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Title: Talent for services: How gaining access to talent enables successful servitisation

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Abstract:

Talent management has become a critical component of competitiveness and an important factor in an organisation's global business success. It has been traditionally deemed to be the sum of activities that specifically support a company's strategic initiatives. However, most of the extant literature on the subject to date has been largely focused on methods for attracting talent and retaining it within an organisation, failing to recognise the importance of 'accessing' talent. This is a barrier that can limit the supply of skills and competences demanded in the marketplace, and is a fundamental factor in a firm's strategic performance. This chapter quantitatively tests a company's ability to 'access' qualified talent and how this affects its strategic orientation. The study focuses on servitisation in manufacturing industries, a process that creates organisational transformation and new roles with very specific skillsets. The study includes 285 servitised MMNEs from seven different industries, located in five different countries. The findings indicate that the ability to 'access' talent plays a key role in a firm's strategic decisions. The evidence also suggests that companies that have ready access to qualified talent for servitisation tend to servitise at higher levels.

1. Introduction:

This study focuses on one important, yet underexplored, aspect in talent management: the study of accessing pivotal talent in fast-changing environments (Collings and Mellahi, 2009). Accessing talent involves finding external candidates to meet the demand for the right competences at the exact point in time when they are needed (Cappelli, 2008; Hills, 2009). This is intended to ensure that qualified talent will join the company to perform in a direction that fits business needs (Wang and Liu, 2016). According to Chuai et al. (2008), having access to qualified talent means that companies are able to upgrade their intellectual capital (knowledge) to operate quickly and more

This is the author's version of the book chapter "Talent for services: How gaining access to talent enables successful servitisation" accepted for publication in the book "Research Handbook of International Talent Management" edited by Prof. Yipeng Liu (Henley Business School) and commissioned by Edward Elgar. efficiently at the right time. Thus, being able to access talented individuals for pivotal positions plays a key role in driving organisational success (Ashton and Morton, 2005). Over the years, a large body of literature has been devoted to describing the benefits of accessing talent, namely financial (Yapp, 2009), organisational (Tarique and Schuler, 2010), and human resource outcomes (Festing and Schäfer, 2014), validating it as an instrument for reaching economic outcomes (Cubas et al., 2016). However, in recent years the global economic spectrum has experienced a major transition from a predominantly industrial economy to a service economy (Mulder et al., 2014). In this context, the irruption of knowledge-based services and products, and the growing economic importance of services across industries have driven the need for talent with new competencies and skills to embrace service orientation in once purely manufacturing firms (McDonnell et al., 2010).

It is expected that the demand for service-qualified talent will intensify as firms integrate services into their operations, a tendency that will be particularly accentuated in manufacturing environments. Recent studies have suggested that over a third of large, global, manufacturing firms offer services, a proportion that exceeds 60% in Western economies (Crozet and Milet, 2017). This growing tendency towards services has become one of the most important drivers of industrial competition. New challenges concerning talent have resulted from it, most of which derive from the adoption of a new strategic logic for goal achievement (Krikken, 2016) that emphasises relational over transactional concerns (Vargo and Lusch, 2008).

The increasing trend of adopting services in manufacturing settings is known as 'servitisation' (Vandermerwe and Rada, 1988). According to these authors, companies have traditionally offered combinations of goods, services, support, and knowledge. But services are currently taking the lead in competitiveness. Likewise, they herald servitisation as a phenomenon that is occurring in almost all industries on a global scale, characterised by manufacturers moving into services in order to create greater value through the services they offer (Vendrell-Herrero et al., 2017). Michael E. Porter¹ has announced that the implementation of services in product firms is re-shaping

¹ Michael E. Porter, Bishop William Lawrence University Professor at Harvard Business School, is an economist, researcher, author, advisor, speaker and teacher. More info at www.hbs.edu/faculty/Pages/profile.aspx?facId=6532

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A clear example to illustrate the importance of servitisation for industrial success in the twenty-first century is probably the most iconic representative of servitisation in manufacturing settings, Rolls-Royce, the world's leading manufacturer of engines for military, civil, and corporate aircraft. In recent years the company has changed from being a 'manufacturer of aerospace engines' to being a product-service provider through its 'power by the hour' programme.³

The maintenance cost of an aircraft engine is very high; if for any reason the engine suffers a breakdown at a geographically distant airport without qualified assistance (both facilities and technical staff) the engine has to be removed from the aircraft and transported long distances to be overhauled and finally repaired. This process is extremely costly, and requires another aircraft to be sent by the airline company to cover the planned route, considerably increasing operational costs.

Rolls-Royce's 'power by the hour' programme focuses on overcoming the traditional aerospace sector contingencies, while better serving its customer base. The programme is framed under the concept of TotalCare®,⁴ a servitisation approach in which value is no longer created by selling an engine at a fixed price, but through selling engine-as-a-service; a pay-per-use system in which customers pay a fixed rate per engine flight hour. In this way, customers purchase the capability that Rolls-Royce engines deliver whilst Rolls-Royce assures product reliability, retains responsibility for maintenance, and assumes all the underlying risks associated with keeping ownership of the asset (Bigdeli et al., 2018; Visnjic et al., 2018).

But this is not all; TotalCare® also provides a set of base and add-on technical support services that complement its value proposition. The base services offering includes: remote engine health monitoring, comprehensive engine overhaul, plus engine reliability improvements and Rolls-Royce-initiated specialist maintenance. Likewise,

² For an extensive reading of Porter's five competitive forces model, please visit https://link.springer.com/chapter/10.1007/978-1-349-20317-8_10

³ Rolls-Royce - Power by the hour programme, available at <https://www.rolls-royce.com/media/our-stories/discover/2017/totalcare.aspx>

⁴ An example of TotalCare® servitisation at Rolls-Royce is provided by Christopher and Ryals (2014). In the Singapore-New York route, an aircraft engine was struck by lightning. Rolls-Royce's service team remotely examined the condition of the plane's engines in flight, and once they had evaluated key indicators, they suggested that the pilot should continue the route in a normal manner, saving the airline company more than 1 million dollars in disruption costs.

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the add-on services offering contains: technical records management, engine transport, spare engine support, additional overhaul coverage, and the option for the customer to initiate specialist line maintenance.

The benefits of this service-based business model for both parties are considerable: for Rolls-Royce, data gathered from in-flight monitoring of engines provide valuable insights into optimisation patterns, crucial in future product (re)design, and essential for ensuring an effective and sustainable value creation process. Meanwhile, airline operators enhance their fleet management and reduce operational and maintenance cost through constant monitoring and proactive maintenance (prognosis) of the aircraft engines. Hence, Rolls-Royce has used servitisation to transform its entire business model from a purely engine manufacturer into a leading service provider, offering a source of value beyond traditional business patterns.

Recent decades have seen an ongoing shift from a manufacturing economy to more of a service economy, thus increasing the implementation of servitisation in the manufacturing sector (Hypko et al., 2010). This has happened to such an extent that small, medium, and large manufacturing multinational enterprises (MMNEs) of the calibre of General Motors, General Electric, Apple, Volkswagen, Caterpillar, IBM, and Xerox are no longer competing on 'product advantage' based on cost-benefit ratio and functionality, but on 'service advantage', which is built on service capabilities (Gebauer et al., 2012; Martin et al., 2018).

Servitisation demands the consolidation of service capabilities, which differ radically from the traditional manufacturing, goods-oriented, set of capabilities (Kowalkowski et al., 2012). According to Vargo and Lush (2008), manufacturing capabilities and services capabilities emerge from two opposite standpoints or dominant logics of understanding value; whereas the goods-dominant logic (based on manufacturing capabilities) emphasises value-in-exchange, the service-dominant logic emphasises value-in-use. Hence, whereas traditional manufacturing capabilities rely on tangible economies of scale, trade-offs among costs and quality and product functions, service capabilities focus on intangible, customised, flexible, customer-centred innovation (Pistoni and Songini, 2017).

This change in a firm's strategic logic entails moving from transactional interactions, towards highly relational ones (Sjödin et al., 2016). This means that firms have to be flexible enough to cater for fast-changing customer needs (Kastalli and Van

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Looy, 2013). However, in-depth consideration needs to be given to new organisational principles and structures (i.e. new departmental structures) in order to support the provision of servitised offerings (Oliva et al., 2012). It also demands skills and competencies, human capital, and the introduction of service-oriented professional knowledge (Baines et al. 2009; Gebauer et al., 2017). Therefore, meeting servitisation challenges requires an effective talent management that ensures appropriate access to *qualified talent*. That is to say, to a human resource base capable of supporting and promoting firms service-centric capabilities (Brach et al., 2015), with skills and attributes to provide higher level of customer centricity, a more complex supply of product-service packages, and a more relationship-oriented cooperation with customers and suppliers (Raja et al., 2010; Bastl et al., 2012).

Previous studies have highlighted the importance of human capital in service contexts (Santamaría et al., 2012; Gotsch et al., 2014), and their significance in accomplishing servitisation challenges (Baines et al., 2013). However, few studies have assessed the effect of accessing qualified talent in servitised firms, even though lack of talent has been highly regarded as a major issue for companies attempting to provide services (Gebauer, 2007). Taking as a basis that companies' value finally resides in the unique configuration of competencies and abilities possessed by its talent (Wang and Liu, 2016), we deem that talent management, particularly in terms of accessing talent from external sources, represents a key element to overcome the servitisation's challenges. Consequently, this chapter empirically analyses the relationship between accessing qualified talent and servitisation, in an attempt to answer the following question:

Do companies with greater access to qualified talent servitise better?

In addition to the introduction, this chapter consists of four main sections. Section two provides a literature review of servitisation's benefits, service approaches, and challenges. It also describes the servitisation paradox, i.e. the tension between service-oriented strategic intention and product-oriented organisational culture. The third section details the characteristics of qualified talent needed for servitisation and identifies the existence of an educational mismatch. The fourth section introduces data from 285 MMNEs to illustrate the effect that accessing talent has on servitised firms.

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Finally, the fifth section offers conclusions, managerial implications, limitations, and suggests possible lines for future research.

2. Servitisation

The term 'servitisation' was coined by Vandermerwe and Rada in 1988, as the incorporation of services into a company's manufactured product assortment on the premise of 'adding value by adding services'. Under this new arrangement, instead of concentrating their efforts on selling products outright, manufacturing firms saliently focused on including services to accompany their products, and increased the value of their offerings (Baines and Lightfoot, 2013). From a strategic perspective, servitisation involves shifting the organisation's capabilities and processes from selling products to selling bundles of products and services (Raddats et al., 2016). This may be conceived as a process of change whereby a former manufacturing company (either deliberately or emergently) introduces service elements into its business model to cope with stagnating product markets and intensifying global competition (Bastl et al., 2012; Brax and Visintin, 2017). Most scholars agree that servitisation represents a transition embraced by product-centric firms in order to transform them into more service-like entities, in which the firm's value gradually moves towards services, to the extent that services become their major source of profits (Bustinza et al., 2015).

The literature has commonly identified three sets of benefits that drive manufacturers to pursue a servitisation strategy, namely (i) financial benefits, (ii) strategic benefits, and (iii) marketing benefits (Gebauer et al., 2008; Mathieu, 2001). Among the main drivers supporting financial benefits, services have been shown to generate higher profit margins and more income stability than physical goods (Crozet and Milet, 2017). In this regard, the literature emphasises that product-service combinations tend to be less sensitive to price-based competition (Malleret, 2006). Likewise, it has also been reported that services create opportunities for growth in mature and saturated markets (Pistoni and Songini, 2017), principally due to the resilience of services to economic cycles (Oliva and Kallenberg, 2003).

Scholars have also frequently indicated that strategic drivers are widely concerned with gaining competitive advantage. One of the main arguments is that services differentiate products from the competitors' offerings, thus creating important competitive opportunities (Gebauer et al., 2009). It has also been suggested that services

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enable reaching economies of scope, creating industry barriers to competitors (Sánchez-Montesinos et al., 2018). Other studies have noted that services can give a sustainable competitive advantage through cooperative actions such as co-creation, co-production, and co-innovation with customers (Rabetino et al., 2017). But above all, most researchers have highlighted that the strategic importance of servitisation lies in the fact that services are less visible and more labour-intensive than pure products, and they are therefore harder to imitate (Szász and Seer, 2018).

Finally, marketing benefits related to servitisation are mainly founded on the shift from discrete transactions to relational exchanges (Raddats et al., 2016). Services tend to be tied to long-term contracts, thereby providing manufacturers with opportunities to strengthen customer relationships, build customer loyalty, gather customer knowledge, and gain deeper insight into customer needs (Kinnunen and Turunen, 2012). Services can also affect customers' purchasing decisions (Salonen et al., 2017). As suppliers are able to offer products and services as a bundled solution (e.g. Rolls Royce), services relieve customers from the risk of owning hard-to-maintain or expensive products. Customers are therefore able to acquire product functionality as a service proposition without dealing with product-related setbacks (Meier et al., 2010).

The benefits associated to servitisation have led to a growing interest in service-led competitive strategies in multiple sectors (Baines et al., 2009). As there is a broad range of service approaches with differing features, when firms undertake servitisation, they must pay special attention to the service approach they wish to adopt. To a large extent, the approach they select will determine the degree of involvement between the firm and the customer, and the characteristics of the service offerings. Tukker (2004) proposed distinguishing between three services approaches on which firms should target their efforts, namely (i) product-oriented, (ii) service-oriented, and (iii) result-oriented. Product-oriented services are characterised by the inclusion of an additional service to a product sell in order to improve its lifetime or utility, such as supply of consumables, maintenance, financing, take-back, and advice on product usage (Sakao et al., 2009). Use-oriented services are founded on keeping the service provider as the owner of the product; it is the provider that then sells the function of the product (leasing, renting, contracting the use of a copier/car/machinery, etc.) to users. Result-oriented services are based on agreements by which the service provider undertakes to deliver a pre-

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determined functional result to customers without involving any products, such as performance contracts and pay-per-use.

Servitisation, however, is more than merely adding services to existing products. It brings with it profound challenges that might disrupt internal organisational arrangements such as corporate strategy, organisational culture, organisational structure, and customer relationships (Kinnunen and Turunen, 2012; Raja et al., 2018). This may be due to the fact that servitisation demands a new corporate rationale, detached from the traditional manufacturing archetype, strongly focused on prioritising a highly service-oriented, customer-centred culture (Kowalkowski et al., 2012). Nevertheless, this new orientation may generate inter-departmental friction among the organisational actors (i.e. personnel) if they have differing views on value creation. It may also encounter resistance from specific areas where the service logic may not be properly understood (e.g. the product department), or caused by their fear of potential infrastructural changes that the service focus might cause (Baines et al., 2009). Therefore, embarking on a servitisation strategy requires a thorough and comprehensive organisational alignment among areas, departments, sections, etc. (organisational structures) and personnel (organisational actors) to transcend internal mismatches and deliver the expected service outcomes (Sabaei et al., 2015). Organisations must conceive talent management as a crucial piece in the servitisation puzzle, and a major agent in moving from a manufacturing to a service culture. Obtaining qualified talent with the required set of skills for service provision, then, becomes one of the essential challenges to be faced for the successful accomplishment of servitisation (Zhang and Banerji, 2017).

2.1 The service paradox

The literature suggests that the transition towards services provide manufacturers with a set of potential financial, strategic, and marketing benefits (Gebauer et al., 2009; Raddats et al., 2016; Pistoni and Songini, 2017). However, despite some successful cases in which firms succeed in transitioning from being purely a manufacturer to a service provider, such as the transformation of Rolls-Royce (Christopher and Ryals 2014), for many organisations the high investment involved in servitising does not translate into higher returns (Neely, 2008). This financial challenge has been called 'the service paradox' (Gebauer et al., 2005). In essence, the service paradox refers to a

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phenomenon in which an organisation embracing servitisation invests in increasing its service offerings, but experiences tensions between manufacturing efficiency and service solutions delivery. Fundamentally, these tensions arise from the inability of the organisation to adopt a culture that promotes a change towards services, causing them to fail in obtaining increased profitability (Kohtamäki et al., 2018). Valtakoski (2017) claimed that 'servitisation failure' is not only possible, but also likely in many cases. Furthermore, the author postulates that de-servitisation takes place when firms are unable to obtain the expected benefits from the transition to services and they either reduce the role of services, or completely abandon the service business.

According to Gebauer et al. (2012), the road to successful servitisation is still poorly understood, and existing evidence still vague and controversial (Eggert et al., 2014). Some studies indicate that, many firms face an uphill struggle and eventually fail to implement servitisation (Benedettini et al., 2015), whereas others have revealed that a number of firms manage to ensure a successful transition path (Kowalkowski et al., 2017). From the results found in the literature it is apparent that servitisation trajectories must be taken on a case-by-case basis (Valtakoski, 2017), and that failure in the transition from products to services may depend upon various contextual factors (Jovanovic et al., 2016).

A number of researchers have made suggestions to overcome the service paradox. Most scholars have identified the importance of building the right organisational capabilities and culture. According to Neely et al. (2011), servitisation requires more than simply developing a service offering; it demands profound organisational changes. Such changes should initially consolidate service awareness and a strong commitment to the economic potential of service offerings (Gebauer et al., 2005). Additionally, firms must notably possess/access customer-centric competences to compete through services (Baines et al., 2013b; Martinez et al., 2010). To do so successfully, it is essential to optimise human resource structures and introduce new professional knowledge aligned with new cultural orientation (Cook et al., 2006; Xing and Liu, 2016). The literature on this matter deems that it is necessary to develop new capabilities, metrics and incentives, as well as a relationship-based business model (Oliva and Kallenberg, 2003). It is particularly important for firms to implement a formal information system that integrates the new service-oriented structure, in order to achieve the expected goals and guarantee continuous customer-oriented services (Matsuda and Kosaka, 2016).

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Although there is no one-size-fits-all approach for avoiding the service paradox, it seems crucial to have the organisational capacities within the company (employee skills, capabilities and technologies, etc.) (Reinartz and Ulaga, 2008; Basaez et al., 2014). In this way, the firm is more likely to successfully face the structural changes in terms of strategy, operations, and value chain that accompany the transition to servitisation (Vendrell-Herrero et al., 2017).

3. Accessing service qualified talent

The transition to servitisation requires organisational principles, structures, competencies and human capital that are new to manufacturers if they are to effectively compete through services and avoid the service paradox (Oliva and Kallenberg, 2003). Companies must engage with their customers and create appropriate collaborative relationships to benefit from service offerings (Kohtamäki and Partanen, 2016). This has encouraged firms to decouple their front- and back-end activities (Oliva et al., 2012), resulting in front-end activities that focus on customers, segments or markets, and back-end activities that concentrate on products, capabilities and technologies (Sawhney, 2006).

As the CEO of IBM claimed, if three-fifths of business is manufacturing, management is basically supervisory, but this is no longer the case when business is primarily based on services (Palmisano, 2004). This is mainly due to the fact that work is divided into smaller divisions and different people are assigned to execute each procedure in purely manufacturing organisations, with value being produced within the company. Within this framework, customers have little or no role in value creation. However, in servitised firms, customers become co-creators of value, so employees are encouraged to actively engage in dialogue with them, effectively managing customer diversity, and co-creating personalised experiences (Prahalad and Ramaswamy, 2004).

Servitisation requires highly qualified and flexible human talent, capable of being strongly customer-focused, and of developing a more relationship-oriented communication with customers and suppliers than is typically found in traditional manufacturing firms (Bastl et al., 2012). As such, servitisation emphasises the consolidation of 'front-end' service organisations (Johnstone et al., 2014), integrating customers into the production process and co-creating with them.

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This requires talent that possesses product-specific knowledge and an understanding of the individual customer's needs (Vomberg et al., 2015). Therefore, it is essential to rely on talent with relationship-oriented skills that is capable of facilitating close interactions and information sharing across the organisation (Ahammad et al., 2016; Durst and Zieba, 2017), but especially in the service sales and delivery units (Kindström, 2010). Information-sharing not only fosters high-trust relationships, but also requires frontline interactors to acquire insights necessary to customise the service offering (if required) according to customer specifications (Bettencourt and Gwinner, 1996). In this regard, Skaggs and Youndt (2003) stated that firms employing service adaptation or customisation require talent with a high level of training, experience, and education, mainly because the lack of service-related experience and mutual trust between a manufacturer and its customers may lead to lower service-related financial returns.

Furthermore, front-line talent also needs to be proficient at diagnosing problems, thinking creatively, and developing novel solutions in order to deal with customer variability (Lusch et al., 2007). Another crucial element is that service-oriented talent must demonstrate higher levels of soft skills, such as teamwork and mutual empowerment (Ng and Nudurupati, 2010). This is particularly important for encouraging collaboration and cooperation between employees and customers, not only in the service offering (Salonen, 2011), but also in the new service development process (Kindström and Kowalkowski, 2009). For this reason, service qualified talent must be able to perform across boundaries rather than in hierarchical lines of command (Johnstone et al., 2014).

Talent management, in terms of acquiring the necessary skillset and abilities, demands a considerable effort on the part of manufacturers; however, it is claimed to be a key determinant for servitisation (Davies et al., 2007). Gaining access to service-qualified talent is increasingly seen as being of crucial importance to successfully deal with servitisation challenges (Gotsch et al., 2014). However, due to the need for a mixture between product-specific knowledge and customer-related skills, it is difficult for firms to acquire suitable talent directly in the market (Ulaga and Reinartz, 2011).

This emphasises that there is a need for gathering further evidence into many aspects of education and qualifications, and their significant connection with successful servitisation, an area that, to our knowledge, has only been partially explored in the

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literature by Szász et al. (2017) and Peillon et al. (2016). In view of this, it is argued here that accessing qualified talent for servitisation might be also influenced by the existence of an educational mismatch between the key skills supplied by academic institutions and those demanded by servitised work environments (Süße and Wilkens, 2014).

A recent analysis of demand for technical and soft skills among graduates in the UK carried out by Cacciolatti et al. (2017) agrees with this view and goes even further, as it claims that the shift from manufacturing towards a service economy has generated increasing demand for a soft-skilled workforce in the UK. Soft skills are critical for successful service interactions (Ng and Nudurupati, 2010), but it has been suggested that a wide range of UK universities have failed to provide the right skills to the prospective workforce, due to a lack of understanding of what skills are really needed in the services realm. Overall, this assertion discloses the need for systemic collaboration between universities and the industry to realign educational aims with the skills required by the service economy. But also, and equally as important, it suggests that the shortage of an academic offering in terms of curriculum and skills supply may be one of the determinants of servitisation failure. This has only been superficially addressed to date, and is likely to be a crucial obstacle for accessing service-qualified talent in the market.

However, at European level it can be observed that many universities have included programmes focused on service management in their postgraduate academic curricula. This might be interpreted as a response to the growing demand for professionals with specialist training in the services field. The list presented in Table 1 illustrates the extant supply by academic institutions aimed at diminishing the academic shortage and meeting market needs within the growing service economy.

Table 1. Newly created postgraduate programmes in European universities to overcome the skills mismatch in services⁵

Programme	University	Country	Target
MSc Management in a Service Economy	University of Buckingham	United Kingdom	All academic backgrounds
MSc Service Management and Design (SMD)	University of Warwick	United Kingdom	All academic backgrounds
Master in Management and Services Management	King Juan Carlos	Spain	Business Administration

⁵ Accessed on 9 July 2018. The list may be subject to changes. The respective academic institutions are responsible for any changes that may be made to these postgraduate programmes in the future.

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Master's Degree in Business, Product and Service Management	University of Valencia Polytechnic	Spain	and Engineering Business Administration and Engineering
Master in IT Project & Service Management	University of Catalonia Polytechnic	Spain	IT engineering and Service Management
MSc in Social Science in Service Management	Copenhagen Business School	Denmark	Business Administration
Master's Programme in Service Management	Karlstad University	Sweden	Business Administration
Master's Programme in Service Management	Lund University	Sweden	Social Sciences, Service Management, and Business Administration
MSc in Management of Services and Technology	University Institute of Lisbon	Portugal	All academic backgrounds
Master in Service Management & Engineering	Karlsruhe Institute of Technology	Germany	Service Management, Information Technologies, Software Engineering, and IT Management
Master's Programme in Service Management	University of Eastern Finland	Finland	All academic backgrounds

4. Empirical evidence on servitised firms

4.1. The sample

The aim of this section is to provide an empirical illustration of how manufacturing multinational enterprises (MMNEs) struggle to access the qualified talent needed to embark on the move to servitisation. The dataset is a cross-sectional survey conducted on a representative sample of MMNEs in 2013. This unique dataset has been used to understand the nature of servitisation, its outsourcing to knowledge intensive business services (KIBS) and their joint effect on company performance (Bustinza et al., 2017; Vendrell-Herrero et al., 2018). To date, this database has not been used to study any nuances specific to talent management.

The survey was conducted by an industry partner jointly with a global advisory firm. The industry partner was an industrial consultancy firm supporting MMNEs in

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their servitisation journey. The partner has a portfolio of approximately 7,000 servitised MMNEs. These firms operate worldwide, have their headquarters in various countries, and have annual revenues equal to or in excess of \$1 billion. Considering the nature of the population, the objective was to produce a representative sample with even sectoral distribution. Assuming a Gaussian distribution and using a confidence level of 95%, the target sample size was 365 MMNEs.

All firms in the population were contacted by e-mail by the industry partner and received a password to participate in the survey. Organisations were contacted periodically until 370 MMNEs had completed the online survey. All respondents had an executive position in the company, and a wide understanding of the firm's service strategy and the underlying difficulties in implementing servitisation. In order to understand country-specific nuances, the study focused only on the countries with at least 30 observations. This included 285 MMNEs with headquarters in the US, the UK, Germany, China and Japan.

4.2. The variables

This study used two variables. The first detailed the level of **servitisation** implemented by the firm. This latent variable was operationalised using product-service development and customer engagement dimensions. Following Bustinza et al. (2017), the variable contained four 5-point Likert scale items: New product innovation, Updated product lifecycle, Service feedback and analytics, and Product-service alignment. A factor analysis (KMO = 0.603 and Bartlett's test $\chi^2 = 86,785.233$ ($p=0.000$)) of the four items generated a representative construct, and the total explanatory variance of the items was approximately 60%. All items were statistically significant at 5%, and factor loadings were above 0.4 (minimum threshold). Importantly, all four items were positively correlated with a Cronbach's alpha of 0.893, indicating good internal consistency. The value of servitisation was operationalised, taking its linear predicted value. When the value of servitisation attributed to a given firm was positive, the company could reach a higher level of servitisation, as compared to the average company in the sample.

The second variable measured the capacity of the firm to *Access qualified talent* for servitisation. For the purposes of the study, *qualified talent* was taken to be a human resource base capable of supporting and promoting firm's service-centric capabilities (Brach et al., 2015). The survey asked whether access to qualified talent was a barrier to

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servitisation. A dummy variable was created which took on a value of 1 if the firm could access qualified talent for servitisation, and 0 if access to qualified talent was seen as a barrier to servitisation. A total of 70.9% of the firms in the sample could access qualified talent, whereas the rest (29.1%) considered that the lack of qualified talent in the job market was a major barrier.

This study also considered a company's heterogeneity by analysing various fixed-effects characteristics. For that purpose, other variables reflecting country, sector, size and strategy heterogeneities were considered. The sample contains companies with headquarters in five different countries –China (45), Japan (46), Germany (52), UK (68) and US (74)– and seven different manufacturing industries –White Goods Manufacturing (39), Aerospace and Defence (41), Commercial or Cargo Airlines (45), Automotive and Transportation (42), Electronics and High Tech Equipment (42), Heavy and Industrial Equipment (40), and Medical Devices and Equipment (36). Company size was divided into 5 categories depending on their annual revenues, small being \$1 billion - \$4.9 billion (83); low-medium being \$5 billion - \$9.9 billion (68); upper-medium being \$10 billion - \$14.9 billion (59); large being \$15 billion - \$19.9 billion (41); and very large being \$20 billion or more (34). The four strategic choices presented in Vendrell-Herrero et al. (2018) that determine how the service function was implemented were considered. This was based on two strategic decisions. The first strategic choice was to whether the service function was carried out in-house or outsourced to a KIBS. The second was whether the service function was carried out in the same country where the company was headquartered, or whether it took place in a different country. These two dichotomies generated four groups, namely Internal domestic (81), Domestic partnership (10), Greenfield Foreign Direct Investment –*FDI* (160) and International partnership (or service offshoring, 34).

4.3. The analysis

The analysis was structured into three phases. The first phase looked at the level of heterogeneity within the company and compared the study's two key variables, access to qualified talent, and servitisation. The second phase described the firm's heterogeneities in accessing qualified talent by the various fixed effects considered (industry, country, size and strategic choices). The third and last phase involved aggregating the analysis to understand the relationship between the access to qualified

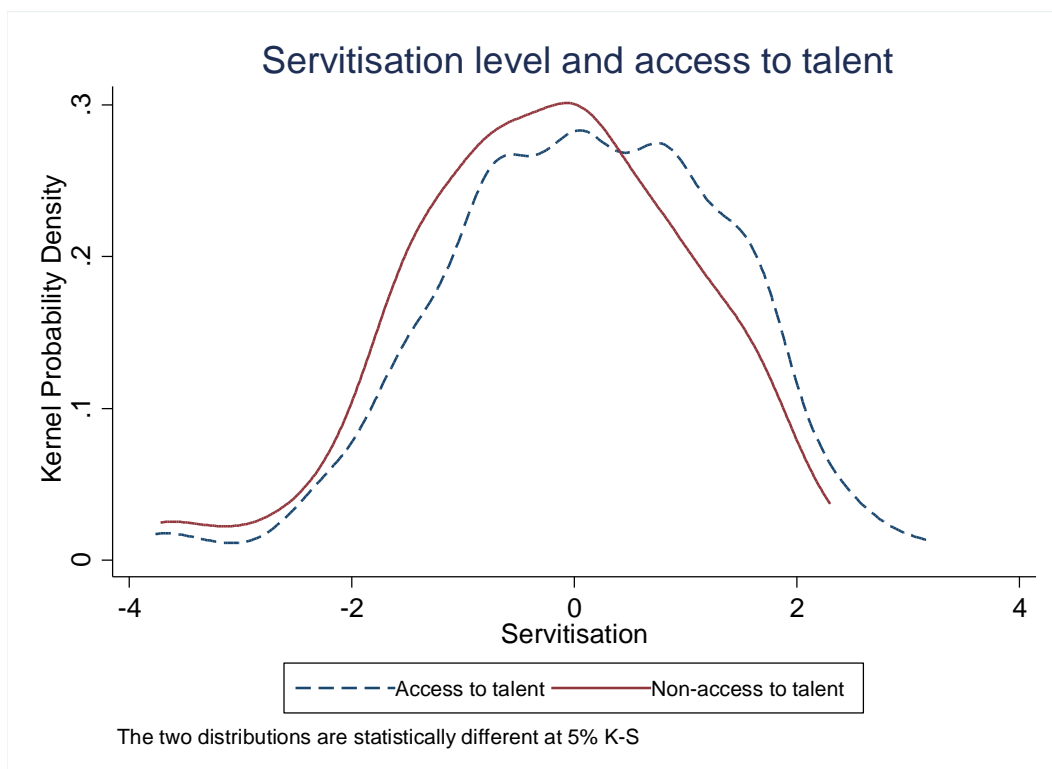
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talent and servitisation at different levels of analysis (e.g. country, size, industry and strategic option).

Figure 1 shows kernel density distributions which compare access to qualified talent and servitisation outcomes. This visual tool goes beyond regression analysis, as it tests differences to the distribution of a continuous variable (servitisation), rather than comparing mean differences (Opazo et al., 2018), depending on a binary variable (i.e. access qualified talent). The figure shows that firms accessing qualified talent are able implement greater levels of servitisation. The servitisation distribution for firms accessing qualified talent (in blue dashes) is to the right of the servitisation distribution for firms not accessing qualified talent (in red). According to the Kolmogorov-Smirnov test, this difference was significant at the level of 5%, which shows stochastic dominance for firms accessing qualified talent. This was the first stylised fact identified in this study.

Stylised fact 1: Firms not accessing qualified talent reach lower levels of servitisation

Figure 1. Product service-innovation (servitisation) Kernel distribution by access to talent group



In order to gain a better understanding of which of the specific conditions concerning access to qualified talent was a barrier to servitisation, Table 2 shows the probability of perceiving qualified talent as a barrier to servitisation [Pr(no access

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talent], conditional on the category of the firm being considered. The first category considered was industry. The sector most lacking in qualified service talent was white products, as 43.6% of firms in this industry highlighted that access to qualified talent was a major barrier to implementing servitisation. Other sectors with a higher technological component were able to have better access to qualified talent; these included the automotive and medical equipment sectors, with 83.3% and 80.6% of firms successfully accessing qualified talent, respectively.

The specifics of individual countries were also analysed. In relative terms, MMNEs with headquarters in China, UK, and Germany had more difficulties in accessing qualified talent. In these three countries access to qualified talent seemed to be a problem for more than one third of firms. No information was available to test why this happened, but this might be related to job market conditions and average pay in those countries. Japan and US were the countries where qualified talent was accessed most successfully, as less than 20% of firms found that accessing qualified talent was a barrier for them to servitise.

There seemed to be a clear correlation between accessing qualified talent and firm size. Larger firms seemed to attract more qualified talent. For example, less than 10% of firms with annual revenue above \$15 billion reported problems in accessing qualified talent. Interestingly, more than 50% of the smallest firms in the sample lacked the capacity to access qualified talent. For mid-range firms (\$5 billion to \$15 billion) the lack of qualified talent oscillated between 20 and 25%. The evidence seems to suggest that larger firms can offer better conditions to newly recruited employees, or are more flexible in training existing employees and relocating them to the service department.

A correlation was also detected between strategic option and access to qualified talent. Those firms outsourcing the service role would need to recruit less qualified talent (if any). For instance, none of the firms resorting to domestic partners lacked qualified talent and only 15% of the firms seeking international partnerships declared that accessing qualified talent was a barrier to servitisation. The group of firms implementing servitisation through Greenfield FDI reported that access to qualified talent was a barrier to servitisation. This result might be explained by the fact that they had less knowledge of the foreign market, especially in terms of the job market. Overall, a second finding of the empirical analysis was as follows:

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Stylised fact 2: *there are important heterogeneities that explain access (or lack of access) to qualified talent, classified by size, sector, country and strategic choice*

Table 2. Probability of perceiving access to qualified talent as a barrier by category (fixed effect)

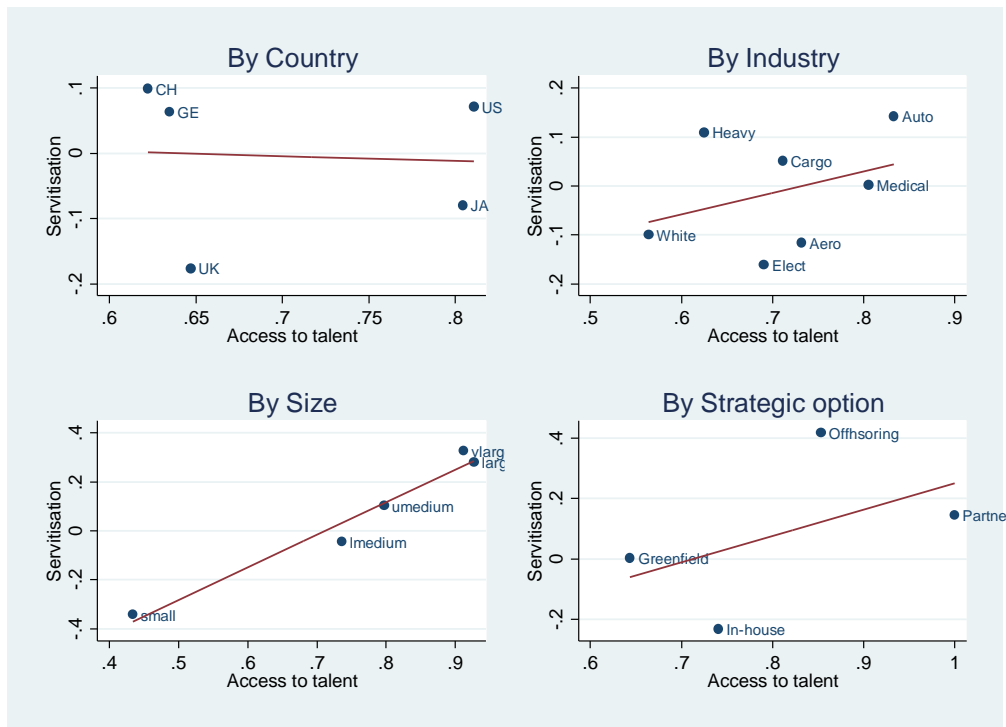
	Category	Number of observations	Pr (no access talent)
	Full sample	285	29.1%
<i>Industry</i>	Aerospace	41	26.8%
	Automotive	42	16.7%
	Cargo	45	28.9%
	Electronics	42	30.9%
	Heavy manufacturing	40	37.5%
	White products	39	43.6%
	Medical equipment	36	19.4%
<i>Country</i>	UK	68	35.3%
	US	74	18.9%
	Japan	46	19.5%
	China	45	37.8%
	Germany	52	36.5%
<i>Size</i>	\$1 billion - \$4.9 billion	83	56.6%
	\$5 billion - \$9.9 billion	68	26.4%
	\$10 billion - \$14.9 billion	59	20.3%
	\$15 billion - \$19.9 billion	41	7.3%
	\$20 billion or more	34	8.8%
<i>Strategy</i>	Internal domestic	81	25.9%
	Domestic partnership	10	0.0%
	Greenfield FDI	160	35.6%
	International partnership	34	14.7%

The results provided in Table 2 provide an insight into the relationship between access to qualified talent and servitisation at different levels of analysis. In Figure 2 access to qualified talent (horizontal axis) was inversely correlated with the values in Table 2, and Pr (access to talent) with servitisation (vertical axis) by country, industry size and strategic option. The results showed that whilst the relationship between access to qualified talent and degree of servitisation was not relevant at country level, it was an important factor when analysing the issue at industry, size and strategic level. The relationship was especially important regarding firm size. Larger firms tended to access qualified talent more easily and implement more developed service business models.

Stylised fact 3: *The link between accessing qualified talent and servitisation is contextual. It depends on the industry (the more technology, the stronger the relationship), size (the larger the firm, the stronger the relationship) and strategic option selected (if outsourced, the relationship is stronger).*

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Figure 2. Relationship between access to talent and servitisation aggregated by firm categories



*Sample of servitised firms matched by country, industry, size, and strategic option. The horizontal axis refers to the level of access to talent and the vertical axis to the mean of the variable of interest (servitisation).

5. Conclusions and Implications

This chapter has empirically analysed the relationship between access to qualified talent and servitisation. To a large extent, talent management literature has traditionally focused on strategies for attracting, motivating and retaining talent (Collings and Mellahi, 2009). However, little evidence seems to have been provided to date as to how talent management, in terms of accessing to talent, can be a barrier capable of influencing a firm’s innovation performance. Therefore, the aim was to explore a new perspective for understanding talent management, in connection with access to pivotal and flexible talent being considered as a barrier for servitisation in product firms.

The convergence between talent management and servitisation has received little attention so far. As this is the first study to note the convergence, the intention here has been to merge seemingly hitherto unconnected theoretical frameworks in order to expand the knowledge base about both of these research areas by studying how accessing talent may influence servitisation. This can be seen as a useful illustration for

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postgraduate students and early-career researchers on how to contribute to existing bodies of knowledge by merging literature streams.

One important contribution of this study is that it explores servitisation failure (Gebauer et al., 2005; Valtakoski, 2017); this is a paradox, as theoretically servitisation is extensively referred to in literature as a winning strategy. It has been argued here that such failure may be attributed, among other reasons, to firms' inability to access talent. This issue has been addressed throughout the chapter, with emphasis on the organisational tensions between service and product departments, and the strategic intent and the organisational culture (Cook et al., 2006; Baines et al., 2009). This has been explored further by reporting the existence of an educational mismatch, and identifying that some academic institutions have increased their supply of postgraduate programmes. This has been signalled as a measure to address the shortcomings shown by university courses to provide specialist skills to the growing service economy. In this vein, the chapter stresses the need for systemic collaboration between universities and the industry to realign the skillset in education with service economy needs.

The study includes an empirical section with a description of the data and the interesting findings obtained. Despite its descriptive nature, this exercise has clarified various aspects. Firstly, it has confirmed that not being able to access talent is a barrier to servitisation. Secondly, it shows that there are specificities related to country, size, strategy and industry. This encourages further contextual research on servitisation and talent management. Finally, it provides evidence that the relationship between accessing talent and servitisation in product firms is importantly moderated by size and industry effects.

Regarding country specifics, the study is to some extent consistent with research examining servitisation in emerging markets. The research conducted by Xing et al. (2017) showed that Chinese MMNEs acquire European firms in order to learn how to servitise. However, this issue needs further exploration, as the data used here also identified a skill mismatch in Europe, since the UK and Germany were found to have a relatively important talent shortage that is not different from the situation faced by Chinese firms.

Managerial implications arising from this study are focused on expanding the traditional notion and scope of talent management within organisations, contemplating access to talent in itself as a fundamental link for the accomplishment of strategic

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business objectives. Furthermore, results call for the development of strategic partnerships with academic institutions, thus boosting training and education for servitised contexts. In this regard, organisations must conceive education as a strategic mechanism for addressing pivotal talent shortage.

The main limitations are linked to the nature of the study. Since the study is cross-sectional, longitudinal studies are needed to corroborate the influence of access to qualified talent on servitisation success. However, the study opens new avenues for further research on the potential problems posed by talent management in servitised companies. Future studies should consider addressing the human aspect of servitisation, by analysing employees' implication in the management of knowledge and in collaborative activities between 'front and back-ended' operations. In the same vein, future studies should attempt to clarify the distinguishing skills and the different ways of leadership required for servitisation success. Finally, it would be relevant to analyze talent management, depending on the strategic option selected by the company and the country where it operates, in order to disclose differences given by strategy and geographical contexts.

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