

In this section, we demonstrate a synthesis of how core components of the Manufacturer A and B's business model have evolved as the organisations were maturing through different stages of servitization transformation.

Exploration Stage

In the exploration stage, both manufacturers were focusing on the resources and competencies required for servitization. For instance, the innovation team within Manufacturer A started to explore how much value could be created by properly managing tyres and which technologies might help their customers. Similarly, Manufacturer B focused on technological resources and capabilities that could record how its products (commercial trucks) were being used (e.g. driven by operators) and transmit this data back to the operating company (logistics provider). Both manufacturers were exploring the idea of advanced services and attempting to establish a vision of how competing through these services may look like. Hence, they were less clear about their offering (i.e. value proposition), as well as how organisational activities should be accumulated to leverage such initiative.

Engagement Stage

The empirical findings demonstrate that the primary change in the manufacturers' BM emerged in the engagement and expansion stages. By confirming how an advanced service vision could look like, the management of both manufactures started to build tractions and make some internal and external collations on the initiative. Therefore, the main focus of this stage was on the internal and external organisational aspects of the BM. For instance, Manufacturer A restructured its Innovation Team to streamline the initiative, and they started to communicate the benefits, risks, and challenges of the initiative with the wider teams, internally, therefore building alignments for the advanced service initiatives within the organisation. In addition, the management team started to evaluate the organisational buy-in and realising the need for the stronger support from the Board, and further developed the management tools for customer engagement and negotiation. Manufacturer B, likewise, focused on restructuring and optimising the processes to establish a customer-centric department dedicated to advanced services. There also started collaborating with the leading telematics provider on integrating new technologies. The engagement stage was also when the value proposition started to be designed through several rounds of co-development activities and experimentation with the relevant customers. Through gathering and analysing feedback from the

experimentation projects, the manufacturers managed to further align their resources and competencies not only for the development of the offering(s) but also for the delivery of such offerings. Manufacturer A, for instance, realised that such initiative requires service-oriented management tools. They also started to develop the capability to disseminate and replicate successful best practices across the operation regions, while communicating the initiative to the stakeholders (sponsors) and higher management levels.

Expansion Stage
By gaining internal and external traction and further understanding the customers' requirements through experimentation projects, both manufacturers launched their advanced service offering in the Expansion stage. For example, Manufacturer A launched its 'Proactive Services' offering in Europe. The offering focused on taking care of the entire tyre-related operation for the road haulage companies through sensor enabled monitoring of tyre pressure and alerts; based on a monthly service fee model. Manufacturer B launched its advanced services contract based around payment for cargo move rather than asset ownership in this stage. The organisation and resources and competency components of the manufacturers' business model were also significantly evolved in this stage. In Manufacturer A, a new Senior Vice President appointed to work closely with the Global Innovation Team, a formal mechanism for improving the organisational commitment developed, and a dedicated team from the Global Innovation, Marketing and Sales departments formed.

Exploitation Stage
In this stage, both manufacturers started to experience how advanced service offering(s) could be exploited across their different business units/lines and how such initiative could become integrated and form a basis of the competitive advantage globally. The efforts started to focus more on designing the products with the mind-set required for the delivery of advanced services and optimising innovation and delivery of a portfolio of advanced services offerings. From a resource and competency perspective, both manufactures started to engage with the initiative through more cross-sectional and senior teams. For instance, Manufacturer A dedicated team from the Global Innovation, Marketing and Sales departments identified relevant customers in North and South Americas, following the success of the initiative in Europe. Furthermore, Managing Director for Proactive Services was appointed to be responsible for leading the start-up of the Proactive Services diversified business entity.

Conclusion

The research drew on the RCOV framework to conceptualise the dynamic nature of the servitization BM and address *how do the core components of a manufacturer's business model evolve as the organisation transform towards becoming an advanced services provider?* We put a specific focus on the dynamics of servitization, mainly because previous studies have largely been based on the assumption that the servitization BM is static and stable once established. Our research shows how the BMs continuously develop as manufacturers mature towards becoming an advanced services provider. Their BM is subject to an ongoing refinement that extends throughout its operation.

The empirical examination of the manufacturers across several levels of analysis emphasises that they are not clear about their business models and the complex relationships between its key components in the early stages of servitization transformation. In this respect, they do not follow the traditional ladder in which the value proposition is first defined followed by characterising the customer segment, classifying

the key resources, activities and other key components of the business model. Rather, they tend to first focus on identifying the vision, and how such BM could look like, followed by gaining some internal and external traction and embedding servitization in the organisational structure to get the cross-sectional support for the delivery of advanced services.

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