EDITORIAL

Servitization for territorial competitiveness: taxonomy and research agenda

Building a taxonomy for servitization research

There is currently around 10 per cent annual growth of the industrial US rental industry. This growth is attracting experienced investors, and rental fleets/inventories are growing exponentially[1]. Why are we observing this preference in the use over the ownership of equipment, vehicles or machinery? This question is reflective of the broader inspiration for a growing literature analysing the value of including service business models in manufacturing firms (Cusumano *et al.*, 2015; Vendrell-Herrero *et al.*, 2014; Wise and Baumgartner, 1999). Manufacturing and services have been traditionally conceptualized as largely independent economic activities, but evidence seems to suggest that there are potential synergies between manufacturing and services to enhance both firm-level competitiveness and consumer satisfaction, a business strategy known as servitization (Vandermerwe and Rada, 1988). What is more, such strategies fit well with the argument that manufacturing business models exclusively focused on exploiting economies of scale have become unsustainable at the turn of the century with the rapid rise of Asia's engagement in the global economy. Advanced economies – such as Europe and the USA – are characterised by high wages, high skills, high disposable income and developed welfare systems. These conditions require a better understanding of what drivers and bottlenecks can enable Western manufacturing sectors to transit to more innovation-intensive and difficult-to-imitate business models based on services that will sustain their competitiveness in the medium and long term. This realisation is driving much practice around regional competitiveness policy, which is increasingly focused on supporting interaction between different agents as a route to more sophisticated and wider-reaching innovation (Aranguren *et al.*, 2010). Indeed, place-based concepts such as regional innovation systems, clusters and smart specialisation strategies have become popular in part due to recognition that interactions between agents with different types of knowledge are capable of generating strong innovation outcomes. In this sense, there are interesting questions around the specific requirements at the territorial level for fostering the development of servitization strategies, which are likely to require a mixture of knowledge that exist outside any one firm. This is particularly the case in regions that are strongly reliant on traditional manufacturing activities, and where policy may have an important role to play in encouraging linkages that support the transition to service-based economic models.

It is with these challenges in mind that this issue of The Competitiveness Review looks at the phenomenon of service implementation and competitiveness and posits a research agenda that needs to be explored at the territorial level. The issue brings together papers from across the spectrum of current servitization debates, as a stimulus to think about the link with territorial competitiveness and related public policy. The four contributions can be positioned within the taxonomy presented in Figure 1, which is constructed from two axes. Whilst the vertical axis differentiates between mainstream and alternative approaches to

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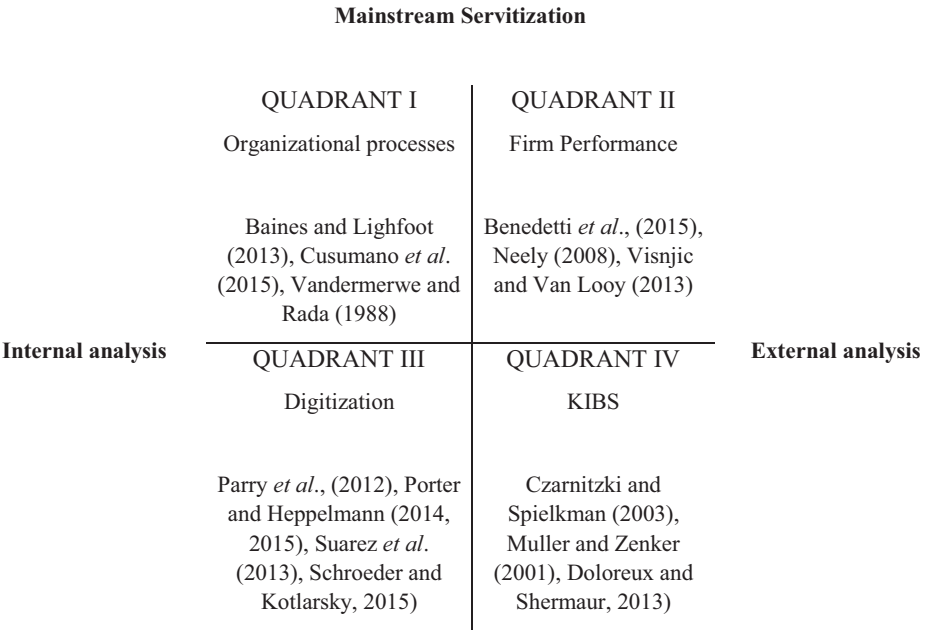

Figure 1.
A taxonomy of the servitization literature

servitization, the horizontal axis focuses on the perspective of the organizational analysis, external or internal. The taxonomy thus has four quadrants, and Figure 1 provides relevant references as examples of the research included in each category.

The most popular stream of literature is positioned in Quadrant I. The internal analysis of mainstream servitization looks at the organisational transformation that is necessary for service implementation. This literature is implicitly targeted at manufacturers who currently focus their businesses on products and production. Icons of successful transformation in this world are companies such as Rolls-Royce Aerospace with Power-by-the-hour, Xerox with document management and Alstom with Train-life services. These are all examples of what Baines and Lightfoot (2013) describe as "advanced services".

The literature in Quadrant II studies the linkage between service implementation and firm performance. This stream of research has sought to respond to increasing global competition in manufactured products through analysing the achievement of competitive advantage based on service infusion and an enhanced focus on customer satisfaction along the whole product life cycle. It is widely posited that competitive advantages achieved through service-based strategies are more sustainable, as being less visible and more labour-dependent, services are more difficult to imitate than other strategies focused on product innovation, technological superiority or low prices. While much of the empirical literature finds a positive link to competitive advantage and firm performance (Neely, 2008; Visnjic and van Looy, 2013), recent research has also emphasized that service implementation can increase risks and lower flexibility (Benedettini *et al.*, 2015), which, in some cases, can provide motivation for de-servitization (Kowalkowski *et al.*, 2015).

The seminal article of Vandermerwe and Rada (1988) explained that companies throughout the world were adding services to their core corporate offerings, but mainstream research on servitization has focused almost exclusively on manufacturing firms. This opens the opportunity of expanding servitization literature to alternative contexts outside of manufacturing. As shown in Quadrant III, one sub-stream of research has focused on the digitization of resources and associated business offerings. This has happened in creative industries such as the music industry, where physical formats have transited into digital services such as Spotify and Apple music (Parry *et al.*, 2012), in computers and information industries with iconic examples such as IBM, transiting from selling hardware to selling software and consultancy services (Suarez *et al.*, 2013), and in manufacturing contexts, where the "smartization" of products based on sensors, data storage, microprocessors and software is transforming competition and firms (Porter and Heppelmann, 2014, 2015). This sub-stream of research has recently been named digital servitization (Schroeder and Kotlarsky, 2015; Bustinza *et al.*, 2015) and is formally defined as the provision of digital services relying on digital components embedded in physical products (e.g. ebook, smartphone, tablet).

Another alternative analysis of servitization is emerging with reference to the external axis of Figure 1, and is located in Quadrant IV. This refers to analysis of the demography, location and interaction of new firms implementing business models based on offering knowledge-based services and widely known as knowledge-intensive business services (KIBS). Muller and Zenker (2001) refer to KIBS as professional services firms delivering high intellectual value-added services mainly to other small- and medium-sized manufacturing firms. Those manufacturers rarely have enough internal resources to include service business models into their offering portfolio and hence resort to KIBS to implement servitization strategies. In this line, Czarnitzki and Spielkamp (2003) see KIBS as bridges that interplay with manufacturing firms, delivering advanced services that complement manufacturer's products.

The special issue contains four contributions; each of them can be attributed to one or more quadrants in Figure 1. In such a way, the special issue provides state-of-the-art evidence while covering all of the different sub-streams of servitization literature, and also provides a basis for thinking about the relationship between firm-level analysis and the territorial competitiveness dynamics in which they are rooted. The next section summarizes the contributions of the special issue, and this article then concludes by unpacking a research agenda with a special focus on topics concerning the relation between servitization and territorial competitiveness and the analysis of specific policies supporting and stimulating the implementation of service business models.

Contributions of the special issue: applying the servitization taxonomy

Figure 2 shows how the four articles published in this special issue can be positioned within the taxonomy presented in Figure 1. Whilst two articles fit perfectly with mainstream literature (Bigdeli *et al.* and Zighdi and Zaeim), the other two articles are clearly positioned in alternative perspectives of servitization. In this respect, Vendrell-Herrero *et al.* investigate firms' willingness for implementing digital formats, and how the degree of aggregated or societal digitization is associated with national competitiveness, and Kamp *et al.* analyse how the use of KIBS influences the regional capacity to export.

The first contribution is the article of Bigdeli *et al.* The authors undertake a comprehensive literature review of mainstream servitization research. They position contributions according to an established theoretical framework for analysing organisational change (Pettigrew, 1988), and in this sense, the article is mostly positioned in

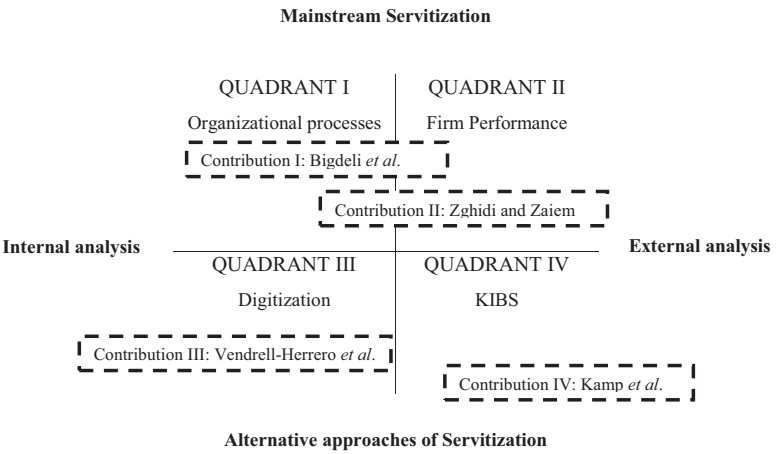

Figure 2.
The contributions of the special issue in the servitization taxonomy

Quadrant I (Figure 2). Their analysis of 158 papers published between 1988 and 2014 highlights the recent rapid increase in attention being afforded to servitization from an organisational perspective (and indeed more generally). Figure 3 summarizes the number of yearly contributions based on their reference list, where it can be observed that 50 per cent of the articles were published in the period 2012-2014, and another 30 per cent in the period 2009-2011, with only 20 per cent of articles published in the 20-year period from 1988-2008. Following Pettigrew (1988), Bigdeli *et al.* categorise the literature according to content, context and process of change and make a distinction between descriptive (What was changed?) and prescriptive (What should be changed?) approaches to researching organizational change. From this analysis, they identify strengths and weaknesses in the servitization research landscape and identify opportunities for further research. These include a stronger infusion of a generic theory into the servitization debate and the exploration of servitization in action through the lens of the theoretical framework that they have developed. With regards to the link between business-level servitization and territorial

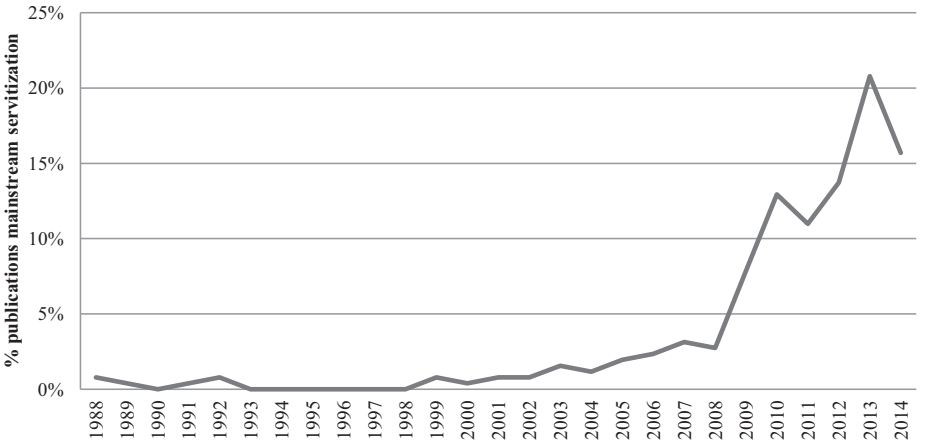

Figure 3.
Percentage of yearly publication in mainstream servitization over total publications during 1988-2014 period (according to literature review in Bigdeli *et al.*)

competitiveness policy, they identify an opportunity to stimulate the inception of servitization in manufacturing firms, while recognizing that weak mechanisms to capture the progress of servitization adoption and lack of awareness among government policy-makers currently present barriers.

While Bigdeli *et al.* touch on the relationship between organizational change and firm performance, the latter is explored more explicitly in the second article, by Zighdi and Zaiem. Specifically, they research the causes (Quadrant I) and consequences (Quadrant II) of servitization through a survey of 130 Tunisian manufacturers in the electronics, textile and food industries. The choice of Tunisia, an emerging economy, is an important contribution, as previous servitization literature has been focused mostly on developed economies. Their paper distinguishes two reasons for servitizing: the support of the product or the support of the customer. Interestingly, according to their evidence, whilst the main environmental cause of servitizing to support product is the increase of technology intensity, the environmental cause of servitizing to support customer is the competitive intensity of the industry. The study also concludes that, regardless of the reason underpinning the managerial decision to servitize, there is a positive and significant relation between the implementation of services and firm performance. This result contributes to the current empirical debates on this topic – in line with Neely (2008) and Visnjic and van Looy (2013), while challenging Benedettini *et al.* (2015) or Kowalkowski *et al.* (2015) – and is used to justify arguments for public policy that can support the implementation of service strategies among manufacturing firms as means of boosting competitiveness.

The contribution of Vendrell-Herrero *et al.* looks at how digitization is associated with competitiveness, and is positioned in Quadrant III (Figure 2). They use the case of the music industry to estimate digital dark matter, those benefits of digital technologies that are non-observable and therefore hard to quantify. They assume that the benefits of digital technologies are maximized when the supply and demand for digital services is matched. Hence, their measure of digital dark matter decreases when the distance between supply and demand increases. This pattern was analysed in ten countries, and demand for digital services was found to be larger than supply in all of them, implying that digital dark matter is not as large as it could be. A direct implication of this is that private companies need to increase their portfolio of digital offerings. The method is robust, and the results are consistent with common sense since the USA, the territory with the highest number of successful digital companies (i.e. Facebook, Google, Microsoft, Apple […]), is the country with the largest estimated digital dark matter. A second step in their analysis is to correlate digital dark matter with different measures of national competitiveness, where they identify a positive and strong relationship. While causation is not proven, the results again intuitively point to the potential for further research on the role of public policies oriented to incentivizing and encouraging the development of product service portfolios in the private sector and introducing service reforms.

The final contribution, the paper of Kamp *et al.*, analyses whether KIBS firms can sustain exporting manufacturing companies in the Basque country, a northern Spanish region with a well-established manufacturing sector and a notorious increase in KIBS activity (Kamp and Alcalde, 2014). They found a positive and significant correlation between the number of KIBS and the total exports and turnover in the region. This result reinforces the idea that KIBS are an essential driver to nurture industrial competitiveness. It is also consistent with the idea that KIBS are the main providers to small manufactures for the necessary knowledge and capabilities to implement service business models, something that is difficult for small manufacturing businesses to do internally. In terms of public policy implications, their research highlights that the design of industrial policies capable of supporting

servitization in small manufacturing firms should take into account the use of knowledge-intensive services by these firms. In this regard, the authors point to the potential for awareness-raising actions towards industry to highlight and demonstrate the potential of KIBS for their business needs, and for the strategic opening of certain innovation programmes and public procurement to KIBS.

Servitization and territorial competitiveness: developing a research agenda

Business models exclusively focused on exploiting economies of scale are no longer suitable in Western economies with relatively high wages and developed welfare systems. This is prompting a transition towards more innovation-based and difficult-to-imitate economic models, whereby much political attention has been given to a wide variety of factors enhancing the knowledge in a territory. Factors such as education, training, R&D investment, university–industry collaboration and other forms of triple-helix collaborative innovation activity typically mark the priorities of policymakers in looking to consolidate the competitiveness of their economies into the future. However, with the exception of some political initiatives (European Commission, 2011), there are very few specific policies to stimulate the implementation of service business models. The objective of this section is to define research avenues that can provide guidance to policymakers on how to achieve a more servitized economy.

A first research line concerns further analysis to confirm and deepen our understanding of the linkage between service business model implementation and territorial competitiveness. This linkage is practically missing in mainstream servitization research, which is more focused on organizational change and its outcomes for the firm. Yet the contributions in this special issue exploring servitization from divergent angles (Vendrell-Herrero *et al.* and Kamp *et al.*) contain figures showing a positive association between degrees of servitization and competitiveness in a territory. This is consistent with recent efforts in both developed (Baines and Shi, 2015) and emerging (Arnold *et al.*, 2015) economies, suggesting that the servitization of the firms operating in a region is linked to enhanced competitiveness in that region, normally in the form of increased economic activity and employment. Confirmation (or not) that servitized economies are more competitive is only the tip of the iceberg, however. For policymakers, the appearance of studies analysing how specific policy measures can either enhance the use of service business models or mediate the relationship between servitization and competitiveness is even more relevant. In this regard, we can propose a series of further specific research lines that are connected to different quadrants presented in our taxonomy.

The stimulation of organizational transformation towards a service business model (Quadrant I) to some extent shares similarities with the stimulation and support for other organizational changes, such as those related to innovation and training. In this respect, one strongly recognised policy element is public procurement (Edler and Georghiou, 2007). Future research should investigate how and to what extent public procurement can support the implementation of service business models in both large and small corporations. Following Quadrant I, another aspect that has been underexplored and is relevant for policymakers is how to support the internationalization of servitized companies, as their patterns of internationalization are different to those of companies selling only products (Jensen and Petersen, 2014). Additionally, a further line of inquiry combining Quadrants I and II would take account of Gebauer's *et al.* (2012) suggestion for further exploration of the organizational steps required for a safe and profitable journey towards service-driven manufacturing. As suggested by Vohora *et al.* (2004), the identification of "critical junctures"

informs policymakers of which are the weakest and more risky steps for implementing service business models, and hence provides guidance in designing support policies.

It has also been noted that the power structure of supply chains might change when upstream companies decide to servitize (Bustinza *et al.*, 2013). One requirement for servitizing is to move downstream towards the supply chain (Wise and Baumgartner, 1999), which might affect the value network dominance for upstream companies (Lockett *et al.*, 2011). To protect network dominance, upstream companies need to develop strategies to reinforce link channels to consumers to create value, and to lock competitors in the downstream to assure processes of value capture. In this respect, future research should focus on the external relations in servitized supply chains (Quadrant II), and, in particular, look at specific market regulations to protect the implementation of service business models. The loss of value network dominance is particularly severe when analysing digital servitization (Quadrant III). Upstream companies in creative sectors (music, publishing) create value by digitalizing their resources, but at the same time, see how electronic retailers or peer-to-peer file-sharing networks are the ones that capture the value created. Some research has been done on analysing the role of specific policies in providing legal protection to upstream companies (Danaher *et al.*, 2014), but further research is required, especially with the threat of entry of large internet/software companies such as Google into manufacturing contexts (Schulze *et al.*, 2015). Following with Quadrant III, other important aspect for policymakers, especially in emerging economies, is the relation between internet connectivity/infrastructure (including the instalment of fast internet technologies such as 4G, and the networks of free and secure public Wi-Fi) and territorial competitiveness.

Internet technologies are also relevant engines for the growth of KIBS, and future research exploring this topic is likely to contribute to research in Quadrant IV. In terms of the dynamics of KIBS creation and growth, a relevant area of research for market regulators is the identification of manufacturers' preferences for internalizing service activities by acquiring existing service providers (Klepper and Thompson, 2006), and therefore acquiring know-how/service capabilities and enhancing the relationship with customers through the means of mergers and acquisitions (Gomes *et al.*, 2011). Further to this, the research of Lafuente González *et al.* (2015) has identified that transport infrastructure (i.e. access to ports and airports) is an important driver for the creation of KIBS in a territory. Altogether, more research focusing on which are the infrastructure requirements for the creation and growth of KIBS is necessary. Moreover, some research has been conducted to assess the relation between KIBS and small manufacturers (Doloreux and Shearmur, 2013), and the location patterns of KIBS (Rahman *et al.*, 2011; Shearmur and Doloreux, 2014); however, little evidence is available to identify how these relationships enhance societal welfare and the economic development of a territory. In this regard, future research will need to deepen the analysis of the ways in which KIBS impact on the transformation of manufacturing industry and the strengthening of territorial competitiveness. Moreover, policy-focused analysis is required to understand the ways in which different types of policies (cluster policies, innovation policies, entrepreneurship policies, public procurement, etc.) interact in supporting both the development of a strong KIBS sector and the servitization of manufacturing firms, improving the overall effect of complex innovation policy systems (Magro and Wilson, 2013).

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Note

1. http://rermag.com/headline-news/navigating-financial-buyers

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