

# 5th International Conference on Business Servitization

November 23-25 2016

University of Granada

## Book of Abstracts

 OmniaScience

# Book of Abstracts

5th International Conference on  
Business Servitization

University of Granada

Granada, November 23-25, 2016

1st edition © 2016 OmniaScience (Omnia Publisher SL)

[www.omniascience.com](http://www.omniascience.com)

DOI: <http://dx.doi.org/10.3926/serv2016>

ISBN: 978-84-945603-8-5

Cover design: OmniaScience

Cover photo: © DouDou - Fotolia.com

## **Foreword**

### **Welcome to 5<sup>th</sup> International Conference on Business Servitization**

I would like to welcome you to the book of abstracts of the fifth International Conference on Business Servitization (ICBS16). On this edition, the conference aimed at studying what processes and actors support the *renaissance* of manufacturing while upgrading existing manufacturing competences and capabilities. Recent trends about a new manufacturing model, *Industry 4.0*, are emerging in the wake of the latest technological advancements. As such, the research collection in the pages below provide a better understanding of the factors that enable manufacturing sectors to transit to more innovation-intensive and difficult-to-imitate business models based on services.

Servitization has affected a wide range of firms, which are consciously transforming their businesses models through adding services to generate competitive advantage. Manufacturing and service industries tended in the past to be thought of two separate sectors. Recent evidence is changing this perception as manufacturers themselves had to base their competitive strategies on developing more complex products including value-added services. In the manufacturing sector, competitive strategies exclusively focused on exploiting economies of scale became unsustainable as customers are taking a critical role in value generation. Servitization is grounded on value-in-use shift paradigm and generate capabilities that are distinctive and sustainable over competitors. The servitization of manufacturing is expected to allow

Western economies to resume growth and sustain long-term competitiveness. In this regard, Knowledge-Intensive Business Services (KIBS) firms are increasingly viewed as vital in maintaining or enhancing competitiveness of industrial sectors.

This is why well-known researches from different countries had attended to the fifth International Conference on Business Servitization in Granada. This conference welcomes relevant keynote speakers as Prof. Marko Kohtamäki analysing “Practices in Servitization” and Dr. Shlomo Tarba speaking about “*Bringing strategic agility and ambidexterity concepts to servitization*”. Moreover, Prof. Lisa De Propis has analysed the topic “*Smart manufacturing and new technologies*”, providing a critical view of European manufacturing sectors. In summary, the conference has studied the process of servitization with eleven separated sessions including a roundtable of southern Spanish firms debating on servitization experiences, some of them having the highest turnover of the region.

Oscar F. Bustinza

Conference Chair of the 5<sup>th</sup> International  
Conference on Business Servitization

## **Organizing Committee**

### **Chair of the Conference:**

PhD. Oscar F. Bustinza, University of Granada.

### **Organizing Committee:**

PhD. Daniel Arias, University of Granada.

PhD. Marco Opazo Basaez, University of Granada.

PhD. Francisco J. Sanchez-Montesinos, Complutense University of Madrid

### **Scientific Committee:**

Director: PhD. Ferran Vendrell-Herrero, University of Birmingham

PhD. Lisa de Propris, University of Birmingham.

PhD. Tim Baines, University of Aston.

PhD. David Bailey, University of Aston.

PhD. Glenn Parry, University of the West of England.

PhD. Emanuel Gomes, University of Birmingham.

PhD. Ivanka Visjnic, ESADE University.

PhD. Mario Volpe, University of Venice.

PhD. Rodrigo Rabetino, University of Vaasa.

PhD. M<sup>a</sup> Luz Martín Peña, Rey Juan Carlos University.

PhD. Esteban Lafuente, Universitat Politècnica de Catalunya.

PhD. Bart Kamp, Orkestra and Deusto Business School.

PhD. Esperanza Marcos, Rey Juan Carlos University.

PhD. Tommaso Aquilante, University of Birmingham.

PhD. Jose Ruizalba Robledo, University of West London.

PhD. Eloísa Díaz, Rey Juan Carlos University.



## ABSTRACT INDEX

<b>THE ROLE OF INHERITED IDENTITY FOR A SHARED FUTURE IN THE INDUSTRY 4.0 ERA: THE CASE OF THE TEXTILE INDUSTRIAL DISTRICT OF PRATO</b>	<b>13</b>
MARCO BELLANDI, ERICA SANTINI	
<b>INTERNAL LEVERS FOR PRODUCT-SERVICE SYSTEMS: HOW PRODUCT-ORIENTED MANUFACTURERS CAN ENHANCE SERVITIZATION</b>	<b>17</b>
WIM COREYNEN, IVO DEWIT, PAUL MATTHYSSENS, ROEL DE RIJCK	
<b>DIGITALIZATION AND SERVITIZATION IN MANUFACTURE: KEYS OF COMPETITIVE ADVANTAGE FOR EUROPEAN INDUSTRY 4.0</b>	<b>23</b>
MARÍA LUZ MARTÍN PEÑA, ELOÍSA DÍAZ-GARRIDO, ESPERANZA MARCOS, VALERIA DE CASTRO, CRISTINA CACHÓN GARCÍA	
<b>WHAT IS THE MEANING OF SERVITIZATION FOR SMALL AND MEDIUM RETAILERS?</b>	<b>29</b>
LOREA NARVAIZA, DAVID RUIZ DE OLANO, TONTXU CAMPOS, IÑIGO ARRONIZ	
<b>SERVICE DOMINANT LOGIC AND MARKET ORIENTATION IN RETAILING</b>	<b>33</b>
LOREA NARVAIZA, IÑIGO ARRONIZ, TONTXU CAMPOS, DAVID RUIZ DE OLANO	
<b>DOES SERVITIZATION IMPLY DOWNSTREAM NETWORK DOMINANCE?</b>	<b>37</b>
ALI Z. BIGDELI, OSCAR F. BUSTINZA, FERRAN VENDRELL-HERRERO, TIM BAINES	
<b>ORGANIZATIONAL CHANGE IN SERVITIZATION: EVIDENCE FROM ITALIAN SMES</b>	<b>43</b>
OSCAR F. BUSTINZA, EMANUEL GOMES, FERRAN VENDRELL-HERRERO, SHLOMO Y. TARBA	
<b>SERVITIZATION: FROM A NEW PARADIGM FOR BUSINESS OPERATIONS TO A PROMISING APPROACH TO SUSTAINABILITY</b>	<b>49</b>
ÁNGELES PEREIRA, XAVIER VENCE	
<b>LEAPING FROM TRADITIONAL TO NEW BUSINESS MODELS THROUGH SERVITIZATION: AN INDUSTRIAL CASE STUDY</b>	<b>55</b>
INMACULADA FREJE OBREGÓN, ALBERTO DE LA CALLE VICENTE, MIGUEL ÁNGEL LARRINAGA OJANGUREN	
<b>RELATIONSHIP BETWEEN CUSTOMER INVOLVEMENT AND SERVICE FIRMS' INNOVATION CAPACITY: THE CASE OF SPANISH FIRMS</b>	<b>63</b>
BASSAM BOUHRIR, CARMEN HARO-DOMÍNGUEZ, TERESA ORTEGA-EGEA	



<b>INNOVATING IN REVERSE GEAR: INNOVATION PROCESS OF OUTCOME-BASED CONTRACTS</b>	<b>65</b>
MARIN JOVANOVIC, IVANKA VISNJIC, ANDY NEELY	
<b>DEVELOPING COMPUTATIONAL METHODS TO EXAMINE BUSINESS MODELS</b>	<b>71</b>
GLENN PARRY, ZENA WOOD, DAVID WALKER	
<b>A FRAMEWORK FOR UNDERSTANDING SUSTAINABLE VALUE IN SERVITIZATION</b>	<b>75</b>
CARLOS H. HURTADO JARAMILLO, XAVIER FERRÀS HERNANDEZ, NURIA ARIMANY-SERRAT, DULCINEA MEIJIDE VIDAL	
<b>(RE)ORGANIZING FOR SERVITIZATION: INSIGHTS FROM A MACHINE TOOL MANUFACTURER</b>	<b>81</b>
BART KAMP	
<b>THE IMPLEMENTATION OF SERVITIZATION STRATEGY BY SPANISH MANUFACTURERS</b>	<b>85</b>
HELEN CASTELLÓN-OROZCO, NATALIA JARÍA-CHACÓN, LAURA GUITART-TARRÉS	
<b>A TALE OF CONTEND AND CONQUEST: LEVERAGING BUSINESS MODELS TO GROW ICT ECOSYSTEMS – ENVELOPMENT LESSONS LEARNED FROM GOOGLE AND YAHOO</b>	<b>89</b>
CHRISTOPHER MÜLLER, BJÖRN KIJL, IVANKA VISNJIC	
<b>A NOVEL INTERPRETATION OF SERVICE MANAGEMENT IN THE PERSPECTIVE OF LEAN PRODUCTION</b>	<b>95</b>
STEFANO BIAZZO, ALBERTO MARIA DE CRESCENZO, MARCOS DIESTE, ROBERTO PANIZZOLO	
<b>THE SIMPLIFICATION OF ECOSYSTEMS TO SUPPORT MANAGEMENT DECISION MAKING</b>	<b>101</b>
SHAUN WEST, MICHELLE KUENZLI, DOMINIK KUJAWSKI, ZIED M. OUERTANI, CHRISTOPHER GANZ	
<b>PROVIDING SERVICES TO BOOST GOODS EXPORTS: THEORY AND EVIDENCE</b>	<b>107</b>
ANDREA ARIU, FLORIAN MAYNERIS, MATHIEU PARENTI	
<b>TECHNOLOGICAL UPGRADING AND KIBS PARTNERSHIPS: EVIDENCE FROM VENETO REGION</b>	<b>111</b>
OSCAR F. BUSTINZA, SERAFINO PITINGARO, GIOVANNA GUZZO, ARIANNA PITARELLO, FERRAN VENDRELL-HERRERO	

<b>DIGITIZATION AND SERVICITIZATION TO ATTEND DIVERSITY: THE COVIRÁN CASE</b>	<b>117</b>
FRANCISCO SÁNCHEZ-MONTESINOS, DANIEL ARANDA, OSCAR F. BUSTINZA, MARCO OPAZO-BASAEZ	
<b>THE POTENTIAL OF PUBLIC PROCUREMENT OF INNOVATION TO TRIGGER SERVICITIZATION</b>	<b>123</b>
MARÍA CONCEPCIÓN PEÑATE-VALENTÍN, ÁNGELES PEREIRA, MARÍA DEL CARMEN SÁNCHEZ-CARREIRA, XAVIER VENCE	
<b>THE POTENTIAL OF THE INTERNET OF THINGS AND DATA ANALYTICS FOR CREATING NEW SERVICITIZED BUSINESS MODELS</b>	<b>129</b>
CARLOS GALERA ZARCO, MARCO OPAZO BASÁEZ	
<b>UPGRADING OF MANUFACTURING SME TO NEW TECHNOLOGIES THROUGH SERVICE EMBEDDING</b>	<b>133</b>
MARIO VOLPE, GIANCARLO CORÒ, DEJAN PECIC	
<b>SERVICITIZATION: SYNTHESIS AND DIRECTION FORWARD</b>	<b>135</b>
WILLEM HARMSSEN, RODRIGO RABETINO, MARKO KOHTAMÄKI	
<b>THE NATURE OF EMERGING DIGITAL BUSINESS MODELS IN SUB-SAHARAN AFRICA: A STUDY OF CAMEROONIAN CASES</b>	<b>141</b>
DEV KUMAR BOOJIHAWON, MICHAEL NGOASONG	
<b>THE IMPACT OF ENABLING EMPLOYEES TO BE INCLUDED IN COMPANY PROCESSES ON THE FINANCIAL PERFORMANCE OF SERVICITIZING COMPANIES</b>	<b>147</b>
JESSICA TINA WEWER, LAMBERT J.M. NIEUWENHUIS	
<b>CAPABILITY DEVELOPMENT FOR SERVICITIZATION USING A SERVICE-DOMINANT LOGIC LENS</b>	<b>153</b>
CHRIS RADDATS	
<b>AUTHOR INDEX</b>	<b>157</b>



**ABSTRACTS OF PAPERS**

**PRESENTED AT**

**5<sup>TH</sup> INTERNATIONAL BUSINESS  
SERVITIZATION CONFERENCE**



## **The Role of Inherited Identity for a Shared Future in the Industry 4.0 era: The Case of the Textile Industrial District of Prato**

**Marco Bellandi<sup>1</sup>, Erica Santini<sup>2</sup>**

<sup>1</sup>University of Florence

<sup>2</sup>Fondazione per la Ricerca e l'Innovazione

### **Abstract**

In the current century, the elaboration of national strategies is a crucial issue, especially in countries where the traditional manufacturing sectors are largely based in local systems of SMEs. These systems, typically characterised by a productive core and a multiplicity of different nuclei of specialized know-how embedded into the area, have to promote dual paths based on artisan traditions and new technologies. If they fail, their productive core is destined to be increasingly exposed to competitive shocks and deep crises. Within such perspective, this paper proposes some investigations on positive and negative side of the productive legacy in the historical industrial district of Prato. The inherited identity is able to promote product differentiation and to support long-term development paths, but it is not enough when radical changes are needed. Various scenarios may open up and an adequate institutional context is needed in order to prevent loss of competitiveness and of inherited identity also helping the growth and networking of new creative and knowledge business services.

**Keywords:** Industrial district, knowledge sharing, industry 4.0, servitization, old and new artisans, new manufacturing.

## **Introduction**

In the current century, in order to answer to the increasing competition coming from the cheap labour countries, the major industrialised area started to support Smart Factory strategies opening the way to solutions now acknowledged as included in the so-called Industry 4.0 era (Hermann et al., 2016). The appearing of Makers is a fundamental feature of this era (Anderson, 2012). In Italy, where the national economy is characterized by the presence of local production systems led by SMEs specialised in typical manufacturing sectors and in agro-food-tourism clusters, the identification of virtuous ecosystems is crucial. These ecosystems have to support knowledge sharing and promote a new generation of artisan skills at the core of the SMEs systems, based on creative re-interpretations of local inherited identities, with the help both of pools of old artisanship as curator of historical productive knowledge of making, personal touch, authenticity, and of Industry 4.0. Multi-scalar strategies and policies (Bellandi & Caloffi, 2016) supporting local excellence have to be identified.

## **An ID's Case Study on Opportunities and Barriers to Change**

In SMEs systems, such as in the many Industrial Districts (IDs) (Becattini et al., 2009), the virtuous paths may be driven by the gradual adjustment of the cognitive and institutional structure of the system, whereby the productive core is combined with new competences and knowledge. This is how ID generates competitive products appreciated by the global market over time. However, when non-gradual changes are needed the systemic features may be unsuitable to take advantage of new knowledge embedded into the area. Building here on the results of a previous research (Santini, 2016), the textile ID of Prato is assumed as a case study where to understand opportunities and barriers to virtuous ecosystems characterised by the integration between the old artisan, curator of historical productive knowledge, and new specialised knowledge, also made of creative and knowledge business services.

### **The ID's Inherited Identity as Base of the New Manufacturing**

The textile ID of Prato grew rapidly from 1950s to 1990s being able to compete in international markets with product differentiation strategies. The introduction of different fibre allowed a great extension of the range of products over time and the industrial organisation of the area was more and more featured by a set of local intermediate markets and by 'teams of specialised companies' (Becattini, 1990). The embedded capabilities latent in the historical heritage were translated in products recognised by the consumers and appreciated in many markets. However, from the 1990s the ID's competitiveness was affected negatively by the emergence of countries characterised by cheap productive factors, while the migration flows from China destabilised the district social cohesion and the emergence of a Chinese clothing and knitwear cluster did not liaise with the traditional local textile core (Dei Ottati, 2014). However, the issue is still open.

### **What Kind of Shared Future for IDs in the Industry 4.0 era?**

The knowledge configuration of Prato's district area has changed through time, and windows for renewed development paths have opened up often in the past. Recently new competences and knowledge, also related to creative and knowledge business services, have been locating into the area (Santini, 2016), but Prato does not seem to having been able to take much advantage of them at the moment. The specialised artisan firms have reduced significantly in the last decade. A robust strategy has to be thought up to increase the impact of the advanced business services and technological knowledge on the emergence of new artisanship. 'Place leadership' (Bailey et al., 2010) is essential to encourage good practices of knowledge sharing between curators of the inherited identity and the district actors that are endowed with new knowledge. The question is if an ID Mark 3 (Bellandi & De Propriis, 2015) can emerge, where the systemic features are renewing their competitive advantage, with a blend of old and new knowledge coming from the increasing sectoral variety of the area.



## References

- Anderson, C. (2012). *Makers. The new industrial revolution*. London, UK: Random House Business Books.
- Bailey, D., Bellandi, M., Caloffi, A., & De Propriis, L. (2010). Place-renewing leadership: trajectories of change for mature manufacturing regions in Europe. *Policy studies*, 31(4), 457-474. <https://doi.org/10.1080/01442871003723408>
- Becattini, G. (1990). The Marshallian industrial district as a socio-economic notion. In F. Pyke, G. Becattini, & W. Sengenberger (Eds.), *Industrial districts and inter-firm co-operation in Italy* (pp. 37-51). Geneva, CH: International Institute for Labour Studies.
- Becattini G., Bellandi M., De Propriis L. (Eds.) (2009). *A Handbook of industrial districts*. Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.
- Bellandi, M., & De Propriis, L. (2015). Three generations of industrial districts. *Investigaciones Regionales*, 32, 75-87.
- Bellandi, M., & Caloffi, A. (2016). Industrial policies in a Marshallian-based multilevel perspective. *European Planning Studies*, 24(4), 687-703. <https://doi.org/10.1080/09654313.2015.1125856>
- Dei Ottati, G. (2014). A transnational fast fashion industrial district: an analysis of the Chinese businesses in Prato. *Cambridge Journal of Economics*, 38, 1247–1274. <https://doi.org/10.1093/cje/beu015>
- Hermann, M., Pentek, T., & Otto, B. (2016). Design Principles for Industrie 4.0 Scenarios. *Paper presented at 49th Hawaii International Conference on System Sciences (HICSS)* (pp. 3928-3937). IEEE. <https://doi.org/10.1109/hicss.2016.488>
- Santini, E. (2016). *Apprendimento e cambiamento in sistemi produttivi locali in condizione di lock-in*. Dip. Scienze per l'Economia e l'Impresa, University of Florence, February 2016, PhD Thesis.

## **Internal Levers for Product-Service Systems: How Product-Oriented Manufacturers Can Enhance Servitization**

**Wim Coreynen<sup>1</sup>, Ivo Dewit<sup>2</sup>, Paul Matthyssens<sup>1</sup>, Roel De Rijck<sup>3</sup>**

<sup>1</sup>Faculty of Applied Economics – Management, University of Antwerp

<sup>2</sup>Faculty of Design Sciences – Product Development, University of Antwerp

<sup>3</sup>Flanders Inshape

### **Abstract**

Manufacturers experience difficulty in extending into the services business. To date, various methods and tools have been developed to support companies in developing successful PSS, yet an overarching framework that combines a strategic, integrated design as well as organizational perspective on PSS is missing. In this research, we developed and tested a three-dimensional toolkit at eight manufacturing companies that wanted to increase their service offering. Following a multiple case study methodology, we briefly describe three types of barriers related to developing and deploying PSS that we encountered. Ultimately, our aim is to develop insight in the organizational levers to successfully create and capture integrated PSS.

**Keywords:** servitization, manufacturing, design, strategy.

## **Purpose**

It has been observed that manufacturing companies find it difficult to exploit the potential of extending into product-service systems (PSS). Increasing the investments in extra services to the product offering often do not produce expected returns in growth or revenue; this has been referred to as “the servitization paradox” (Gebauer, Fleisch & Friedli, 2005). We distinguish a number of possible explanations described in academic literature. First, companies are uncertain which type of services to pursue. Success in servitization is considered dependent on the type of services offered by the company, thereby favoring advanced services over mere add-on services (Parida, Ronnberg-Sjodin, Wincent & Kohtamäki, 2014), but overall the performance effect remains unclear. Second, firms may lack service-specific capabilities or experience for designing, making and delivering new service offerings (Baines et al., 2007). Third, firms may lack a service-oriented culture, for instance managers may overemphasize tangible rather than intangible features, be skeptic of the economic potential of services and fear to absorb risks beyond the point of sale (Gebauer et al., 2005). In sum, manufacturers encounter several barriers in servitization, and there is much uncertainty on how to move forward. This is particularly the case for SMEs that -compared to larger-sized enterprises- suffer from a number of additional obstacles. For instance, they often sell and deliver through a network of distributors and installers (Oliva & Kallenberg, 2003) and lack the resources to investigate and provide additional services (Kowalkowski et al., 2013).

The aim of this research is to gain insight in the organizational levers necessary for creating new PSS and successfully capturing their value, drawing from the distinct research fields of servitization/PSS, strategic market management and integrated design thinking. These research fields claim to offer valuable insights and methods to support companies in servitization, yet an overarching framework is missing (Vasanthan et al., 2015). In this paper, we take a more holistic perspective of the firm to find how companies can successfully design and capture integrated PSS. Furthermore, we translate this knowledge into a toolkit that helps companies in setting priorities regarding PSS and several organizational areas.

## **Research Methodology**

For this purpose, we use a multiple case study research methodology (Eisenhardt, 1989). Through this approach we are able to draw evidence from more than one unit of analysis to add both breadth and depth to data collection (Kindström, 2010). Eight manufacturing companies have been involved to participate in three rounds of semi-structured, in-depth interviews and workshops; we refer to the appendix for a list of companies and a figure that summarizes our research approach. Participants were decision makers such as owners, CEOs, divisional managers, product and service managers. During the research process, a toolkit to support manufacturers in servitization was developed, evaluated and fine-tuned through individual expert discussions with five service design agencies, two intermediary organizations (representing the manufacturing industry and SMEs respectively), and a network of researchers focused on service-related topics such as product-service design, service climate, organization and strategic management.

## **Findings**

Based on our current progress, we find that companies encounter three types of barriers related to PSS development and deployment.

A first group of highly product-oriented companies consider servitization as a valuable route for further growth, yet they are highly uncertain on how to move forward with PSS. For instance, Beta sells and installs innovative security systems and considers offering additional services such as remote monitoring; Epsilon looks to offer maintenance and revamping services for its installed-base of electric switchboards; and Lambda considers new ways to support its network of dealers that sell and install flatbed printers.

A second group of companies have already taken concrete steps to increase their service offering, however, they offer PSS on a rather ad-hoc basis and suffer from issues related to upscaling within their organizations. For instance, Alpha offers a range of services to unburden podiatrists, yet they have not fully transferred them into their operations; Gamma cooperates with a number of external

partners to create total solutions for office furniture, yet they mostly emphasize on product innovation in their communication; and Kappa claims to offer clients “peace of mind” rather than just selling stainless steel pumps.

A third overlapping issue is the lack of an organizational environment that supports new PSS initiatives; this is particularly the case in medium and large-sized companies with multiple business units or departments. For instance, Mu says the organization lacks the culture and structure to support ideas that are out of the scope of product or technological innovations.

### **Contribution**

The contribution of this paper is twofold. First, we developed and tested a three-dimensional toolkit to support the servitization shift of product-oriented manufacturers. As our preliminary results show, the problems which case companies are faced with concern different areas within the organization, ranging from 1) the development of new PSS, to 2) deploying existing PSS (both on the business unit level) and 3) general supportive factors in terms of leadership, culture, structure and processes (at the company level). This third "problem area" applies primarily to mid- and large-sized companies with multiple business units. The toolkit helps companies in identifying the gap between the present and desired situation, and in setting priorities for both the short and long term, thereby assisting companies in strengthening their PSS development.

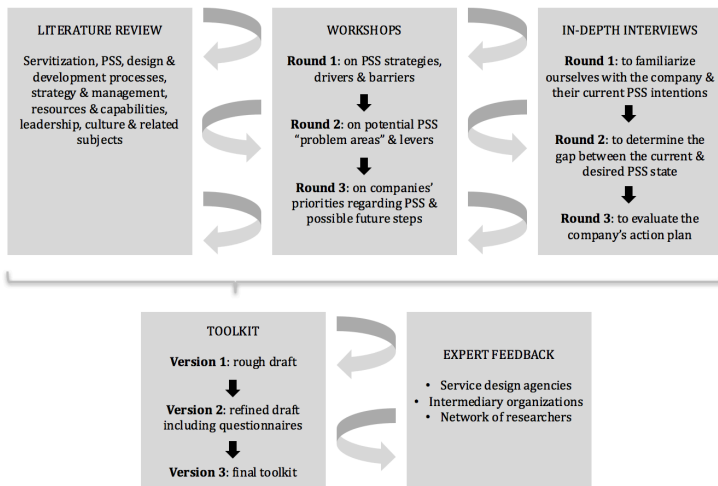
Second, from a theory building perspective, this paper blends knowledge from three literature streams, i.e. servitization/PSS, strategic market management and integrated design thinking, into a more holistic approach to develop insight in how companies can successfully create and capture integrated PSS. One of the core theoretical contributions is the recognition of psychological/cultural aspects' role in supporting the exploration and development of new bottom-up PSS initiatives.

## Appendix

### Company list:

Company	Main products	Size
1. Alpha	Functional insoles & feet scanner	Small
2. Beta	Security systems	Small
3. Gamma	Office furniture	Medium
4. Delta	Fuel cell systems & hydrogen generators	Medium
5. Epsilon	Electric switchboards	Medium
6. Kappa	Stainless steel pumps & components	Medium
7. Lambda	Vinyl cutters, printer cutters & contour cutting plotters	Medium
8. Mu	Air compressors	Large

### Research methodology:



## References

- Baines, T., Lightfoot, H.W., Evans, S., Neely, A., Greenough, R., Peppard et al. (2007). State-of-the-art in product-service systems. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 221(10), 1543-1552. <https://doi.org/10.1243/09544054JEM858>
- Eisenhardt, K.M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-550.
- Gebauer, H., Fleisch, E., & Friedli, T. (2005). Overcoming the service paradox in manufacturing companies. *European Management Journal*, 23(1), 14-26. <https://doi.org/10.1016/j.emj.2004.12.006>
- Kindström, D. (2010). Towards a service-based business model - Key aspects for future competitive advantage. *European Management Journal*, 28(6), 479-490. <https://doi.org/10.1016/j.emj.2010.07.002>
- Kowalkowski, C., Witell, L., & Gustafsson, A. (2013). Any way goes: Identifying value constellations for service infusion in SMEs. *Industrial Marketing Management*, 42(1), 18-30. <https://doi.org/10.1016/j.indmarman.2012.11.004>
- Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International Journal of Service Industry Management*, 14(2), 160-172. <https://doi.org/10.1108/09564230310474138>
- Parida, V., Ronnberg-Sjodin, D., Wincent, J., & Kohtamäki, M. (2014). Mastering the transition to product-service provision insights into business models, learning activities, and capabilities. *Research-Technology Management*, 57(3), 44-52.
- Vasantha, G. V. A., Roy, R., & Corney, J. R. (2015). Advances in designing Product-Service Systems. *Journal of the Indian Institute of Science*, 95(4), 429-448.

## **Digitalization and Servitization in Manufacture: Keys of Competitive Advantage for European Industry 4.0**

**María Luz Martín Peña, Eloísa Díaz-Garrido, Esperanza  
Marcos, Valeria de Castro, Cristina Cachón García**

Rey Juan Carlos University

### **Abstract**

Since 1995, productivity growth in the European manufacturing sector has been slowing down. The EU Competitiveness Report 2014 cautions that the perceived decline of European industry, as expressed in terms of industry's share of GDP, is partly due to productivity gains and associated falling relative prices of manufacturing in relation to services. Many manufacturing firms are adapting to offer integrated solutions based on the needs of their customers. Within this process, servitization and digital technologies become key factors for firms immersed in the so-called 'Industry 4.0'. The aim of this work is to analyse the relationship between the level of servitization and the degree of digitalization in industrial firms, from a theoretical perspective. Digitalization and servitization are treated as related factors of value-creation in the firm, and thus a source of competitive advantage.

**Keywords:** Servitization, digitalization, industry 4.0.



## **Digitalization & Servitization**

The increase in global competition has led many manufacturing firms to search for customized solutions for their customers. Achieving maximum customer satisfaction, as well as bringing in income, has involved a shift towards integrated solutions based on the needs of customers (Kohtamäki et al., 2013; Storbacka, 2011; Tuli et al., 2007).

The specialized bibliography stresses the factors which facilitate this process. Technology, especially ICT, is one of the most important factors involved in promoting digitalization (Lightfoot et al., 2012). In recent years, a rapid, technology-driven transformation in all economic sectors has been detected.

Concerning the industrial sector, the so-called 'fourth industrial revolution' (Industry 4.0) is being encouraged by the introduction of digital technologies, which encourage the specialization of the value chain and connectivity between actors (Wiesmüller, 2014). The real-time exchange of information allows for faster and more flexible responses, what has a direct impact on profitability and productivity. Industry 4.0 heralds' greater operational efficiency and the development of new products, services and business models (Kagermann et al., 2013). The digital revolution leads industry to new forms of competition, to ways to respond to the needs of increasingly demanding customers who demand customized solutions. For these reasons, many firms have evolved from producing and commercializing a single product, to offering customers need-based integrated solutions (Davies, 2004). The specialized literature has referred to this process as the servitization of manufacture.

Within the framework of Industry 4.0, we find cyber-physical systems (CPS), which are conceived as networks in which ICT links electronic and mechanical components, blurring the line between the virtual and the real worlds. Cyber-physical systems are composed of smart products and processes in a context of smart manufacture and in connection with smart infrastructures. Within this framework of digitalization and interconnection, services are present in all areas, from information, big data, web services and

remote- and cyber-security. The result is a close relationship between the production of goods and the generation of services.

In this new scenario established by Industry 4.0, therefore, services play a crucial role (Herman et al., 2015). The smart factory is based on a service-based architecture. Digitalization becomes an enabler/driver of servitization; thus, services supported by digital systems are incorporated into products, resulting in the creation of new product-service systems. The availability of these new product-services may in turn lead to a far-reaching reconfiguration of the mechanisms of value creation in manufacture (Münster & Meiren, 2011). Technology plays an essential role in the creation of added value for the customer, with the provision of smart systems, which guarantee more efficient delivery and provide for a closer relationship with customers (Penttinen & Palmer, 2007).

In this context, industry must face the challenge of digitalization and servitization in order to improve competitiveness, by generating sustainable competitive advantages. In this regard, the European Commission's target is for industry to amount to 20% of European GDP in 2020. Currently, the industrial sector represents 15% of total added value and employs 20% of the employed workforce. In recent years, the contribution of the industrial sector to the GDP has decreased in a sustained manner.

Digital technologies and servitization are a key opportunity for the industrial sector. To a large extent, digitalization has meant the introduction of services. It may be said that digitalization is an enabler/ driver of servitization, whereas servitization promotes further digitalization, with the design of new product-services. The following research questions are relevant for the issue at hand:

- Do servitization and digitalization influence one another?
- Is there a relationship between the level of servitization and the degree of digitalization in manufacture?
- Do digitalized product-service systems result in the firm's competitive advantage?

Total connectivity ensures that clients have considerable access to information, and as a result they demand total customization of products and services, which further complicates inter-firm

competition. Digitalization and servitization facilitate customization, giving a competitive advantage to those firms which decide to offer digitalized product-services.

If firms make a bid for personalized solutions, they need to engage in collaborative innovation, including integrated chains of supply and connected productive resources. This is Industry 4.0: digitalized, servitized, connected and smart. This must be Europe's new industry, an industrial sector within which the boundaries between manufacture and services become blurred. The administration must promote digitalization and servitization.

This work presents a comprehensive framework which brings together the emerging trends of servitization and digitalization in a conceptual structure. Digitalization and servitization are interconnected, and together contribute to the creation of value in the firm.

## References

- Davies, A. (2004). Moving base into high-value integrated solutions. A value stream approach. *Industrial and Corporate Change*, 1(5), 727-756. <https://doi.org/10.1093/icc/dth029>
- Herman, M., Pentek, T., & Otto, B. (2015). Design Principles for Industrie 4.0 Scenarios: A Literature Revue. *Working paper n<sup>o</sup> 1*. Technische Universität Dortmund.
- Kagermann, H., Wahlster W., & Helbig J. (2013) *Recommendations for implementing the strategic initiative Industrie 4.0: Final report of the Industrie 4.0 Working Group*.
- Kohtamäki, M., Partanen, J., Parida, V., & Wincent, J. (2013). Non-linear relationship between industrial service offering and sales growth: the moderating role of network capabilities. *Industrial Marketing Management*, 42(8), 1374-1385. <https://doi.org/10.1016/j.indmarman.2013.07.018>
- Lightfoot, H.W., Baines, T.S., & Smart P. (2012). Emerging Technology and the Service Delivery Supply Chain. *Decision-Making for Supply Chain Integration*, 211-226. [https://doi.org/10.1007/978-1-4471-4033-7\\_11](https://doi.org/10.1007/978-1-4471-4033-7_11)

- Münster, M., & Meiren, T. (2011). Internet-basierte Services im Maschinen- und Anlagenbau. [*Internet-Based Services in Mechanical and Plant Engineering*] Stuttgart: Fraunhofer-Verlag.
- Penttinen, E., & Palmer, J. (2007) Improving firm positioning through enhanced offerings and buyer–seller relationships. *Industrial Marketing Management*, 36(5), 552-564.  
<https://doi.org/10.1016/j.indmarman.2006.02.005>
- Storbacka, K. (2011). A solution business model: Capabilities and management practices for integrated solutions. *Industrial Marketing Management*, 40(5), 699-711.  
<https://doi.org/10.1016/j.indmarman.2011.05.003>
- Tuli, K.R., Kohli, A.K., & Bharadwaj, S.G. (2007). Rethinking customer solutions: From product bundles to relational processes. *Journal of Marketing*, 71(3), 1-17. <https://doi.org/10.1509/jmkg.71.3.1>
- Wiesmüller, M. (2014). Industrie 4.0: surfing the wave? *e & i Elektrotechnik und Informationstechnik*, 1.



## **What is the Meaning of Servitization for Small and Medium Retailers?**

**Lorea Narvaiza, David Ruiz de Olano, Tontxu Campos, Iñigo Arroniz**

University of Deusto

### **Abstract**

Servitization has been mainly applied in the manufacturing sector but there are other areas that could benefit from this concept. Servitization in retailing is still in its infancy so in this study we want to explore the potential of servitization for small and medium retailers. In this study, we would try to answer the following questions: Can small and medium retailers benefit from the servitization concept? What is the meaning of servitization for small and medium retailers? Can servitization be a framework to increase the competitiveness of small and medium retailers? What are the drivers and barriers for the servitization process in small and medium retailers? In order to answer these questions, we first report the state of the art. Then using a case study approach, we analyse a successful retailer in order to know what is its understanding of servitization, what kind of servitization actions is he applying and which ones could be carried out, what are the drivers and barriers for servitization, and finally how servitization could increase its competitiveness. The contributions of this study could be of interest for researchers, for retailers and for policy makers.

**Keywords:** Servitization, small and medium retailers, case study.

## **Introduction**

Servitization is recognized as the process of creating value by adding services to products (Rada & Vandermerwe, 1988). The growing interest in servitization by scholars, businesses and policy makers is rooted in the belief that a move towards servitization could create additional value for the organizations (Baines et al., 2007; Muller & Doloreaux, 2007).

The concept of servitization or adding services to the existing product offer has been primarily studied in the manufacturing sector and its interest has increased since the mid-1990s. Recently there are several studies on servitization in other areas rather than manufacturing, for example, on complex engineering service (Barnett et al., 2013), the music industry (Bustinza et al., 2013), local newspaper companies (Sánchez-Montesinos & Arias, 2014) or retailing (Narvaiza et al., 2016).

We agree with Lightfoot et al. (2013) that the topic of servitization is an emerging field with many opportunities and more empirical studies should be developed to show the results of servitization strategy in different context (Martin-Peña et al., 2016). Related to servitization little attention has been paid to the application of this concept in the retail sector.

Taken into account the identified gaps in this study we would like to answer the following questions: Can small and medium retailers benefit from the servitization concept? What is the meaning of servitization for small and medium retailers? Can servitization be a framework to increase the competitiveness of small and medium retailers? What are the drivers and barriers for the servitization process in small and medium retailers?

## **Methods**

The methodology used in this article is first to review the state of the art, present in books and articles. Our investigation consists of an extensive analysis of servitization in different sectors rather than manufacturing. Then using a case study approach, we would analyse a successful retailer from the servitization point of view.

## Findings

The findings of this paper are to define servitization in the words of small and medium retailers, to identify servitization actions that are carried out by those retailers, to identify which services could be added in the future by those retailers and to identify the drivers and barriers for the servitization process in small and medium retailers.

## Implications

There are some important implications at different levels. For the scholarship, there would be a theoretical contribution to better understand how the servitization concept could be applied to a retailing context. At the managerial level, the identification of the customer's perception and the possibility to offer new services in order to increase the value offered could increase the differentiation of small and medium retailers. For policy makers, it would be helpful to know which policies could be applied to increase the competitiveness of the retailing sector.

## References

- Baines, T.S., Lightfoot, H.W., Evans, S., Neely, A., Greenough, R., & Peppard, J. (2007). State-of-the-art in product-service systems. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 221(10), 1543-1552. <https://doi.org/10.1243/09544054JEM858>
- Barnett, N.J., Parry, G., Saad, M., Newnes, L.B., & Goh, Y.M. (2013). Servitization: Is a paradigm shift in the business model and service enterprise required? *Strategic Change*, 22(3-4), 145-156. <https://doi.org/10.1002/jsc.1929>
- Bustinza, O.F., Parry, G., & Vendrell-Herrero, F. (2013). Supply and demand chain management: The effect of adding services to product offerings. *Supply Chain Management: An International Journal*, 18(6), 618-629. <https://doi.org/10.1108/SCM-05-2013-0149>



- Lightfoot, H., Baines, T., & Smart, P. (2013). The servitization of manufacturing A systematic literature review of interdependent trends. *International Journal of Operations & Production Management*, 33(11/12), 1408-1434.
- Martin-Peña, M.L., & Bigdeli, A. (2016). Servitization: academic research and business practice. *Universia Business Review*, first quarter.
- Muller, E., & Doloreux, D. (2007). *The key dimensions of Knowledge-Intensive Business Services (KIBS) analysis: a decade of evolution*. Discussion paper, Fraunhofer Institute Systems and Innovation Research.
- Narvaiza, L., Ruiz de Olano, D., Campos, T., & Arroniz, I. (2016). When services are offered by small and medium retailers: what is the customer's perception? *Universia Business Review*, first quarter.
- Rada, J., & Vandermerwe, S. (1988). Servitization of business: Adding value by adding service. *European Management Journal*, 6(4), 314-320. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)
- Sánchez Montesinos, F., & Arias Aranda, D. (2014). La adaptación a la servitización como elemento esencial del futuro de los medios de comunicación de prensa escrita. *Intangible Capital*, 10(2), 239-265. <https://doi.org/10.3926/ic.503>
- Yin, R.K. (2003). *Case study research, design and methods*. Vol 5. (3rd edition). Sage Publications, Thousand Oaks, California.

## **Service Dominant Logic and Market Orientation in Retailing**

**Lorea Narvaiza, Iñigo Arroniz, Tontxu Campos, David Ruiz de Olano**

University of Deusto

### **Abstract**

The intent of this study is to better understand the interplay of the services dominant logic (SDL), with market orientation and the propensity to innovate in small and medium retailers. In order to do so we study the literature on market orientation, on servitization and innovation. We propose a model that integrates market orientation, servitization and propensity to innovate with retailers' performance. Following a qualitative and quantitative approach we gather information from small and medium retailers to check the model.

**Keywords:** Service Dominant Logic, market orientation, ervitization, small and medium retailers, performance.

## **Service Dominant Logic (SDL) and Market Orientation**

Retailing is witnessing dramatic changes due to technology changes (Internet, Information and Communication Technology-ICT), the use of several channels (Sorescu et al., 2011) and the globalization of retailing firms. In order to face the fast-changing environment retail firms should try to adapt to the markets. In this line market orientation has a central role in the discussion of strategic direction and marketing (Day, 1992; Jaworski & Kohli, 1993; Narver & Slater, 1990; Pelham, 1997). Market orientation approach, in addition to listen to actual customers, it considers continuous market learning to identify latent needs and unserved markets to mobilize resources, proposed market focused innovations and achieve competitive advantage in all types of markets.

Retailer's market orientation can positively influence the propensity to innovate (Aldas-Manzano et al., 2005). Previous research has identified a positive relationship between market orientation and aspects linked to innovation (Aldas-Manzano et al., 2005).

A concept such as servitization is closely related to the service dominant logic as servitization (Vandermerwe & Rada, 1988) is the addition of services or retransformation to a service of a product or a core service. This implies that servitization embodies some of the basic ideas behind the SDL. We argue that servitization is, in a way, a strategy that enables the move from a goods dominant logic to a services dominant logic. And in that servitization should enable a real firm to begin the journey from goods to services (Vargo & Lusch 2012).

In this study, we propose a model that integrates market orientation, servitization and propensity to innovate with retailers' performance.

## **Methods**

The setting for the analysis is the small and medium size retailers in Spain. After several in-depth interviews to experts and retailers, a survey was used to gather information from small and medium retailers. We collected 800 responses from two geographically distinct areas, a rural area and a metropolitan area. Data collection

using CATI (Computer Aided Telephone Interview), using a structured survey for each of the interviewees. In all cases the key informant was the owner or manager of the business.

### Findings and implications

The findings of this paper are first to contrast market orientation, innovation and servitization scales in small and medium retailers. Then to analyse how these dimensions could be used to improve the competitiveness of small and medium retailers. For academics and retailers, the contrast of measurement scales in the retailing sector would be an important contribution. In addition to that, measuring and comparing the levels of market orientation, servitization and innovativeness in two regions would be also of interest for policy makers.

### References

- Aldas-Manzano, J., Küster, I., & Vila, N. (2005). Market orientation and innovation: An interrelationship analysis. *European Journal of Innovation Management*, 8(4), 437-452.  
<https://doi.org/10.1108/14601060510627812>
- Day, G.S. (1992). Marketing's contribution to the strategy dialogue. *Journal of the Academy of Marketing Science*, 20(4), 323-329.  
<https://doi.org/10.1007/BF02725208>
- Jaworski, B.J., & Kohli, A.K. (1993). Market-orientation: Antecedents and consequences. *Journal of Marketing*, 57(3), 53-70.  
<https://doi.org/10.2307/1251854>
- Narver, J.C. & Slater, S.F. (1990). The effect of a market orientation on business profitability. *Journal of Marketing*, 54 (October), 20-35. <https://doi.org/10.2307/1251757>
- Pelham, A. (1997). Mediating influences on the relationship between market orientation and profitability in small industrial firms. *Journal of Marketing Theory and Practice*, 5(2), 1-23.

- Vandermerwe, S., & Rada, J. (1988). Servitization of business: Adding value by adding service. *European Management Journal*, 6(4), 314-320. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)
- Sorescu, A., Frambach, R.T., Singh, J., Rangaswamy, A., & Bridges, C. (2011). Innovations in retail business models. *Journal of Retailing*, 87, S3-S16. <https://doi.org/10.1016/j.jretai.2011.04.005>
- Vargo, S.L., & Lusch, R.F. (2012). The nature and understanding of value: A service-dominant logic perspective. *Review of Marketing Research*, 9, 1-12. [https://doi.org/10.1108/S1548-6435\(2012\)0000009005](https://doi.org/10.1108/S1548-6435(2012)0000009005)

## **Does Servitization Imply Downstream Network Dominance?**

**Ali Z. Bigdeli<sup>1</sup>, Oscar F. Bustinza<sup>2</sup>, Ferran Vendrell-Herrero<sup>3</sup>,  
Tim Baines<sup>1</sup>**

<sup>1</sup>Aston University

<sup>2</sup>University of Granada

<sup>3</sup>University of Birmingham

### **Abstract**

Implementation and adoption of advanced services have become a crucial decision for manufacturing firms. The purpose of this paper is to analyse how such strategy is developed and implemented in manufacturing firms by taking into consideration the influences of the supply chain network including entry barriers and the position in the value chain. This paper also challenges one of the main assumptions behind the servitization literature, that dominance in the network in servitized supply chains is fixed at downstream levels. The context of analysis is the UK road transport industry, including manufacturers, operators and technology providers. Through in-depth interviews with the senior executives of all relevant players in the industry and establishment of a novel decision matrix covering risk perception and make-or-buy decisions based on payment cards, the results suggest that advanced service implementation is perceived as a high-risk strategy.

**Keywords:** Supply chain network, servitization assumptions, strategic partnership, network dominance.

## **Introduction**

Fundamental to the servitization debate is that manufacturers broaden their focus from products to services. Services themselves are not however homogeneous; they differ substantially in their level of risk, level of competition, and potential to create competitive advantages (Bustinza et al., 2015). To better understand customer requirements, firms have principally moved downstream in their supply chain, pursuing implementation of advanced services in their offerings. Most research lines in the literature have assumed (explicitly or implicitly) direct links between this downstream orientation and the network dominance, emphasizing the development of actionable strategies based on customer information. The question remains, however, as to whether or not the barycenter should be located downstream for successful advanced services adoption and implementation.

This question aligns with literature providing insights into a firm's strategy development within its supply chain network, the structural power derived from position in the network, and the ways in which network power can be achieved from the perspective of an advanced services provider. The assumptions behind manufacturers' service-led growth need further analysis (Baines et al., 2016), and it is important to clarify whether the servitizing firm's position in the supply chain network must be downstream, as the relevant literature suggests. Building on the servitization and supply chain literature, the aim of this paper is to understand whether or not manufacturers can implement advanced services locked upstream in the value chain while maintaining network dominance. The main objective is to illustrate the trade-off between outsourcing, partnership, and in-house production in deciding whether to implement advanced services in the company portfolio, and to determine the best point in the value network to do so. Hence, based on empirical data gathered from the UK road transport industry, this paper also examines and estimates the expected premium associated with such risks by employing a payment card method.

## **Research Context and Methodology**

This study has focused on one of the key OEM industries in the United Kingdom, the road transport industry. This study follows a qualitative case study approach conducted among a variety of different key players within the selected industry. This methodology enabled us to explore the background of the firms, their key product/service offerings, and the extent of their relationship with other network players. Data collection was based on fourteen in-depth semi-structured face-to-face interviews with two Senior Executives (including CEO, Chief Innovation Officer, and Chief Operation Officer) of 7 companies involved in the road transport industry in the UK. Having the opportunity of the in-depth interviews we decided to design a numerical exercise to measure risk perception of respondents. This exercise was designed as a “payment card” method (Vendrell-Herrero, Bustinza et al., in press), which is a method commonly used in behavioural economics to elicit the utility function of consumers.

## **Findings**

The analysis of the results indicates that companies with more knowledge and information about the value of advanced services have lower risk perception and prefer in-house development, keeping internal control on their labour skills and specific knowledge. This goes in line with Barrales-Molina et al. (2013) who argues that understanding the technology reduce the inherent risk associated with incremental and radical innovations, Bustinza, Parry and Vendrell-Herrero (2013), and Vendrell-Herrero, Myrthianos et al. (in press) who considers technology as a key enabler for new product-service implementation. Based on the idea that visibility in the value chain as a prerequisite for advanced services implementation, it is reasonable to argue that establishing a sub-regime of power in the value chain through upstream positioning decreases risk, creates entry barriers and transmits implementation costs to the entire value chain.



## Conclusions

This paper demonstrates a novel approach to analysing the best point of entry in the supply chain network through analysis of risk perception and partnering propensity for implementing advanced services useful to building a sustainable competitive edge for products and services. Results show the importance of the extent to which partnership with those firms provides strategic information for better understanding of the product-service value propositions. This strategic partnership needs to consider the point of entry through an analysis of the entire supply chain network. Moreover, this analysis is crucial in advanced services implementation as it determines the best partners with whom to link processes.

## References

- Baines, T., Bigdeli, A.Z., Bustinza, O.F., Guang-Shi, V., Baldwin, J., & Ridgway, K. (2016). Servitization: Revisiting the state-of-the-art and research priorities. *International Journal of Operations & Production Management*, In Press.
- Barrales-Molina, V., Bustinza, O.F., & Gutierrez-Gutierrez, L.J. (2013). Explaining the causes and effects of dynamic capabilities generation: A multiple-indicator multiple-cause modelling approach. *British Journal of Management*, 24(4), 571-591. <https://doi.org/10.1111/j.1467-8551.2012.00829.x>
- Bustinza, O.F., Parry, G., & Vendrell-Herrero, F. (2013). Supply and demand chain management: The effect of adding services to product offerings. *Supply Chain Management: An International Journal*, 18(6), 618-629. <https://doi.org/10.1108/SCM-05-2013-0149>
- Bustinza, O.F., Bigdeli, A.Z., Baines, T., & Elliot, C. (2015). Servitization and competitive advantage: The importance of organizational structure and value chain position. *Research-Technology Management*, 58(5), 53-60. <https://doi.org/10.5437/08956308x5805354>

Vendrell-Herrero, F., Bustinza, O.F., Parry, G., & Georgantzis, N. (In press). Servitization, digitization and supply chain interdependency. *Industrial Marketing Management*, In Press. <https://doi.org/10.1016/j.indmarman.2016.06.013>

Vendrell-Herrero, F., Myrthianos, V., Parry, G., & Bustinza, O. F. (In press). Digital dark matter within product service systems. *Competitiveness Review*.



## **Organizational Change in Servitization: Evidence from Italian SMEs**

**Oscar F. Bustinza<sup>1</sup>, Emanuel Gomes<sup>2</sup>, Ferran Vendrell-Herrero<sup>2</sup>, Shlomo Y. Tarba<sup>2</sup>**

<sup>1</sup>University of Granada

<sup>2</sup>University of Birmingham

### **Abstract**

Adoption of service innovation has become a source of competitive advantage. Firms undertaking an organizational change transformation towards more innovative-based offerings are more capable of understanding the critical success factors involved in such transition. The purpose of this paper is to identify and explain crucial organizational variables required in service product innovation. This paper adopts an ambidexterity approach considering that firm capability and firm agility are needed for successful organizational change. The context of analysis is the NUTS 2 Veneto region in Italy. Through surveying an extensive sample of manufacturers and service providers, this paper identifies their stage of technology deployment, their level of service and technology outsourced, and their partnership propensity. Results highlight the importance that organizational commitment has in articulating the ambidexterity relationship between firm capability variables such as resource capacity and competence, and firm agility variables such as speed and accuracy.

**Keywords:** Organizational change, servitization, strategic partnership, regional analysis.

## **Introduction**

The fact that over the last few decades firms have been confronted with radical innovations makes organizational change a core research topic (Greenwood & Hinings, 1996; Vendrell-Herrero et al., 2014). Since the turn of the century new digital technologies are changing production methods, which in turn develop and enhance different forms of smart manufacturing (De Propriis, 2016). Smart manufacturing is closely linked to the resilience capacity of manufacturers operating in fast changing conditions (Bustinza et al., in press), and the subsequent upgrading of manufacturing activities based on product-service innovation enabling processes of digitization and servitization (Vendrell-Herrero et al., in press). Servitization requires an organizational effort for continuous transformation, since manufacturers move from selling goods to selling an integrated combination of products and services that are constantly updated by the higher understanding of customers' needs enabled by digital technologies. This manufacturing transition to incorporate service offerings supposes an organizational challenge that requires a reconfiguration of the various business units, and a rethinking of the strategy developed to sustain organizational performance (Bustinza et al., 2015). Based on current debates on servitization (see for instance Baines et al., in press) we argue that to integrate services functions, strategic business units need to reconfigure the internal organizational structure and to develop new organizational capabilities (Gomes et al., 2013; Miles et al., 1978).

Under these changing conditions, organizational commitment can be a useful tool for minimizing the trade-offs between opposite demands (Cunha et al., 2016; Gomes et al., in press). Commitment facilitates the capacity for simultaneously achieving environmental alignment and strategic business unit adaptability; a capacity defined as structural ambidexterity (Junni et al., 2013). Recent research studies have analyzed the role of structural ambidexterity in the context of product innovation as an ability to simultaneously pursue innovation and change (O'Reilly & Tushman, 2008). However, no previous studies have analyzed this in the context of service innovation. Therefore, there is a growing interest in this

topic, especially considering the importance that servitization is having on manufacturing upgrading (De Propris, 2016).

Having established structural ambidexterity as the theoretical lens to analyze organizational change in the context of service innovation, our aim is to identify the critical variables required to undertake business unit transformation and achieve environmental alignment. We propose firm capability, commitment and firm agility as these critical variables.

### **Research Context and Methodology**

To understand the importance of these organizational variables a study is developed in the NUTS-2 Veneto region (Italy). This region has a highly competitive manufacturing base supported by different industrial districts as well as a growing knowledge intensive service and digital sector (Unioncamere Veneto, 2016). The empirical analysis is based on an extensive survey to manufactures and service providers in the region. Questions include standard firm demographics, the level of servitization and digital capabilities, and the rationale for choosing or not service providers as partners.

### **Preliminary Results and Managerial Implications**

Results clarify the stage of technology deployment where Veneto firms are, and the partnerships propensity with service providers. Findings allow to determine an organizational change framework where organizational commitment seems to articulate the ambidexterity relationship between internal firm capability and external firm agility to overcome a successful digital service implementation.

### **References**

Baines, T., Bigdeli, A.Z., Bustinza, O.F., Guang-Shi, V., Baldwin, J., & Ridgway, K. (In press). Servitization: Revisiting the state-of-the-art and research priorities. *International Journal of Operations & Production Management*.

- Bustinza, O.F., Bigdeli, A.Z., Baines, T., & Elliot, C. (2015). Servitization and competitive advantage: The importance of organizational structure and value chain position. *Research-Technology Management*, 58(5), 53-60.  
<https://doi.org/10.5437/08956308X5805354>
- Bustinza, O.F., Vendrell-Herrero, Perez-Arostegui, M.N., & Parry, G. (In press). Technological capabilities, resilience capabilities and organisational effectiveness. *The International Journal of Human Resource Management*, 18(6).  
<https://doi.org/10.1080/09585192.2016.1216878>
- Cunha, M.P., Fortes, A., Gomes, E., Rego, A., & Rodrigues, F. (2016). Ambidextrous leadership, paradox and contingency: Evidence from Angola. *The International Journal of Human Resource Management*, In Press. <https://doi.org/10.1080/09585192.2016.1201125>
- De Propriis, L. (2016). *A fourth industrial revolution is powering the rise of smart manufacturing*. UK: *The Conversation Trust*. Retrieved from <https://theconversation.com/a-fourth-industrial-revolution-is-powering-the-rise-of-smart-manufacturing-57753>
- Gomes, E., Angwin, D., Weber, Y., & Tarba, S. (2013). Critical success factors through the mergers and acquisitions process: Revealing pre- and post- M&A connections for improved performance. *Thunderbird International Business Review*, 55(1), 13-35.  
<https://doi.org/10.1002/tie.21521>
- Gomes, E., Mellahi, K., Sahadev, S., & Harvey, A. (In press). Perceptions of justice and organizational commitment in international mergers and acquisitions. *International Marketing Review*.
- Greenwood, R., & Hinings, C.R. (1996). Understanding radical organizational change: Bringing together the old and the new institutionalism. *Academy of Management Review*, 21(4), 1022-1054.
- Junni, P., Sarala, R.M., Taras, V., & Tarba, S.Y. (2013). Organizational ambidexterity and performance: A meta-analysis. *The Academy of Management Perspectives*, 27(4), 299-312.  
<https://doi.org/10.5465/amp.2012.0015>

Miles, R.E., Snow, C.C., Meyer, A.D., & Coleman, H.J. (1978). Organizational strategy, structure, and process. *Academy of Management Review*, 3(3), 546-562.

O'Reilly, C.A., & Tushman, M.L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior*, 28, 185-206.  
<https://doi.org/10.1016/j.riob.2008.06.002>

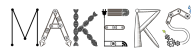
Unioncamere Veneto (2016). *Veneto 2015 Economic Report Summary*. Retrieved from  
[http://www.unioncameredelveneto.it/userfiles/ID171\\_\\_Summary\\_2015EconomicReport\\_en.pdf](http://www.unioncameredelveneto.it/userfiles/ID171__Summary_2015EconomicReport_en.pdf)

Vendrell-Herrero, F., Parry, G., Bustinza, O.F., & O'Regan, N. (2014). Servitization as a driver for organizational change. *Strategic Change*, 23(5-6), 279-285. <https://doi.org/10.1002/jsc.1976>

Vendrell-Herrero, F., Bustinza, O.F., Parry, G., & Georgantzis, N. (In press). Servitization, digitization and supply chain interdependency. *Industrial Marketing Management*.

### **Acknowledgements**

This research was supported by the European Commission under the Horizon 2020 Marie Skłodowska-Curie Actions project “MAKERS: Smart Manufacturing for EU Growth and Prosperity” with grant agreement number 691192.







## **Servitization: From a new paradigm for business operations to a promising approach to sustainability**

**Ángeles Pereira, Xavier Vence**

University of Santiago de Compostela

### **Abstract**

The sustainability challenge is causing a re-thinking of services and of innovation in services. This paper contributes to the development of the theoretical underpinnings of servitization from the re-conception of services as drivers of a new performance-oriented economic model that searches for the reduction of resources consumption and polluting emissions. Firstly, the paper sets the links between the research areas corresponding to the different disciplines that focus on servitization, namely management and marketing studies and literature concerned with environmental sustainability. In this paper, it is argued that the link between servitization and sustainability requires a broad theoretical perspective, in order to explain its potential effects on a system level. For that reason, secondly, a theoretical contribution is made that relates this innovation with the evolutionist thinking and in particular with innovation systems, socio-technical systems and social innovation theories.

**Keywords:** servitization, sustainability, systemic view, theoretical underpinnings.

### **The logic of adopting a broad perspective on servitization**

The important environmental challenges that the capitalist system is facing has created an increasing concern about the direction of innovation and about the effects that it causes in the society. In this sense, some authors argue that, among other factors, the sustainability challenge will be a key driver of future developments in service activities (Gadrey, 2010; Gallouj et al., 2015). On one hand, new services may be created on the basis of a new economic model, supporting primary and manufacturing activities that are organised in the local economy and the new needs appearing in that context. On the other hand, services may be innovative and have less impacts in the environment.

In any case, the sustainability challenge requires system innovation, meaning changes in production and consumption patterns supported by a favourable socio-technical environment (Smith et al., 2010). From this viewpoint, servitization is a service innovation that has a potential to achieve environmental and social gains. The scope will be greater to the extent that the companies' shift to the provision of services is accompanied by other changes in the consumers and other agents, as well as institutions. For this reason, in this paper we argue the usefulness of analysing servitization from the theoretical underpinnings of system innovation, socio-technical innovation and social innovation.

### **The drivers of servitization in management and marketing studies**

The marketing and management literature offers the main references to servitization as a strategy to improve the competitiveness of companies (Gebauer & Kowalkowski, 2012; Neely, 2008; Oliva & Kallenberg, 2003; Vandermerwe & Rada, 1988; Visnjic, Arts & Ringov, 2015). It is stated that servitization allows companies to set barriers to competitors and others, to lock-in the customers, to differentiate the market offer and to diffuse innovations, as well as to get relevant information from the customers, which is needed to further innovation.

## **Servitization and eco-efficiency**

On the other hand, there is a part of the literature that highlights the link between servitization and dematerialisation (EPA, 2009; Goedkoop et al., 1999; Stahel, 2010). Dematerialisation is understood as “changing a user’s need fulfilment in such a way, that it brings a significant decrease in the materials component needed for the fulfilment” (Goedkoop et al., 1999, p. 18). Among the elements that allow servitization to contribute to sustainability the eco-efficiency gains and the freedom to design and commercialise a value proposition to the customer based on performing a function or providing a result, are highlighted (Roy, 2000). For the EPA (2009), when product-service systems improve the eco-efficiency of the economic function it is possible to identify a green servitization. Eco-efficiency may be achieved by closing the materials loop, by dematerialising the economic activity, through energy efficiency and other methods.

The design of eco-efficient product-service systems sets the basis for re-thinking servitization as an innovation that goes further than economic gains for the companies and provides societal benefits. However, it cannot be generally assumed that servitization drives dematerialisation and other environmental advantages. It is necessary to analyse each case and to adopt a life cycle perspective, taking into account the environmental impacts of the product-service to analyse its environmental performance, and the role of the different agents that are involved in the system.

Although the literature highlights the natural interest of the companies to achieve environmental gains when they are aligned to economic incentives (Mont, 2004; White et al., 1999), eco-efficient servitization is scarce in the reality.

## **Elements for a servitization theory from a systemic point of view**

When the focus is on the company that innovates its business model and shifts to servitization, the transaction cost economics theory and the resource based view of the firm are useful to analyse the drivers and barriers. However, the definition of servitization as a

promising approach to sustainability requires the adoption of a broader theoretical framework.

In this paper the key ideas of the theories from evolutionist economics are used to identify the elements that allow to re-think servitization as a system innovation.

Eco-innovation theory and sustainable business models support the definition of servitization with a profile of environmental innovation. The sustainable business model concept includes service eco-innovation and highlights the role of other actors around the company.

System innovation theories are useful to understand the different elements that may affect the success of such type of innovation on a sectoral-macro level. Thus, it highlights the interaction between technologies, infrastructure, policies and agents in the innovation system to explain the transition to a new technological regime based on servitization.

The socio-technical systems theory adds a greater focus on the use and the functionality, and therefore in the social transformations and the role of institutions as determinants of the change to a new regime. Moreover, this approach is based on a multilevel perspective and proposes that innovations such as green servitization take place in a protected niche.

Finally, social innovation theories are useful to understand the role of agents other than commercial companies to adopt servitization. This is a relevant factor given that the servitization objective is not necessarily and / or exclusively to obtain a commercial gain but to achieve also environmental and social objectives.

## References

- EPA (2009). "Green Servicizing" for a more sustainable US Economy. *Key concepts, tools and analyses to inform policy engagement*. Retrieved from <http://www.epa.gov/wastes/conservation/tools/stewardship/docs/green-service.pdf>

- Gadrey, J. (2010). The environmental crisis and the economics of services: The need for revolution. In F. Gallouj & F. Djellal (Eds.). *The handbook of innovation and services: A multi-disciplinary perspective* (pp. 93–125). Cheltenham: Edward Elgar Publishing. <https://doi.org/10.4337/9781849803304.00014>
- Gallouj, F., Weber, K.M., Stare, M., & Rubalcaba, L. (2015). The futures of the service economy in Europe: A foresight analysis. *Technological Forecasting and Social Change*, 94 (October 2015), 80-96. <https://doi.org/10.1016/j.techfore.2014.06.009>
- Gebauer, H., & Kowalkowski, C. (2012). Customer-focused and service-focused orientation in organizational structures. *Journal of Business & Industrial Marketing*, 27(November), 527-537. <https://doi.org/10.1108/08858621211257293>
- Goedkoop, M.J., van Halen, C.J.G., te Riele, H.R.M., & Rommens, P.J.M. (1999). *Product Service systems, Ecological and Economic Basics. Report for the Dutch ministries of Environment (VROM) and Economic Affairs (EZ)*. The Hague. Retrieved from <http://teclim.ufba.br/jsf/indicadores/holan Product Service Systems main report.pdf>
- Mont, O. (2004). *Product-Service Systems: Panacea or Myth?* Lund University. Retrieved from <http://lup.lub.lu.se/record/467248>
- Neely, A. (2008). Exploring the financial consequences of the servitization of manufacturing. *Operations Management Research*, 1(2), 103-118. <https://doi.org/10.1007/s12063-009-0015-5>
- Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International Journal of Service Industry Management*, 14(2), 160-172. <https://doi.org/10.1108/09564230310474138>
- Smith, A., Voß, J.-P., & Grin, J. (2010). Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges. *Research Policy*, 39(4), 435-448. <https://doi.org/10.1016/j.respol.2010.01.023>
- Stahel, W.R. (2010). *The Performance Economy* (2nd ed.). London: Palgrave Macmillan.

Vandermerwe, S., & Rada, J. (1988). Servitization of business: adding value by adding services. *European Management Journal*, 6(4), 314-324. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)

Visnjic, I., Arts, S., & Ringov, D. (2015). *How do industry evolution and industry conditions prompt product firms to offer services?* (Cambridge Service Alliance). Retrieved from [http://cambridgeservicealliance.eng.cam.ac.uk/resources/Downloads/MonthlyPapers/2015OctoberPaper\\_IndustryEvolutionandConditions.pdf](http://cambridgeservicealliance.eng.cam.ac.uk/resources/Downloads/MonthlyPapers/2015OctoberPaper_IndustryEvolutionandConditions.pdf)

## **Leaping from Traditional to New Business Models through Servitization: An Industrial Case Study**

**Inmaculada Freije Obregón<sup>1</sup>, Alberto de la Calle Vicente<sup>2</sup>, Miguel Ángel Larrinaga Ojanguren<sup>1</sup>**

<sup>1</sup>Deusto Business School. Universidad de Deusto

<sup>2</sup>Engineering Faculty. Universidad de Deusto

### **Abstract**

In recent decades servitization has become a valuable way for incumbent manufacturing companies to explore new business opportunities and sustain competitive advantages. As such, it is of particular interest for mature companies operating in traditional, highly competitive industries that are experiencing aggressive competition from low cost foreign competitors. However, the process has proven to be long, difficult and risky. Adding services to existing offerings and transforming solutions involves deep changes in many organizational areas. Servitization involves profound adaptations to the company business model along with other cultural and managerial adjustments. The aim of this paper is to provide insight into the main changes required for servitization and the obstacles this strategic approach can present. The research involves an in-depth analysis of a Spanish manufacturing company. The company's traditional business model is operating in an increasingly mature and highly competitive environment. In an effort to maintain relevance in the market the company is immersed in a strategic change process by evolving from a standardized product offering to a customized one. Consequently, the entire business model required redesigning predominantly in the areas of marketing and sales, IT and manufacturing.

**Keywords:** New business model, servitization, traditional products, production.



## **Objectives and Rational**

In the past three decades' interest in servitization has attracted interest from academics, researchers and practitioners. The separation between product and service is becoming less tangible as manufacturing firms increasingly incorporate services into their products, not only to fulfill the needs of their current or potential customers, but also in response to the growing threats emerging from competitors' strategies.

The term servitization (Vandemerwe & Rada 1988) is associated with adding value to a company's offering through the inclusion of services and intangible goods. It enables firms to explore new income sources, adopt more sustainable strategies, nurture and strengthen existing customer relationships, in addition to broadening their customer base.

Service providers are generally considered to enjoy better margins than those solely providing products (Anderson et al., 1997). Furthermore, service provision is a more stable revenue stream (Quinn et al., 1990) (especially in comparison with investment and durable consumer goods). Service provision requires fewer resource inputs (Wise & Baumgartner, 1999) and services can be developed on an installed base of product with a long history and known life cycles (Oliva & Kallenberg, 2003; Potts, 1988). Due to their intangible nature (Heskett, 1987) services are more difficult to imitate as they increase causal ambiguity as an inimitability factor (Barney, 1991).

Yet servitization is not solely about adding services to products, it also paves the way for new activities on the basis of traditional products. The incorporation of services, by manufacturing companies, may result in a wide range of add-on opportunities from the mere coverage of needs related to product sales, such as transport, installation, training or spare parts, to more complex services such as maintenance and management operations (Oliva & Kallenberg, 2003).

The servitization process usually requires deep changes in the organization to fulfill newly identified needs in terms of adapting customer relationships and offerings. For the process to be

successful it is essential the organization properly understands customer needs, adapting manufacturing processes where necessary and creating new service processes. There may also be a need to redefine outsourcing, critical resources and capabilities, including supply chain management, etc.

This new business model is becoming a key means of obtaining and sustaining competitive advantage, the servitization model relies on changes that are more difficult to imitate, as such they provide the business with a unique aspect not readily present for those companies that do not instigate a business model change. Yet there are also some difficulties to servitization - the complexity of the system and the tradeoffs that are required when the company renounces some segments, products or markets leads to an element of risk. However, such a risk also acts as a useful way of detaching competitors from directly mimicking the business strategy; through servitization it becomes more difficult to duplicate the company's strategic behaviors than when it is simply a matter of adding on services

In addition to the new processes, structures and competences required to shift from an old business model based on transaction to a new one based on relationships, there must also be a change in business mind-set, with clear determination being necessary by management. As part of the change, the firm may need to pay less attention and devoting fewer resources to the traditional product and customer; given that this segment is traditionally the main source of profit for the firm moving away from it requires a cultural shift. The literature observes a growing interest in the nature of the link between services and production (Benedettini et al., 2015).

In the manufacturing sector, business models exclusively focused on exploiting economies of scale are becoming increasingly unsustainable for today's Western companies since Asia entered as a main player in the global economy (Vendrell-Herrero et al., 2014). European manufacturing companies are faced with mature markets, alongside higher costs in many sectors, therefore such firms are seeking out new ways of competing in which they can exploit their advantages through new business models.

Following Neely et al. (2011) five underlying trends can be identified in the shift to services related to complex engineered products: products to solutions, outputs to outcomes, transactions to relationships, suppliers to network partners and elements to ecosystems. As such traditional business models need to fit the new requirements.

Although promising, the servitization process is also difficult and risky, some authors warned about the difficulties and pitfalls, yet results remain elusive (De la Calle & Freije, 2016). However, successful business cases indicate the need for more in-depth research of the specific conditions for servitization.

As servitization is considered an area of significant interest for manufacturing companies, the aim of our work is to provide greater understanding of the challenge of servitization and guidance on how best to proceed in developing new business models to address it. In order to shed light on the questions highlighted by the literature, in addition to understanding the complex nuances that occur throughout the servitization process, this research focuses on a single case study. The firm under observation is one of Spain's leading bicycle manufacturers. For the company in question the servitization process proposes a great strategic change, impacting all functional areas of the business such as, marketing & sales, production, product development and Information Technologies (IT).

## **Methods, Results and Findings**

The case study method was used as a means of data collection due to the need to gather rich, thick, descriptive data. An inductive approach was considered the most appropriate research strategy, since the aim is to enhance current understanding of the ways in which servitization is an interesting option for manufacturing companies. Furthermore, the study also aims to examine how such deep changes to the business model are invoked. Servitization is a complex phenomenon that should be analyzed in its natural context. Engaging this research strategy, it is possible to combine several data collection techniques together, which serves the purpose of

facilitating the examination of the research object from several perspectives.

Essentially two different sources of information are enlisted: primary data is gathered through interviews and secondary data is collected from existing sources. The interviews were conducted with people involved in the planning of the servitization strategy, in addition to important others representing the various functional areas involved in instigating and implementing the strategic change. The secondary data was collected from publically available documents such as company's annual reports and the company's official website.

The results show the extent to which it is necessary to manage both technological and managerial issues in this kind of process, in addition to cultural change.

### **Implications and Conclusions**

This paper aims to give academics, managers and practitioners an insight of a servitization initiative for a company that manufactures products in a traditional sector, based on a tangible firm experience. The purpose of which is to explain the company's leap from its traditional business operations to a very different strategic position where customization of the product is key. It implies a focused strategy so that changes in marketing and distribution areas, IT and manufacturing, prove to be crucial, as well as cultural managerial, and organizational areas.

### **References**

- Anderson, E.W., Fornell, C. & Rust, R.T. (1997). Customer satisfaction, productivity, and profitability: differences between goods and services. *Marketing Science*, 16(2), 129-145. <https://doi.org/10.1287/mksc.16.2.129>
- Baines, T.S., Lightfoot, H.L., Steve, E., Neely, A., Greenough, R., Peppard, J., Roy, R., & Wilson, H. (2007). State-of-the-art in product service-systems. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 221(10), 1543-1552. <https://doi.org/10.1243/09544054JEM858>

- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120.  
<https://doi.org/10.1177/014920639101700108>
- Benedettini, O., Davies, J. & Neely, A. (2015). A Capability-Based View of Service Transitions. *Working paper University of Cambridge, April 2015*. Accessed in June 2016 from:  
[http://cambridgeservicealliance.eng.cam.ac.uk/Resources/Downloads/Monthly%20Papers/2015April\\_Capabilitybasedviewofservicetransition.pdf](http://cambridgeservicealliance.eng.cam.ac.uk/Resources/Downloads/Monthly%20Papers/2015April_Capabilitybasedviewofservicetransition.pdf)
- De la Calle, A., & Obregón, I.F. (2016). ¿Es la servitización tan rentable como puede parecer?: Evidencias de empresas manufactureras españolas durante dos décadas. *Universia Business Review*, (49), 54-95.
- Heskett, J.L. (1987). Lessons in the service sector. *Harvard Business Review*, 65(2), 164-174.
- Neely, A., Benedettini, O., & Visnjic, I. (2011). The servitization of manufacturing: further evidence. *Proceedings of the 18th European Operations Management Association Conference*, Cambridge, UK, 3-6.
- Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International Journal of Service Industry Management*, 14(2), 160-172.  
<https://doi.org/10.1108/09564230310474138>
- Potts, G.W. (1988). Exploiting your product's service life cycle. *Harvard Business Review*, 66(5), 32-5.
- Quinn, J.B., Doorley, T.L., & Paquette, P.C. (1990). Beyond products: services-based strategy. *Harvard Business Review*, 68(2), 58-67.
- Vandermerwe, S., & Rada, J. (1988). Servitization of Business: Adding Value by adding Services. *European Management Journal*, 6(4), 314-324. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)

- Vendrell-Herrero, F., Parry, G., Bustinza, O., O'Regan, N. (2014). Servitization as a Driver for Organizational Change. *Strategic Change*, 23(5-6), 279-285. <https://doi.org/10.1002/jsc.1976>
- Wise, R., & Baumgartner, P. (1999). Go downstream: The new imperative in manufacturing. *Harvard Business Review*, 77(5), 133-141.



## **Relationship between Customer Involvement and Service Firms' Innovation Capacity: The Case of Spanish Firms**

**Bassam Bouhrir, Carmen Haro-Domínguez, Teresa Ortega-Egea**

University of Granada

### **Abstract**

The aim of our research is to study the factors that condition service firms' innovation capacity, more specifically, to explore how customer participation create an environment favorable to innovation.

The concept "customer involvement" is finding increasing popularity in academic marketing texts. We can define customer involvement as the process through which firms interact with current or potential customers during the innovation process (Alam, 2006). Customer involvement has been acknowledged as an important factor for successful service development. Despite this recognition, few studies have investigated the relationship between customer integration, innovation, and performance outcomes in the context of services (Homburg & Kuehnl, 2014). Our study attempts to fill this gap.

To do so, we contribute to the literature by analyzing a series of factors that may help to stimulate the service firm's innovation capacity. Starting from an exhaustive literature review, we proceed to formulate hypotheses and then to verify the theoretical model proposed. We attempt to confirm these theoretical proposals through empirical analysis of data obtained from 200 Spanish firms.

The results confirm a direct and positive relationship between the firm's innovation capacity and the conditioning factors proposed. This paper has several theoretical and managerial implications.



Firms seek continually to improve their existing services and/or to develop new services. This study shows that the service firms should focus their efforts on integration. Furthermore, the study reveals that customer integration is an important means to reduce cycle, and to improve new product value

**Keywords:** Customer involvement, service innovation capacity, performance outcomes.

## References

Alam, I. (2006). Removing the fuzziness from the fuzzy front-end of service innovations through customer interactions. *Industrial Marketing Management*, 35(4), 468–480.

<https://doi.org/10.1016/j.indmarman.2005.04.004>

Homburg, C., & Kuehnl, C. (2014). Is the more always better? A comparative study of internal and external integration practices in new product and new service development. *Journal of Business Research*, 67(7), 1360–1367.

<https://doi.org/10.1016/j.jbusres.2013.08.017>

## **Innovating in Reverse Gear: Innovation Process of Outcome-based Contracts**

**Marin Jovanovic<sup>1</sup>, Ivanka Visnjic<sup>2</sup>, Andy Neely<sup>3</sup>**

<sup>1</sup>KTH Royal Institute of Technology / Universidad Politécnica de Madrid

<sup>2</sup>ESADE Business School

<sup>3</sup>University of Cambridge

### **Abstract**

Services have traditionally been perceived as less innovative than product, raising questions about why service firms are less able to apply best innovation practices than their product counterparts, and whether the process of service innovation is well understood. Based on the case-study research performed on four product-service providers, our findings reveal that conventional product-oriented thinking about the nature of the innovation process does not extend to services. While product innovation begins with research, continues with design/development, and is followed by production and use respectively, the innovation of a service starts with the initial design, while the actual research is performed simultaneously to production and use of this 'first service', as the experiential nature of service implies that a significant part of the service is unknown in the initial design stage and that the first learning experience comes in production/use. The initial service delivery (production and use) tends to be less successful, which can be seen as the actual research investment that is to be recouped in the following service-delivery projects. The inverted design-research sequence, and simultaneity between initial service production/use and research, also results in a different risk profile of service innovation. Given that customers commit to pay for the 'innovative' service delivery after they are presented with an initial design, service innovators don't face the market risk that the products face,

but instead face a delivery risk of that first service. This paper discusses at length the implications of the reverse innovation process and associated risks, as well as managerial recommendations on how to capture learning, make the right investments and mitigate risk.

**Keywords:** Servitization, service innovation, service business models, outcome-based contracts.

## **Introduction**

Product firms are increasingly shifting from sales of products and services towards provision of service contracts that guarantee fulfillment of a certain outcome over a period of time (Baines & Lightfoot, 2013; Cusumano et al., 2015; Neely, 2008; Visnjic Kastalli & Van Looy, 2013). Consequently, product firms are challenged to change the logic of traditional product and service development process (Carlborg et al., 2014; Ostrom et al., 2015) and embark on the process that underpins development of outcome-based contracts (Kim et al., 2007; Ng et al., 2013). Pisano (1996) differentiated the 'learning-before-doing' from the 'learning-by-doing', since the later takes place after a process is transferred to a commercial environment. Thus, product firms need to shift from the traditional logic of stage-gate developmental process (Utterback, 1996) and embrace a more intensive customer- and service-oriented 'learning-by-doing' process (Alam & Perry, 2002; Matthing et al., 2004). We see a great analogy with respect to different problem-solving strategies as well as different key success factors (Storey et al., 2016) associated to the design and ongoing development of outcome-based contracts. This study seeks to investigate the core principles of and stages in the design and development of outcome-based contracts. Specifically, we focus on answering the following question: How do outcome providers design and develop their service and solution offerings?

## **Research Design**

The explanatory nature of our research questions prompted us to conduct a comparative multiple inductive case studies (Eisenhardt, 1989; Yin, 1994). We decided to study the outcome-based contracts in a context of industrial goods manufacturing, given that this context has been identified in literature as a setting where shift to outcomes occurs frequently and takes most advanced forms (Ng et al., 2009). We wanted to study 'advanced' or 'ambitious' outcome providers and for this purpose, we selected four renowned outcome-based contract providers. In the data collection phase, we triangulated data from semi-structured interviews with archival data, such as company reports, financial data and historical records (Kvale, 1996). We also used company visits and observations, including participation at the management meetings where the management would discuss progress on the outcome-based service design and development. Data analysis is based on a grounded theory approach (Glaser & Strauss, 1967).

## **Findings**

A key difference between traditional product and service development and outcome-based contracts is that in outcome-based contracts the provider makes an upfront commitment to the client regarding specific outcome requirements (Cusumano et al., 2015). This commitment is made at the stage of contracting/design. In essence, the commitment to deliver is a promise - initial consideration of how the service will be delivered has taken place, but operational experience of actually delivering the service is limited (Visnjic et al., 2014). A consequence of this set up is that the nature of uncertainty changes. On one hand, market uncertainty decreases in outcome-based contracts, as the product-service system is presold and the client is committed to pay for the outcome. On the other hand, delivery or operational uncertainty rises in outcome-based contracts as the provider practically commits to deliver the outcome of an unknown and unknowable product-service system (PSS) (Baines & Lightfoot, 2013). We argue that this shift from market uncertainty to operational/delivery uncertainty unlocks innovation of the product-service system (PSS), encouraging

companies to become more creative as they seek to enhance the ways in which they meet the contract requirements.

## Contribution

This paper contributes to the literature on service innovation for product firms by distilling how the design and development of outcome-based contracts changes the nature of uncertainty and drives different problem-solving strategies. The study shows that success of the outcome innovation hinges on identifying specific opportunities and challenges that appear at the stage of the outcome design as well as the outcome delivery.

## References

- Alam, I., & Perry, C. (2002). A customer-oriented new service development process. *Journal of Services Marketing*, 16(6), 515–534. <https://doi.org/10.1108/08876040210443391>
- Baines, T.S., & Lightfoot, H.W. (2013). *Made to Serve: How Manufacturers Can Compete through Servitization and Product Service Systems*. Hoboken, NJ: John Wiley & Sons.
- Carlborg, P., Kindström, D., & Kowalkowski, C. (2014). The evolution of service innovation research: a critical review and synthesis. *The Service Industries Journal*, 34(5), 373–398. <https://doi.org/10.1080/02642069.2013.780044>
- Cusumano, M.A., Kahl, S J., & Suarez, F.F. (2015). Services, industry evolution, and the competitive strategies of product firms. *Strategic Management Journal*, 36(4), 559–575. <https://doi.org/10.1002/smj.2235>
- Eisenhardt, K.M. (1989). Building Theories from Case Study Research. *Academy of Management Review*, 14(4), 532–550. <https://doi.org/10.5465/AMR.1989.4308385>

- Glaser, B.G., & Strauss, A. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago, IL: Aldine Publishing Co.
- Kim, S.-H., Cohen, M. a., & Netessine, S. (2007). Performance Contracting in After-Sales Service Supply Chains. *Management Science*, 53(12), 1843-1858.  
<https://doi.org/10.1287/mnsc.1070.0741>
- Kvale, S. (1996). *InterViews: An introduction to Qualitative Research Interviewing*. London: Sage Publications Ltd.
- Matthing, J., Sandén, B., & Edvardsson, B. (2004). New service development: learning from and with customers. *International Journal of Service Industry Management*, 15(5), 479-498.  
<https://doi.org/10.1108/09564230410564948>
- Neely, A. (2008). Exploring the financial consequences of the servitization of manufacturing. *Operations Management Research*, 1(2), 103–118. <https://doi.org/10.1007/s12063-009-0015-5>
- Ng, I.C.L., Ding, D.X., & Yip, N. (2013). Outcome-based contracts as new business model: The role of partnership and value-driven relational assets. *Industrial Marketing Management*, 42(5), 730-743. <https://doi.org/10.1016/j.indmarman.2013.05.009>
- Ng, I.C.L., Maull, R., & Yip, N. (2009). Outcome-based contracts as a driver for systems thinking and service-dominant logic in service science: Evidence from the defence industry. *European Management Journal*, 27(6), 377–387.  
<https://doi.org/10.1016/j.emj.2009.05.002>
- Ostrom, a.L., Parasuraman, A., Bowen, D.E., Patricio, L., & Voss, C. a. (2015). Service Research Priorities in a Rapidly Changing Context. *Journal of Service Research*, 18(2), 127–159.  
<https://doi.org/10.1177/1094670515576315>
- Pisano, G.P. (1996). Learning-before-doing in the development of new process technology. *Research Policy*, 25(7), 1097–1119.  
[https://doi.org/10.1016/S0048-7333\(96\)00896-7](https://doi.org/10.1016/S0048-7333(96)00896-7)
- Storey, C., Cankurtaran, P., Papastathopoulou, P., & Hultink, E.J. (2016). Success Factors for Service Innovation: A Meta-Analysis.

Journal of Product Innovation Management, n/a–n/a.  
<https://doi.org/10.1111/jpim.12307>

Utterback, J.M. (1996). *Mastering the Dynamics of Innovation: How Companies Can Seize Opportunities in the Face of Technological Change*. Harvard Business School Press Books.  
[https://doi.org/10.1016/S0024-6301\(97\)82840-3](https://doi.org/10.1016/S0024-6301(97)82840-3)

Visnjic Kastalli, I., & Van Looy, B. (2013). Servitization: Disentangling the impact of service business model innovation on manufacturing firm performance. *Journal of Operations Management*, 31(4), 169–  
<https://doi.org/10.1016/j.jom.2013.02.001>

Visnjic, I., Turunen, T., & Neely, A. (2014). *When Innovation Follows Promise - Why service innovation is different, and why that matters*. Cambridge, UK.

Yin, R.K. (1994). *Case Study Research: Design and Methods (Applied Social Research Methods)*. Newbury Park CA Sage (Vol. 5).

## **Developing Computational Methods to Examine Business Models**

**Glenn Parry<sup>1</sup>, Zena Wood<sup>2</sup>, David Walker<sup>3</sup>**

<sup>1</sup>University of the West of England

<sup>2</sup>University of Greenwich

<sup>3</sup>University of Exeter

### **Abstract**

Measuring the number of firms that can be categorised as pure manufacturers, servitized or pure service is of interest to servitization researchers, but the number of firms in each category at any given point in time provides only a cross-sectional viewpoint. Ideally the extent of servitization would be longitudinally measured to show trends in the data. However, approaches to the measurement of servitization are time consuming and reliant on databases which are not controlled by the individual firms of interest and may contain inaccuracies (Neely, 2009). This work was undertaken to develop a computation methodology to measure the diffusion of service and extent of servitization through the analysis of firm's webpages.

The work is focused on developing a method that allows business to be classified based on the business models that they operate. In this early work a basic framework for a business model (Parry & Tasker, 2014), was employed that includes three elements value proposition, realization of value in use and worth capture elements of a business. Servitization is taken as a change in these elements, from a focus on purely product towards inclusion of service in the value proposition.

The method involves three components.

- A **web scraping** component operates by taking a list of parameters and searching for them in a list of web pages; in



this case, we were interested if the firm's webpage states product, service or both.

- K-means **clustering** is a process by which data points are identified by recognising those with similar characteristics. In this case, the websites are data points and characteristics are the presence or absence of keywords on those pages. The aim is to find clusters that correspond to different service business models that can be defined with similar properties.
- **A taxonomy** can be used to classify a number of items according to a set of criteria. Previous methods to classify the nature of businesses have resulted in frameworks and canvases being produced that highlight the key concepts that can describe and differentiate between business models.

Each element of the analysis process operates as a "black box", requiring no interaction with the previous step, but relying simply on its output. This loosely coupled architecture provides for flexibility in the tool. As the tool develops more advanced replacements can easily be substituted.

Due to the short timescale of the project, the method was tested on a subset of websites. As a sample, the list of the West Country's 150 biggest businesses (Top 150 Businesses Guide 2014) as listed by Western Daily Press was chosen. Out of these 150 businesses, 109 had a website that could be scraped. For this initial work, which is proof of concept, the number of keywords was kept to a minimum; this initial set of keywords become the parameters for the web scraping (see table 1). The method allows for key words be expanded upon in later work and synonyms added.

When applying these parameters to the 109 webpages, 39 webpages returned a '0' for all parameters (i.e., none of the keywords were found). Table 2 shows the number of websites where each parameter had been found (i.e., a 1 was returned). The keywords 'product' and 'service' were registered on 39 and 37 websites respectively; 18 of these websites registered both 'product' and 'service' as a keyword.

<b>Concept</b>	<b>Question</b>	<b>Keywords</b>
Value proposition	What do we offer?	product/service
	What is the customer value?	review
Value Creation	What are the key activities?	Aim / purpose / function / objective / goal / mission
Worth Capture	What is the market value, revenue or cost structure?	Cost / price / subscription / monthly

Table 1. Parameters that would allow the different business models to be identified

<b>Parameter</b>	<b>No. of websites</b>
<b>Function</b>	0
<b>Monthly</b>	1
<b>Review</b>	1
<b>Goal</b>	2
<b>Mission</b>	3
<b>Purpose</b>	3
<b>Objective</b>	4
<b>Aim</b>	8
<b>Cost</b>	8
<b>Subscription</b>	11
<b>Price</b>	13
<b>Service</b>	37
<b>Product</b>	39

Table 2. Number of websites that registered each parameter

A taxonomy based on the output of the cluster classifies between whether the keywords product and service have been found either singularly (i.e., just product or service) or both. Further classification is possible according to whether the keyword price had been found followed by how many keywords have been identified. It is difficult to classify according to the remaining keywords since no patterns were evident from the clustering. This also emphasises the importance of adopting the correct keywords.

The proposed approach has demonstrated that computational analysis is feasible. Work is on-going to enhance the process as there are three potential benefits. First, the analysis is not limited to firms who meet the necessary qualification to appear in a database, such as geography, turnover, registration etc. Second, the data is assumed to be more reliable as it is created and disseminated by the firm themselves who have a direct commercial interest in the timeliness and accuracy of data. Third, by employing extensive computational methods the approach can be run at minimal time and cost to the research team. Thus, the work seeks to provide a regular output that may be of interest to the research community, tracking trends in the number of firms and any changes in activity from product to service over time.

There are limitations with the clustering method and website blocking our search engine, but mainly that the success of the whole process is largely driven by the presence of certain keywords in company websites. The use of synonyms is therefore problematic, as a company using a synonym to a parameter within their website will cause that parameter to be registered as not present. More advanced text analysis of the website content, for example including synonyms in parameter lists and considering words around found parameters, is being implemented.

**Keywords:** Servitization, Service diffusion, Computational method

## References

- Parry, G., & Tasker, P. (2014). Value and servitization; creating complex deployed responsive services? *Strategic Change*, 23, 303-315. <https://doi.org/10.1002/jsc.1978>
- Neely, A. (2009). Exploring the financial consequences of the servitization of manufacturing. *Operations Management Research*, 1. 103-118. <https://doi.org/10.1007/s12063-009-0015-5>
- Top 150 Businesses Guide 2014. South West Business. Accessed at: [http://www.southwestbusiness.co.uk/southwestbusiness-co.uk/img/Supplements/Top\\_150\\_Businesses\\_Guide\\_2014.pdf](http://www.southwestbusiness.co.uk/southwestbusiness-co.uk/img/Supplements/Top_150_Businesses_Guide_2014.pdf)

## **A Framework for Understanding Sustainable Value in Servitization**

**Carlos H. Hurtado Jaramillo<sup>1</sup>, Xavier Ferràs Hernandez<sup>1</sup>,  
Nuria Arimany-Serrat<sup>1</sup>, Dulcinea Mejjide Vidal<sup>2</sup>**

<sup>1</sup>Universitat de Vic I Central de Catalunya

<sup>2</sup>Aquambiente – Servicios para el Sector del Agua SAU

### **Abstract**

Study is centered in build an understanding framework in client-provider relationship that facilitates the value alignment of product-service system (PSS) in regards to sustainability; for this, a set of sustainability criterias were identified from a global to particular contexts. These criteria allow firms to drive value creation and its assessment in servitization process; thus, companies can enhance its business strategies by embracing co-creation approach. It mechanism helps servitization to define the enablers along value chain and, in consequence, to gain improvements in quality and performance.

**Keywords:** Servitization, SPSS, CRM, Customer Value, Sustainable Value.

## **Motivation**

Pressures on business to operate sustainably are increasing, the global business panorama is becoming more strict for companies in regards to its performance and influence exerted to achieve milestones, as a consequence, emerge business opportunities for those companies in the Business to Business (B2B) environment which takes the initiative to properly answer to the new business requirements; indeed, this scenario has oriented the market dynamics in order to look for more competitive, capable and responsible offerings regarding products and services delivered (UE-Commission, 2014). Even sustainability is a widespread known word, curiously, to clients and Firms is complicated understand it and process it completely because it is a complex, wide and therefore diffuse concept (Öberseder et al., 2013). It is even more remarkable to B2B environments, where it is not easy identify and measure sustainable value created by Firms (Chou et al., 2015). Many companies have a clear and compelling customer value proposition but fail to demonstrate clearly capabilities or benefits achieved by means of servitization; it happens because its value proposition are not correctly linked to the customer sustainable value perception (Biju et al., 2015). In this sense, integrations of customer sustainability perception into servitization process are seen in this study as mechanism to strengthen corporate links in supply and value chains because allows a better understanding of shared objectives/commitments into client-provider relationship, and undoubtedly, their interaction is becoming a critical factor to extract and create value (Kohtamäki & Partanen, 2016; Vezzoli et al., 2015); but to make it real is necessary to be aware how sustainability is perceived in a business environment, as well as, which criteria are common enablers into client-provider relationship; but to answer them, new questions emerge such as ¿How clients perceive sustainability-values? ¿Which and who are drivers along value chain? ¿How key factors can be enablers of value-creation process? In spite of the existence of a wide literature regarding sustainable PSS, some researchers have spotlighted the lack of alignment about what represent sustainability-values to clients and firms (Chou et al., 2015; Doualle et al., 2015). Similarly, there is not available a comprehensive model or understanding framework that allows to

identify how knowledge of value creation and management feeds sustainable PSS delivery processes. This is because many tools and guidelines have adopted several aspects as customer criterias regardless their particular interest; in consequence, they can skew, reduce or simply do not perceive the importance of value created; for this reason, the approach of that tools not satisfy completely neither firms nor client (Biju et al., 2015). Research was mainly based in B2B client interest and acceptance of sustainability-values offered by PSS solutions and how client-firms interactions can be aligned by means of shared values.

## Objective

The study was oriented to align sustainability-values criteria into client-providers relationship, in order to develop a method that can be used as tool to adjust, assess and validate the value proposition in sustainable product-service system (SPSS); in this sense, the main goal was focused in to build a framework for understanding sustainability-values into a servitization environment.

## Methodology

To gain a deeper knowledge about what represent “sustainability-values” into clients-providers relationship, it was adopted an inductive exploratory strategy through literature. therefore, to analyze client-provider sustainability perspectives were considered 3 different contexts (Agbar 2013; B2B clients interest; GRI, 2013) in order to align value perception, then, an initial set of criterias that could be used as understanding framework were sought (Figure 1). Posteriorly, it was planned a filtering of results by means of a group of Agbar’s clients. Finally, last criterias selected are going to be key drivers

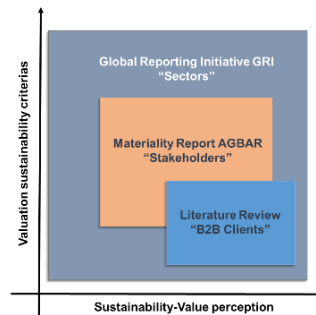
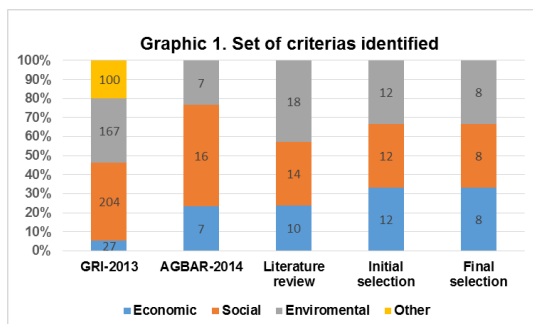


Figure 1. Methodology

(understanding framework) to adjust, articulate and assess the values delivered through servitization.

## Results/Findings



From a GRI's study, it was extracted a total of 498 major topics by 52 industrial sectors; from AGBAR's materiality report (2013-2014), it was identified a total of 30 subjects considered as most important for stakeholders; finally, from a selection of 54 articles, 39 aspects were pointed by having a particular interest to B2B environments. As outcome of filtering process emerged a total of 24 sustainable criteria (8 for each dimension) which embrace the common value perception (Graphic 1). Criteria were allocated in cause-effect matrices as a useful analytical tool to align, adjust and assess SPSS. Matrices have oriented to consider the key actors' perception and facilitate their joint participation in order to allocate them in the process axis, thus, cease to be simply passive elements (target group) to become in active elements (co-producers) into development, assessment and innovation on servitization processes, in order to pursuit common sustainability-milestones. In Agbar was found a set of 24 key criteria that play a role as enablers of client-agbar interaction environment, as well as to drivers which facilitates adjust, assessment and creation of sustainability-values in PSS.

## Implications and Conclusions

A central issue to create sustainability-values in servitization has strong relation with alignment of interests, so, firms must to fulfill lacks on client's value perception, and re-design the proposals to reinforce it. Accordingly, Servitization would drive to sustainability-value creation, if into a client-provider relationship have increased collaboration, efficiency and profitability. But, to do this real, B2B clients should be treated as producers, developers and innovators, emphasizing a shift to what they term as a sustainability value creation process. The link between sustainability-perspective and its value perception is a dependent factor by the evolution of the business scenario built through client-provider relationship in which has been highlighted the value creation logic, its effects and potential forms for co-development.

## References

- AGBAR Report. (2014). *Informe de materialidad del grupo Aguas de Barcelona*. [Online Accessed 12/03/2016]  
<http://www.desarrollosostenible.agbar.com/en/sd-report-2014/materiality>
- Biju, P.L., Shalij, P.R., & Prabhushankar, G.V. (2015). Evaluation of customer requirements and sustainability requirements through the application of fuzzy analytic hierarchy process. *Journal of Cleaner Production*. [Online Accessed 12/09/2015].  
<https://doi.org/10.1016/j.jclepro.2015.08.051>
- Chou, C.-J., Chen, C.-W., & Conley, C. (2015). Creating sustainable value through service offerings. *Research Technology Management*, 58(2), 48-55.
- Doualle, B., Medini, K., Boucher, X., & Laforest, V. (2015). Investigating Sustainability Assessment Methods of Product-service Systems. *Procedia CIRP*, 30, 2015, 161-166.  
<https://doi.org/10.1016/j.procir.2015.03.008>
- EU-Commission. (2014). *Final Report 2014: High Level Group on Business Services*. 1-169.



- GRI. (2013). Sustainability topics for sectors: What do stakeholders want to know. *Global Reporting Initiative*, Amsterdam, 1-156.
- Kohtamäki, M., & Partanen, J. (2016). Co-creating value from knowledge-intensive business services in manufacturing firms: The moderating role of relationship learning in supplier–customer interactions. *Journal of Business Research*, 69(7), 2498-2506. <https://doi.org/10.1016/j.jbusres.2016.02.019>
- Öberseder, M., Schlegelmilch, B.B., & Murphy, P.E. (2013). CSR practices and consumer perceptions. *Journal of Business Research*, 66(10), 1839-1851. <https://doi.org/10.1016/j.jbusres.2013.02.005>
- Vezzoli, C., Ceschin, F., Diehl, J.C., & Kohtala, C. (2015). New design challenges to widely implement ‘Sustainable Product–Service Systems’. *Journal of Cleaner Production*, 97, 1-12. <https://doi.org/10.1016/j.jclepro.2015.02.061>

## **(Re)organizing for Servitization: Insights from a Machine Tool Manufacturer**

**Bart Kamp**

Orkestra-Basque Institute of Competitiveness, Deusto Business School

### **Abstract**

This paper looks into the reorganization implications for a machine tool company that envisages broadening the service component in its value propositions to the market. It is structured as follows: after setting the scene on servitization, we review basics with regard to organizational change and development. Afterwards, we provide insights on the case study and action research methods that we applied to analyze the company in question, as well as highlights on the machine tool company of choice. Finally, we provide insights on the way that an internal change agent from the company in question appraises the situation as is, as well as its vision on how to adapt the organization to foster its readiness for servitization. The former perspectives form the outcome of the applied action research activities. The closing piece of the paper is formed by a series of managerial and research implications.

While other definitions on the concept of servitization exist (see e.g. Vandermerwe & Rada, 1988), in this paper we follow the approach to servitization by authors like Baines et al. (2009) who view it as the process through which a company develops the capacities to provide services and solutions that supplement their traditional product offerings. This implies both changes in the way that servitizing companies profile themselves in the market place (Mont, 2002), how they interrelate with those markets, and how they organize themselves to serve those markets (Sakao et al., 2009).

From our literature review, we derive that:

- Preparing a company for a servitization journey can be likened to an organizational change process.
- The likeliness that those in favour of change form a minority in an organization, who kind of have to educate, enlighten and emancipate the company, is considerable.
- The probability that realizing change is an iterative process, where those in favour of change have to infuse the overall mindset in the company with unconventional ideas in a gradual (action-reaction) manner, is foreseeable.

The former points provided guidance to our choices regarding research design and led us to adopt an action research approach (Bradford & Burke, 2005; Martincic & Dovey, 2011) to a machine tool company that is trying to move into service territory and where only a minority is eager to embrace change and shift from a product-centric logic to a PSS and service-dominant-logic. Over a period of ¾ of a year, 6 sparring sessions were held with the company in question allowing to characterize the situation “as is”, as well as possible roads ahead and points of intervention; both from an intra-organizational and inter-organizational (b2b) perspective. The process also served to address the role of Industry 4.0 concepts and ITC as enablers for servitization and how to harness such technological novelties through back-end and front-line arrangements in the organization.

In the end, the exchange of experiences and viewpoints, as well as the unveiling of different propensive and countervailing currents change vectors and factions inside the company, allowed drawing up a vision on how to prepare the company for servitization; a vision that ought to be acceptable for the organization in question at large.

The case at hand shows that moving into knowledge-intensive and client-specific services requires both a dual product/service approach to customer relationship management and a reorganization of staff and line functions (Oliva & Kallenberg, 2003; Tukker, 2004; Zomerdiijk & De Vries, 2007), linked together via transversal data analysis activities (Penttinen and Palmer, 2007).

**Keywords:** Servitization, organizational change, knowledge/data-intensive services.

## References

- Baines, T., Lightfoot, H., Peppard, J., Johnson, M., Tiwari, A., Shehab, E. & Swink, M. (2009). Towards an operations strategy for product-centric servitization, *International Journal of Operations and Production Management*, 29: 494–519.  
<https://doi.org/10.1108/01443570910953603>
- Bradford, D. & W. Burke (Eds.). (2005). *Reinventing Organization Development*, S. Fr.: Pfeiffer.
- Martincic, A. & Dovey, K. (2011). Action research as a knowledge generating change methodology, *Int. J. Learning and Intellectual Capital*, 8: 108–122. <https://doi.org/10.1504/IJLIC.2011.037362>
- Oliva, R. & Kallenberg, R. (2003). Managing the transition from products to services, *International Journal of Service Industry Management*, 14, 160-172.  
<https://doi.org/10.1108/09564230310474138>
- Penttinen, E., & Palmer, J. (2007). Improving firm positioning through enhanced offerings and buyer–seller relationships. *Industrial Marketing Management*, 36(5), 552–564.  
<https://doi.org/10.1016/j.indmarman.2006.02.005>
- Sakao, T., Ölundh, G. & Matzen, D. (2009). Framing research for service orientation through PSS approaches. *Journal of Manufacturing Technology Management*, 20, 754-778.  
<https://doi.org/10.1108/17410380910961082>
- Tukker, A. (2004). Eight types of product-service systems: Eight ways to sustainability? Experiences from SusProNet. *Business Strategy and the Environment*, 13, 246–260.  
<https://doi.org/10.1002/bse.414>
- Vandermerwe, S., & Rada, J. (1988). Servitization of business, *European Management Journal*, 6, 314-24.  
[https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)
- Zomerdijk, L. & De Vries, J. (2007). Structuring front office and back office work in service delivery systems, *International J. of Operations and Production Management*, 27, 108–131.  
<https://doi.org/10.1108/01443570710714565>



## **The Implementation of Servitization Strategy by Spanish Manufacturers**

**Helen Castellón-Orozco, Natalia Jaría-Chacón, Laura Guitart-Tarrés**

University of Barcelona

### **Abstract**

The increasing importance in the relevance of services in business activity for many years is notable. This is an area of growing interest among professionals, policy makers and academics. However, little is known about the adoption of servitization by Spanish manufacturers. This paper analyzes the adoption of servitization strategy on Spanish manufacturing industries, its dependence or non-dependence on variables such as the size of the organizations, or the perceived stability of a market, and its relation to the parameters that determine the business performance. For that, this paper studies a large number of Spanish manufacturing firms. Those companies are selected taking into account statistical, operation and economics data from the past years (from 2013 to 2016). Most of these manufacturers offer services, but some use them as a basis for competitive strategy. Spanish manufacturing companies are experiencing increasing competition for manufactures of developing countries, with substantially lower production costs. This has increased initiatives manufacturers on competition, differentiate and add more value to their offers in order to remain competitive. The servitization represents a strategy for Spanish manufacturers, who by expanding its business model to include services and, in turn, ultimately provide solutions. Despite the evolution of different servitization strategies between Spanish manufacturers, the concept has not yet been studied in depth. For this reason, this paper analyze the evolution of servitization strategy through an empirical approach.

**Keywords:** Servitization, manufacturing firms, strategy, Spain.

## **Introduction**

Servitization is now widely recognized as the process of creating value by adding services to products (Vandermerwe & Rada, *Servitization of business: adding value by adding services*, 1988). The term of servitization was first mentioned in the late 1980's, since then, the term has been studied by different researchers. This strategy, can strengthen relationships with customers, also, to create new revenue streams and rugged. Finally, to set a high barriers for competitors (Baines et al., 2009, 2011). Manufacturing companies are now, from selling products coupled, with a few essential services. It could be said that servitization is a second add-value to products. Moreover, servitization process is transforming manufacturing companies in more similar services entities. Companies are aware that the provision of services is often more complex than the manufacture of products, which require different approaches to develop. This process is not exclusive from service companies, since many manufacturing companies are combining their products with associated services, offering in order to add value to their products (Arias-Aranda & Jaría-Chacón, 2014).

## **Methodology**

The quantitative analysis is based on Spanish manufacturing companies, data were obtained from SABI (Iberian Balance Sheet Analysis System) database. The mentioned database contains 2 million Spanish companies and more than 500,000 Portuguese as well. The initial research involved to identify all companies with primary or secondary US SIC codes in the range 10-39 inclusive, financial data, control from company size, numbers and operating workers among others. Due to the innate complexity of services, it is difficult to find an accurate and measurable indicator for manufacturing servitization that is both convenient and universally applicable. Taking into consideration of the fact that only a handful of firms have transformed completely from selling products to selling solutions, while the majority of them are still at the stage of

increasing services into the portfolio, the service quantity (the number of service types) as the indicator for servitization (the independent variable) is chosen, which is also a well-accepted indicator adopted by scholars such as the work of Neely (Exploring The Financial Consequences of the Servitization Of Manufacturing, 2008) and Chen (An empirical test of the effect of manufacturing service-orientation on corporate performance: A comparison between Chinese and American enterprises, 2010).

This analysis resulted in the identification of 1,456.709 companies. The second research, involved to add a company size filter; the result reduces the database to 1000 companies. Attempts to analyze the evolution of servitization, its dependence or no-dependence on variables such as the size of the organizations or the perceived stability of a market and its relation to parameters that determine business performance. A comprehensive study of the literature, was conducted initially to provide a theoretical basis for this research by the previous selection of manufacturing firm. Later, databases and public information for each company was analyzed by FACTIVA database. The later database, is a business information and research tool owned by Dow Jones & Company. It is the world's leading source of premium news, data and insight, helping today's professionals make better business decisions faster through its powerful search.

Different statistical analysis allow to observe the state and process of adoption made by servitization strategy on Spanish manufacturing companies. FACTIVA and SABI database, and the information contained in companies web pages, are the main sources to this research in order to achieve the aim.



## References

- Arias-Aranda, D., & Jaría-Chacón, N. (2014). Servitization and value creation: deploying to mobile device platforms. *Dyna*, 89(5), 482.
- Baines, T., Lightfoot, H., & Smart, P. (2011). An exploration of vertical integrations and facilities practices within servitized operations. *Proceedings of the European Operations Management Association Conference, Cambridge, UK*.
- Baines, T., Lightfoot, H., Peppard, J., Johnson, M., Tiwari, A., Shehab, E., & Swink, M. (2009). Towards an operations strategy for product-centric servitization. *International Journal of Operations & Production Management*, 29(5), 494-519.  
<https://doi.org/10.1108/01443570910953603>
- Chen, J. X. (2010). An empirical test of the effect of manufacturing service-orientation on corporate performance: A comparison between Chinese and American enterprises. *Journal of Business Economics*, (4), 33-41.
- Neely, A. (2008). Exploring the Financial Consequences of the Servitization of Manufacturing. *Operations Management Research*, 1(2). <https://doi.org/10.1007/s12063-009-0015-5>
- Vandermerwe, S. & Rada, J. (1988). Servitization of business: adding value by adding services. *European Management Journal*, 6(4), 314-324. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)

# **A Tale of Contend and Conquest: Leveraging Business Models to Grow ICT Ecosystems – Envelopment Lessons Learned from Google and Yahoo**

**Christopher Müller<sup>1</sup>, Björn Kijl<sup>2</sup>, Ivanka Visnjic<sup>3</sup>**

<sup>1</sup>Copenhagen Business School

<sup>2</sup>University of Twente

<sup>3</sup>ESADE Business School

## **Abstract**

How do large platform companies in digital markets innovate their business model over time? The pace of growth and innovation of digital platform players such as Google, Facebook or Amazon astonishes communities of researchers and practitioners likewise. This paper aims to shed light on the growth trajectories of large players in two-sided ICT markets in which envelopment based business model innovation is assumed to play a vital role. Earlier research identified three types of envelopment bestirring such unique industry dynamics yet leaving it unclear how different types of envelopment may be utilised in order to effectuate the augmentation of their respective ICT ecosystem. Neither the existence nor the effectiveness of long-term envelopment schemes have previously been scholarly investigated. Scrutinising envelopment patterns of Google and Yahoo by analysing their newly launched products and services has uncovered an envelopment typology comprising two opposing strategies that result in success and failure, respectively. This typology enabled us to derive a matrix that helps to illustrate the envelopment of Google and Yahoo as well as to provide strategic directives for envelopment based business model innovation in digital markets.

**Keywords:** Digital business models, platform markets, envelopment, ICT ecosystems.

## **Introduction**

Internet and digital technology enables the emergence of novel, increasingly platform based, digitalized business models (Amit & Zott, 2001; Myrthianos et al., 2014; Teece, 2010). These business models provide the rationale for how organisations create, deliver, and capture value, and as such can help organizations to grow and become more competitive and profitable (Vendrell-Herrero et al., 2014). In today's digital economy large platform companies increasingly attempt to enter each other's market in order to increase competitiveness, growth and profitability as can be observed by examining recent product & service introductions of Apple, Google, Amazon and Facebook who initially operated in separate markets (search, online stores, access to content, operating systems, social networks and hardware). Now, all of these afore mentioned actors compete with each other through supra-platforms, ceasing traditional market boundaries (Visnjic & Cennamo, 2013).

## **Platform Markets, Envelopment and Business Models**

Prevailing literature largely takes on an economic or technical point of view on platform markets. Guidance on how platform firms can assume and sustain industry leadership stems from Gawer & Cusumano (2002, 2008, 2014) who identify 'coring' and 'tipping' as two principal strategies to become a platform leader and four strategic 'levers' to sustain such a leadership position. Eisenmann et al. (2006, 2010, 2011), on the other hand, introduce envelopment as a mechanism to grow ICT ecosystems. Theoretically, it needs to be clarified to what extent these concepts, in particular tipping and envelopment, overlap or complement each other.

Empirically, the underlying logic of value creation – when and how do firms decide to enter which markets – needs to be investigated. The articulation of the value proposition, i.e. the value created for users by the offering based on the technology, is regarded as one of

the functions of a business model focusing on value creation whereas other functions, like describing the position within the value network or estimating the cost structure focus more on value delivery and value capture (Chesbrough & Rosenbloom, 2002).

In an attempt to gain first, exploratory insights into how business model innovation shapes platform envelopment this paper is motivated to generate answers to the following research question: How do digital platform companies innovate their value proposition over time in the pursuit of revenue growth? The central case of this paper will be elaborated upon by examining the evolution of value propositions of Google and Yahoo.

### **Methodology**

In an attempt to uncover how ICT platform players innovate their business models in a highly dynamic market two inductive case studies and structured content analysis were conducted. In particular, press releases of Google Inc. and Yahoo Inc. were screened for the introduction of new products and new product versions.

The process of envelopment constitutes a specific form of business model innovation by changing the logic of value creation. Hence, one has to analyse the evolution of value propositions in order to isolate envelopment strategies. In order to account for value creation by Google and Yahoo a total of 138 and 76 new product introductions as well as new versions of existing products brought to market in the period from 2006 to 2011 were analysed respectively. Necessary information was extracted from 1791 blog posts and 96 press releases regarding Google and 685 blog posts as well as 920 press releases from Yahoo.

Extracted value propositions were analysed according to the ICT layer model from Fransman (2010). Zahavie and Lavie's (2009) software product classification was used to identify and retrace the corporations' envelopment into different markets.

## **Envelopment Matrix**

The observations made enabled the creation of a generic envelopment matrix that can be utilised to extract generalizable instructions for platform industry participants based on an identification of four envelopment stages: 1) Home Market & Adjacent Envelopment (strengthening core capabilities and market presence), 2) Core Envelopment (envelopment of complements and weak substitutes), 3) New Adjacent & Supra-Platform Envelopment (exploiting markets that come into functional proximity due to previous envelopment efforts and eventually establish supra-platforms), and 4) Unrelated Envelopment (experimenting with unrelated envelopment in order to explore new markets).

Yahoo started with unrelated envelopment before actually coring into a home market (dispersed strategy) whereas Google went through all phases mentioned afore before engaging in unrelated envelopment (focused strategy). During the period researched Google managed to substantially increase its profitability with return on capital rates between 15 and 20%. Yahoo, on the other hand, could not show any significant revenue growth and showed return on capital rates between 3 and 9%.

## **Contribution**

The results instruct scholars and practitioners in the application of coring, tipping and envelopment. Coring seems crucial in the early phase of a new platform. However, standalone platforms appear to be a relic from the past and it is tipping that assumes a pivotal role in growing ICT ecosystems. Arguing that tipping and envelopment are strongly related concepts this paper contributes a differentiation between three forms of tipping and instrumentalises the envelopment typology of Eisenmann et al. (2010) to illustrate that a focused strategy (type I&II) leads to sustainable growth and supra-platform envelopment whereas a dispersed strategy (unrelated, type III envelopment) may be pursued additionally in an experimental fashion under circumstance of strong market presence to leverage associated benefits of functionality and user-bases. The 'winner-takes-it-all' rationale to 'get big fast' cannot be assumed

blindly; how to get big (fast) is deemed to be of greater importance. This is reflected in the envelopment matrix which provides strategic advice and direction on how to pursue growth via envelopment balancing envelopment scope and market presence.

## References

- Amit, R. & Zott C. (2001). Value creation in e-business. *Strategic Management Journal*, 22(6-7), 493-520.  
<https://doi.org/10.1002/smj.187>
- Chesbrough & Rosenbloom (2001). The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529-555.
- Eisenmann, T. R., Parker, G., & Van Alstyne, M.W. (2010). Platform Envelopment. *SSRN Working Paper Series*.  
<https://doi.org/10.2139/ssrn.1496336>
- Eisenmann, T., Parker, G., & Van Alstyne, M.W. (2006). Strategies for two-sided markets. *Harvard Business Review*, 84(10), 92.
- Eisenmann, T., Parker, G., & Van Alstyne, M.W. (2011). Platform Envelopment. *Strategic Management Journal*, 32(12), 1270-1285.  
<https://doi.org/10.1002/smj.935>
- Fransman, M. (2010). *The New ICT Ecosystem: Implications for Policy and Regulation*. Cambridge: Cambridge University Press.  
<https://doi.org/10.1017/CBO9780511676130>
- Gawer, A., & Cusumano, M. A. (2002). *Platform leadership: How Intel, Microsoft, and Cisco drive industry innovation*. Boston, MA: Harvard Business School Press.
- Gawer, A., & Cusumano, M. A. (2008). How companies become platform leaders. *MIT Sloan management review*, 49(2), 28.
- Gawer, A., & Cusumano, M. A. (2014). Industry platforms and ecosystem innovation. *The Journal of Product Innovation Management*, 31(3), 417-433. <https://doi.org/10.1111/jpim.12105>

- Myrthianos V, Vendrell-Herrero F, Parry G, Bustinza O.F. (2014). Firm profitability during the servitization process in the music industry. *Strategic Change*, 23(5-6), 317-328. <https://doi.org/10.1002/jsc.1979>
- Teece D J. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43(2), 172-194. <https://doi.org/10.1016/j.lrp.2009.07.003>
- Vendrell-Herrero F, Parry G, Bustinza O.F, O'Regan N. (2014). Servitization as a driver for organizational change. *Strategic Change*, 23(5-6), 279-285. <https://doi.org/10.1002/jsc.1976>
- Visnjic, I., & Cennamo, C. (2013). The gang of four: acquaintances, friends or foes? Towards an integrated perspective on platform competition. *ESADE Business School Research Paper*, 245. <https://doi.org/10.2139/ssrn.2264869>
- Zahavi, T., Lavie, D. (2009). *Software product classification*. Austin TA: University of Texas at Austin, Red McCombs School of Business.

## **A Novel Interpretation of Service Management in the Perspective of Lean Production**

**Stefano Biazzo, Alberto Maria de Crescenzo, Marcos Dieste, Roberto Panizzolo**

University of Padova

### **Abstract**

The culture and the operational methods of service management (SM) have become a formidable competitive weapon even for manufacturing firms. The term "service factory" has been proposed for identifying that particular integration of products and services, achieved by the excellent manufacturing firm. On the other hand, Lean Production (LP) emerged as one of the most popular topics in business and manufacturing literature. Since the cardinal work of the International Motor Vehicle Program at MIT several companies have gained superior performances by adopting the Toyota Production System. Lean production is seen as the third step in a historical progression, which took industry from the age of the craftsman through the methods of mass production and into an era that combined the best of both. Starting from the analysis of literature related to both the concept of service management and LP practices, the authors propose a novel interpretation of Service Management in the perspective of Lean Production. In the paper a matrix-based model is developed which highlights the relationships between the main practices that characterize Lean production with four distinctive features of Service Management. The model shows how the traditional characteristics of service factory underlie the functioning of Lean Production firms.

**Keywords:** Service management, service factory, lean production, lean practices.



## **Service Factory and Lean Production**

Robert Chase has emphasized the importance of combining product and service aspects in a competitive environment. He has proposed the term *service factory* to identify the integration between products and services (Chase & Erikson,1988; Chase & Garvin,1989; Chase,1990; Chase,1991). As stated by Chase, the Service Factory can be seen as the final stage of an evolutionary process of a manufacturing firm: from *traditional*, to *flexible* and therefore *service factory*. Chase and Erikson (1988) proposed the concept of the service factory in which manufacturing personnel and the factory itself share a service mission that extends beyond the basics of reliable, flexible and cost-effective production. In this approach, the company offers those products/services that represent the solution of customer's "problem". Nowadays, the SM assumes a key role in firm's competitive strategies.

On the other hand, Lean Production (LP) has emerged as one of the most popular topics in business and manufacturing literature and is seen as the third step in an historical progression, which took industry from the age of the craftsman through the methods of mass production and into an era that combined the best of both. This philosophy, developed by Toyota in 50s and 60s, is grounded to the concept of "doing more with less" and increasing the value deliverance to the costumers. To implement Lean Production principles, several lean tools and practices have been developed (Bonavia & Marin, 2006; Doolen & Hacker, 2005; Karlsson & Åhlström, 1996; Panizzolo, 1998; Shah & Ward, 2003).

## **A Model for analysing the relationships between Lean Production and Service Management**

Starting from the analysis of literature related to both the concept of Service Factory and Lean Production practices, a matrix-based model (see Figure 1) has been developed which highlights the relationships between the main practices that characterize Lean Production with four distinctive features of Service Management.

The rows of the matrix contain 38 key Lean Production practices. They are grouped into five different areas of intervention: Process &

Equipment, Manufacturing Planning and Control, Human Resources, Supplier Relationships, Customer Relationships.

The columns of the matrix comprise some distinctive characteristics of Service Factory. Among the many characteristics of the service firm, as described in the literature (Bowen et al., 1990; Chase, 1988; Chase, 1991; Grönroos, 1994; Heskett et al., 1990; Vandermerwe and Rada, 1988), the authors have selected four as being of particular importance to manufacturing firms: customer involvement in the production process, simultaneous production and consumption, service package and human resources as crucial assets.

The central thesis of this paper is that the characteristics of Service Factory that have just been presented, are not only distinguishing features of the service factory, but can be seen to be a part of the cultural heritage of manufacturing firms that have implemented Lean Production practices. The authors propose the conceptual framework of Figure 1 that shows how the traditional characteristics of service factory underlie the functioning of Lean Production firms.

In the matrix of Figure 1 we have indicated with a "x" if the Lean practice of the *i*-th row is correlated with the Service Factory characteristic of the *j*-th column. Due to the lack of space, we cannot describe in detail the matrix. In the following we provide only some examples of how Lean Production practices support a Service Factory approach.

In Lean Production manufacturing is regulated through a pull logic. Downstream consumption primes upstream production, rendering production and consumption almost simultaneous. The logic that links the upstream and downstream centres is, thus, that of service: in fact, production is based on exactly what, how much and when it is required. In order to guarantee that this will function, full responsibility, and consequently the necessary authority, must be delegated to workers to manage the operations.

As regards, customer involvement in the production process, LP practices as pull flow control, early information on customer needs and open orders are finalized to enhance the level of customer participation. Moreover, it emerges that practices as set up

reduction, JIT deliveries and rigorous preventive maintenance strengthen the simultaneous production and consumption. Finally, practices such as multifunctional workers, expansion of autonomy and competence of sales network are closely related to human resource as a fundamental asset.

Service Management Characteristics	CUSTOMER INVOLVEMENT IN THE PRODUCTION	SIMULTANEOUS PRODUCTION AND CONSUMPTION	SERVICE PACKAGE	HUMAN RESOURCES AS FUNDAMENTAL ASSET
<b>Lean Production Practices</b>				
<b>Process &amp; Equipment</b>				
set up reduction		X		
flow lines		X		
rigorous preventive maintenance		X		
error proof equipment				X
progressive use of new process technologies			X	
process capability		X		
order and cleanliness in the plant	X			X
continuous reduction of cycle time		X	X	
<b>Manufacturing Planning &amp; Control</b>				
levelled production		X		
synchronised scheduling	X	X	X	
mixed model scheduling	X	X	X	
under-capacity scheduling		X	X	
small lot sizing		X		
visual control of the shop floor				X
overlapped production		X		
pull flow control	X			
<b>Human Resources</b>				
multifunctional workers				X
expansion of autonomy and responsibility				X
few levels of management		X		X
worker involvement in continuous quality improvement programmes	X		X	X
work time flexibility		X		
team decision making			X	X
worker training				X
<b>Supplier Relationships</b>				
JIT deliveries		X	X	
open orders	X		X	
quality at the source			X	
early information exchange on production plans	X	X		
supplier involvement in quality improvement programmes	X		X	
reduction of number of sources and distances		X		
long-term contracts	X		X	
total cost supplier evaluation	X		X	
<b>Customer Relationships</b>				
reliable and prompt deliveries		X	X	
commercial actions to stabilize demand	X	X		
capability and competence of sales network			X	X
early information on customer needs	X	X		
flexibility on meeting customer requirements	X		X	
service-enhanced product			X	
customer involvement in quality programmes	X		X	

Table 1. LP practices and SM characteristics relationship analysis

## References

- Blackburn, R., Rosen, B., (1993). Total quality and human resources management: Lessons learned from Baldrige award-winning companies, *Academy of Management Executive*, 7(3), 49-66. <https://doi.org/10.5465/ame.1993.9411302347>
- Bonavia, T., & Marin, J. A. (2006). An empirical study of lean production in the ceramic tile industry in Spain. *International Journal of Operations & Production Management*, 26(5), 505-531. <https://doi.org/10.1108/01443570610659883>
- Bowen, D. E., Chase, R. B. and Cummings T. G. (1990) *Service Management Effectiveness*, San Francisco
- Chase, R. B. (1990). *Dimensioning the Service Factory*, Ettlie, J E. Manufacturing Strategy, Dordrecht, Kluwer Academic Publishers. [https://doi.org/10.1007/978-94-009-2189-4\\_18](https://doi.org/10.1007/978-94-009-2189-4_18)
- Chase, R. B. and Erikson, W. J. (1988). The Service Factory, *the Academy of Management Executive*, 2(3), 191-196.
- Chase, R. B. and Garvin, D. A. (1989). The Service Factory, *Harvard Business Review*, 67(4), 61-69.
- Chase, R.B., (1991) The Service Factory: A Future Vision, *International Journal of Service Industry Management*, 2(3), 60-70. <https://doi.org/10.1108/09564239110007139>
- Doolen, T. L., Hacker, M. E. (2005). A review of lean assessment in organizations: an exploratory study of lean practices by electronics manufacturers. *Journal of Manufacturing systems*, 24(1), 55. [https://doi.org/10.1016/S0278-6125\(05\)80007-X](https://doi.org/10.1016/S0278-6125(05)80007-X)
- Grönroos, C. (1994). From scientific management to service management: a management perspective for the age of service competition. *International Journal of Service Industry Management*, 5(1), 5-20. <https://doi.org/10.1108/09564239410051885>
- Hall, R.W., (1983). *Zero Inventories*. Dow Jones Irwin, Homewood, IL.
- Harper, D., (1985). Zero Inventories poses questions for Distributors, *Industrial Distribution*, 74(3), 49-52.

- Karlsson, C., & Åhlström, P. (1996). Assessing changes towards lean production. *International Journal of Operations & Production Management*, 16(2), 24-41.  
<https://doi.org/10.1108/01443579610109820>
- Levitt, T. (1972), Production Line Approach to Service, *Harvard Business Review*, 50(5),41–52.
- Panizzolo, R. (1998). Applying the lessons learned from 27 lean manufacturers: The relevance of relationships management. *International journal of production economics*, 55(3), 223-240.  
[https://doi.org/10.1016/S0925-5273\(98\)00066-8](https://doi.org/10.1016/S0925-5273(98)00066-8)
- Richard B. Chase, (1991). The Service Factory: A Future Vision, *International Journal of Service Industry Management*, 2(3), 60-70.  
<https://doi.org/10.1108/09564239110007139>
- Schonberger, R.J., (1990). *Building a Chain of Customers*. The Free Press, New York.
- Shah, R., Ward, P. T. (2003). Lean manufacturing: context, practice bundles, and performance. *Journal of operations management*, 21(2), 129-149. [https://doi.org/10.1016/S0272-6963\(02\)00108-0](https://doi.org/10.1016/S0272-6963(02)00108-0)
- Suzaki, K., (1987). *The New Manufacturing Challenge: Techniques for Continuous Improvement*. Free Press, New York.
- Vandermerwe, S., Rada, J. (1988). Servitization of business: adding value by adding services. *European Management Journal*, 6(4), 314-324. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)
- Womack, J.P., Jones D.T. and Ross, D., (1990) *The machine that Changed the World*. Rawson and Associates, New York.

## **The Simplification of Ecosystems to Support Management Decision Making**

**Shaun West<sup>1</sup>, Michelle Kuenzli<sup>1</sup>, Dominik Kujawski<sup>1</sup>, Zied M. Ouertani<sup>2</sup>, Christopher Ganz<sup>3</sup>**

<sup>1</sup>Luzern University of Applied Science and Art

<sup>2</sup>ABB AG (Forschungszentrum)

<sup>3</sup>ABB Technology Ltd

### **Abstract**

This paper describes the simplification process of an ecosystem and has relevance to manufacturing firms with complicated supply chains where the product provided is installed into an end user's operations. The manufacturing firm in such a situation has to understand complex ecosystems to provide valuable solutions to the end-user. Based on three publicly available use cases. Service Design tools were used for analysis to describe the value exchange within the IOT deployed ecosystems. The results suggest that value flow between key players in the ecosystems need to be understood for digital transformation and the change in mind-set is required to fully use its potential.

**Keywords:** Servitization, ecosystem, customer value, business decision making.

## **Purpose**

The purpose of this paper is to describe the process of ecosystem simplification that has been developed to help managers to understand the 'spaghetti' of transactions that exist within complex ecosystems typical of the industrial equipment manufacturer. These ecosystems are often complex due size of the firm, the range of products and services, markets it serves and the countries in which it is active. These complexities make it ever necessary for its business leaders to be able to understand and navigate their way through the ecosystem to deliver customer value. In the context of Internet of Things (IoT), understanding customer value creation within the ecosystem and who provides what is an important aspect for discussion.

## **Methodology**

Three use cases were identified where there is an existing ecosystem and a disruptive IOT-based entrant. The use cases were taken from publicly available materials, including websites, trade-shows and brochures. The analysis was undertaken using Service Design tools to help describe the ecosystem and the value exchanges for three different use cases. Customer personas were used to describe relationships between actors. The use of the customer journey mapping and situational analysis was integrated into the exchanges to better understand the customer value. An adapted version of Osterwalder's Value Proposition Canvas (Osterwalder & Pigneur, 2014) describes the value and its delivery. The lessons were then compared with the ecosystem and finally used to create a simplified model to navigate complex ecosystems.

## **Findings**

The cross-cases analysis identified the following:

- Ecosystems – the new entrants understood the existing ecosystem and the value exchanges.
- Value creation and capture – often bypasses the traditional ecosystems.

- Service design –effectively putting the customer in the centre and reengineering the process to maximize customer value.
- Digitization – this supported the decision-making process and the customer value creation.

By comparing the cross-case analysis a layered visualization of the ecosystem - and key actors were identified. The empathy mapping identified what was important for each of the key actors. Timing was shown to affect the relationships and the information/know-how each actor possessed. The customer journey mapping supported the situation and job-to-be-done analysis by understanding the value provided at each stage of the journey. Finally, the customer value proposition was built, initially on the customer side before moving to the supplier side.

A simplified five-step model in Figure 1 was constructed to assist managers to understand the customer value. From a previous study a number of one-sided value exchanges had been identified in the ecosystem. The key actors in the ecosystem and the value exchange between each identified. Empathy maps were then created for the key actors. Job-to-be-done/ situation analysis provided the input to show that given different situations the needs could be quite different.

One customer journey and one customer value proposition were required per situation/job-to-be-done to describe the end customer value proposition. This is in line with the cross-case analysis where the situation was found to have a major impact on the customer value proposition.



Figure 1. Simplified five-step model to assist managers to understand customer value in the ecosystem



## Main conclusions

The IoT elements are already available today and companies were using them in service delivery, in particular the key conclusions identified in this study were:

- Value flows between key actors within the ecosystem need to be understood.
- The traditional timeline of the value chain is no longer valid from the viewpoint of the ecosystem.
- Situational analysis is important for value creation in the ecosystem.
- The customer journey is supportive to understanding how the IOT can deliver customer value.
- A change in mind-set is required to fully benefit from the digital transformation.
- Visual design thinking can support customer value proposition development.

## References

- Adner, R., & Kapoor, R. (2010). Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations. *Strategic Management Journal*, 31(3), 306-333. <https://doi.org/10.1002/smj.821>
- Ben Letaifa, S., & Reynoso, J. (2015). Toward a service ecosystem perspective at the base of the pyramid. *Journal of Service Management*, 26(5), 684-705. <https://doi.org/10.1108/JOSM-04-2015-0133>
- Chandler, J.D., & Lusch, R.F. (2015). Service systems: A broadened framework and research agenda on value propositions, engagement, and service experience. *Journal of Service Research*, 18(1), 6-22. <https://doi.org/10.1177/1094670514537709>

- Hui, G. (2014). How the Internet of Things Changes Business Models. *Harvard Business Review*. Retrieved from <https://hbr.org/2014/07/how-the-internet-of-things-changes-business-models>
- Iansity, M., & Lakhani, K.R. (2014). Digital ubiquity: How connections, sensors, and data are revolutionizing business. *Harvard Business Review*, 92(11), 91-99.
- Ng, I.C.L., Nudurupati, S.S., & Tasker, P. (2010). Value co-creation in the delivery of outcome-based contracts for business-to-business services. *Working Paper*. Retrieved from <https://ore.exeter.ac.uk/repository/handle/10036/99859>
- Osterwalder, A., & Pigneur, Y. (2014) *Value proposition design: How to create products and services customers want*. London: Wiley.
- Porter, M., & Heppelmann, J. (2014). Managing the Internet of Things: How smart, connected products are changing the competitive landscape. *Harvard Business Review*, 92(11), 64-88
- West, S., Kujawski, D., & Gaiardelli, P. (2015). Can machine-to-machine communications be used to improve customer experience in a service environment? *Paper presented at the 4th International Conference on Business Servitization (ICBS 2015)*. Madrid, SP: King Juan Carlos University.



## **Providing Services to Boost Goods Exports: Theory and Evidence**

**Andrea Ariu<sup>1</sup>, Florian Mayneris<sup>2</sup>, Mathieu Parenti<sup>3</sup>**

<sup>1</sup>University of Geneva

<sup>2</sup>Université Catholique de Louvain

<sup>3</sup>Université Libre de Bruxelles

### **Abstract**

The largest manufacturing exporters are typically Bi-Exporters: firms that export goods and services. This paper shows that this is because by associating services to their goods exports, Bi-Exporters can sell at higher price and sell more conditional on prices than standard exporters. We develop a theoretical model of oligopolistic competition featuring heterogeneous firms where goods and services are one-way essential complements: the product is essential to consumption while the service is optional. By means of a detailed dataset on goods and service exports for Belgium and a novel instrumental strategy, we test the model predictions and find that by associating services to goods firms can sell 30% higher values. This is both because of an increase in prices and an increase in the quantities exported conditional on prices. Therefore, services act as a growth determinant for trade in goods.

**Keywords:** Servitization, bi-exporting, one-way complementarity.

## **Introduction and Preliminary Results**

Firms do not produce only goods or services anymore. Worldwide, at least 30% of manufacturing firms produce also services (Neely et al., 2011) and this trend is growing over time (Crozet & Millet, 2014). This phenomenon is not related just to domestic production, but also to international trade. Almost 8% of exporters provide both goods and services in their export markets (Ariu, 2016) and besides being few, they are present in all sectors (Breinlich & Ciruscuolo, 2011; Kelle, 2012) and they account for around 30% of total exports for both goods and services (Ariu, 2016). Despite the increasing importance of this phenomenon, little is known about the reason why some firms decide to engage in the production and exports of both goods and services.

In this paper, we focus on the international dimension of this trend and we show that the best goods exporters are Bi-Exporters, i.e. firms that export both goods and services together. On the one hand, this could merely be that only firms that are successful enough can also provide services. On the other hand, it can be that by selling services together with goods firms can export more goods. This is possible only if services can provide a value added to the good, i.e. if services are complementary to goods. We show both theoretically and empirically that the second mechanism is the most important: by associating services to goods firms can export 30% higher goods values. This is both thanks to an increase in prices and an increase in quantities conditional on prices. Therefore, services are a channel of expansion for goods exporters. At the same time, Bi-Exporting is a vector of vertical differentiation for trade in goods. More specifically, Bi-Exporters can export higher goods quantities (conditional on prices) thanks to the fact that services increase the perceived quality of the exported goods.

## **Methods**

We start our analysis by describing the data and outlining some stylized facts about firms and flows that are going to guide our theoretical model. We make use of detailed trade data for both goods and services from the National Bank of Belgium (NBB

henceforth) recording exports at the firm, product (service) and destination country level for the period 1995-2005. For goods exports, we have information on both the values and quantities shipped. We can thus analyze the frequency and magnitude of Bi-Exporting and compare the characteristics and performances of Bi-Exporters with respect to normal goods exporters. Based on this descriptive evidence, we develop a model of oligopolistic competition in markets where goods and services are one-way essential complements. This means that the service itself does not raise the utility of the consumer unless it is associated to a good. In this way, the good represents the essential component while the service is optional. Firms choose to export its good alone or become a Bi-Exporter knowing that the two products are imperfect substitutes in the eyes of consumers and by considering the costs and benefits of adding the service to the good. The model predicts that Bi-Exporters export more than normal goods exporters thanks to higher prices and quantities. Thanks to an instrumental strategy based on a control function approach, we show that by adding services to their goods exports, Bi-Exporters export on average more than normal goods exporters. This is because they can increase the prices of their exported products and sell more conditional on prices.

## References

- Ariu, A. (2016). Services versus goods trade: A firm-level comparison. *Review of World Economics (Weltwirtschaftliches Archiv)*, 152(1), 19-41. <https://doi.org/10.1007/s10290-015-0230-0>
- Breinlich, H., & Criscuolo, C. (2011). International trade in services: A portrait of importers and exporters. *Journal of International Economics*, 84(2), 188-206. <https://doi.org/10.1016/j.jinteco.2011.03.006>
- Crozet, M., & Milet, E. (2014). The servitization of French manufacturing firms. *Working Papers 2014-10*. Paris, FR: CEPII research center.

Kelle, M. (2012). Crossing industrial borders: German manufacturers as services exporters. *Development Working Papers 329*. Milan: Centro Studi Luca d'Agliano, University of Milano.

Neely, A., Benedetinni, O., & Visnjic, I. (2011). The servitization of manufacturing: Further evidence. *Paper presented at the 18th european operations management association conference*. Cambridge, UK.

## **Technological Upgrading and KIBs Partnerships: Evidence from Veneto Region**

**Oscar F. Bustinza<sup>1</sup>, Serafino Pitingaro<sup>2</sup>, Giovanna Guzzo<sup>2</sup>,  
Arianna Pitarello<sup>2</sup>, Ferran Vendrell-Herrero<sup>3</sup>**

<sup>1</sup>University of Granada

<sup>2</sup>Unioncamere Veneto

<sup>3</sup>University of Birmingham

### **Abstract**

Servitization is related to those new service business models enabled by technology capabilities and customers' understanding. Therefore, servitization implies a continuous upgrading of innovation that requires complex decision-making processes related to make-or-buy decisions. The purpose of this study is to identify the critical determinants for choosing a (current or potential) technological service provider in service innovation processes. Veneto region is the unit of analysis, and the method undertaken is based on descriptive statistics from primary data collection. After surveying a representative sample of Veneto manufacturing firms, the descriptive analysis sheds light on the critical variables underlying technological upgrading for overcoming servitization transition. Results highlight the importance of service's provider specific knowledge for establishing long term partnerships, clarifying the role of Knowledge-Intensive Based Services (KIBs) providers as enablers of service innovations within a region.

**Keywords:** Servitization, KIBs, strategic partnership, regional analysis.



## **Introduction**

Share of manufacturing in Growth Domestic Product (GDP) has decreased in the European Union (EU-15) from 21.3% in the 1960 to 13.3% in 2013 whereas, on the other hand, service economy has grown (Aquilante et al., 2016). However, most of the digital services are embedded in a product platform (Bustinza et al., 2015a; Vendrell-Herrero et al., 2016b); and therefore, open an opportunity to product firms to implement 'pay per use' or 'outcome base' business models. Importantly, those business models raise the revenues from service provision that occurs throughout the entire product manufactured life cycle.

In this competitive landscape an important fraction of manufacturing firms in developed economies are moving downstream in the supply chain following a strategy known as servitization (Wise & Baumgartner, 1999). Service infusion in manufacturing goods is a source of product differentiation, being used for crucial competitive reasons as locking out competitors and locking in customers (Vandermerwe & Rada, 1988). As an illustrative example of servitization strategies, Tesla delivers product innovation through electric vehicles and moves downstream to provide service innovation through technological enabled services as auto parking (those tech-services are free updated by the firm during the entire life cycle of the car).

When manufacturing firms begin the servitization journey, critical organizational change is needed (Vendrell-Herrero et al., 2014; Baines et al., 2016). Basically, firms need to take make-or-buy decisions considering external vs. internal service innovation development. In this point, firm's size is important. Big manufacturing firms mostly choose internal development, being slightly higher than 10% the percentage of those firms that outsourced service innovation development (Bustinza et al., 2015b). In the other side, small and medium enterprises (SMEs) opt for external partnership through KIBs (Lafuente et al., 2016). That is one of the reasons for the EU-15 to adopt policies aimed at stimulating the generation of KIBs businesses (European Commission, 2012) based on the necessity of developing strong knowledge-based sectors (De Propriis, 2016).

## **Research Context and Methodology**

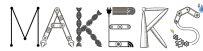
This research is focused in the analysis of the role of KIBs as strategic service providers for manufacturing SMEs. To understand the determinants for choosing a technological service provider a study is developed in the NUTS-2 Veneto region (Italy). This region has a significant number of KIBs that can provide services relevant for advanced manufacturing development (De Marchi, V., & Grandinetti, 2012; Minello, 2014; Unioncamere Veneto, 2014). The descriptive analysis uses a survey about KIBs and level of servitization within the SMEs manufactures of Veneto region. Questions include firm size and demographics, and the determinants for establishing (current or potential) partnership with specialist service providers.

## **Preliminary Results and Implications for Practice and Policy**

Preliminary results suggest that geographical proximity, service cost, service's provider specific knowledge and perceived risk are some of the critical determinants for choosing partnership with KIBs. The results can help to establish regional initiatives and policies for advanced manufacturing development in EU regions as well as support managerial decision making. For policy makers, whilst our results reinforce territorial frameworks based on agglomeration strategies such as clusters and districts, our evidence also seem to indicate that clusters and districts should move to a multi-sectoral setting in which product and service firms need to be integrated. For practitioners, our study supports the idea that product SMEs need to protect their competitive position through long term partnerships with specialized service and digital technology providers.

## Acknowledgements

This research was supported by the European Commission under the Horizon 2020 Marie Skłodowska-Curie Actions project “MAKERS: Smart Manufacturing for EU Growth and Prosperity” with grant agreement number 691192.



## References

- Aquilante, T., Bustinza Sánchez, O.F., & Vendrell-Herrero, F. (2016). *Services in European manufacturing: Servinomics explained*. Retrieved from <http://bruegel.org/2016/03/services-in-european-manufacturing-servinomics-explained/>
- Baines, T., Bigdeli, A.Z., Bustinza, O.F., Guang-Shi, V., Baldwin, J., & Ridgway, K. (2016). Servitization: Revisiting the state-of-the-art and research priorities. *International Journal of Operations & Production Management, In Press*.
- Bustinza-Sanchez, O.F., Parry, G., Vendrell-Herrero, F., & Myrthianos, V. (2015a). Link channels or how to enhance upstream-downstream relations in servitized contexts. *DYNA*, 90(6).
- Bustinza, O.F., Bigdeli, A.Z., Baines, T., & Elliot, C. (2015b). Servitization and competitive advantage: The importance of organizational structure and value chain position. *Research-Technology Management*, 58(5), 53-60. <https://doi.org/10.5437/08956308X5805354>
- De Marchi, V., & Grandinetti, R. (2012). Le imprese di servizi ad alto contenuto di conoscenza: Dal contesto locale al mercato internazionale, in Unioncamere Veneto, *Veneto Internazionale. Rapporto annuale 2012*, Venezia.
- De Propris, L. (2016). A fourth industrial revolution is powering the rise of smart manufacturing. UK: The Conversation Trust. Retrieved from <https://theconversation.com/a-fourth-industrial-revolution-is-powering-the-rise-of-smart-manufacturing-57753>

- European Commission (2012). Knowledge-intensive (business) services in Europe. Luxembourg, Publications Office of the European Union (doi: 10.2777/59168).
- Lafuente, E., Vaillant, Y., & Vendrell-Herrero, F. (2016). Give me a KIBS: Exploring the virtuous circle connecting knowledge-intensive services and sustainable new manufacturing businesses. *International Journal of Production Economics, In Press*. <https://doi.org/10.1016/j.ijpe.2016.12.006>
- Minello A. (2014). Il ruolo dei servizi ad alta intensità di conoscenza in tempo di crisi: struttura ed evoluzione dei KIBS in Veneto, in Unioncamere Veneto, *La situazione economica del Veneto. Rapporto annuale 2014*, Venezia.
- Unioncamere Veneto (2014). Veneto 2014 economic report summary. Retrieved from: [http://unioncamereveneto.it/userfiles/ID172\\_\\_Anteprima2014\\_english.pdf](http://unioncamereveneto.it/userfiles/ID172__Anteprima2014_english.pdf)
- Vandermerwe, S., & Rada, J. (1988). Servitization of business: Adding value by adding services. *European Management Journal*, 6(4), 314-324. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)
- Vendrell-Herrero, F., Parry, G., Bustinza, O.F., & O'Regan, N. (2014). Servitization as a driver for organizational change. *Strategic Change*, 23(5-6), 279-285. <https://doi.org/10.1002/jsc.1976>
- Vendrell-Herrero, F., Bustinza, O.F., Parry, G., & Georgantzis, N. (2016). Servitization, digitization and supply chain interdependency. *Industrial Marketing Management, In Press*. <https://doi.org/10.1016/j.indmarman.2016.06.013>
- Wise, R., & Baumgartner, P. (1999). Go downstream: The new profit imperative in manufacturing. *Harvard Business Review*, 77(5), 133-141.



## **Digitization and Servitization to Attend Diversity: The Covirán Case**

**Francisco Sánchez-Montesinos<sup>1</sup>, Daniel Aranda<sup>2</sup>, Oscar F. Bustinza<sup>2</sup>, Marco Opazo-Basaez<sup>2</sup>**

<sup>1</sup>Complutense University of Madrid

<sup>2</sup>University of Granada

### **Abstract**

Nowadays, digitization affects all industrial sectors. The development of new technologies together with the expansion of social networks and the increasing involvement of consumers in the retailing process are introducing deep changes within the industries. The digitization strategy in the case of companies in the food retailers sector follows a similar pattern. For food retailers in the form of cooperatives, digitization is even more relevant when those cooperatives intend to serve and fulfill demands in very diverse environments. This study analyzes a case of digitization and servitization in a large cooperative in Spain in the field of food industry retailers. The study follows a qualitative approach performed at the Covirán Cooperative. This methodology allowed us to study the history of the company, its products and services and their status and value in the supply chain. Most sector companies are pursuing digitization and servitización, however Covirán is positioned in a very encouraging starting point when implementing digitization across the entire company. This study demonstrates how Covirán Cooperative is improving service to partners and customers by digitizing all its processes. The high diversity covered by Covirán fosters them to distribute all available information for making business decisions to satisfy the request of that diversity.

**Keywords:** Digitalization, servitization, cooperative, food retailers.

## Introduction

Digitization is much more than a mere accumulation and transference of data across the firm. The effects of digitization go beyond the economy itself and affect society as a whole. It can be considered from the product perspective or from the value creation perspective. From the first perspective, digitization allows the transition from products to services and from the second perspective digitization allows the passage-way to two-way models of value creation models (Rainer Schmidt et al., 2015).

Digitization affects all sectors, but in a different way to food retailers sector. Changing habits of consumers has pushed the industry to a new paradigm of consumption in which the shopping experience is almost as important as the product. The development of new technologies, expansion of social networks and the increasing digitization of consumers to the retailers are facing profound changes within the sector. The buying preferences of consumers have changed and gone from a passive consumer to a co-producer consumer value (Parry et al., 2012), and all these changes have made necessary the digitization of operations and the organizations themselves (Akram, 2012). But even more critical is the digitization strategy in the case of companies in the sector whose configuration is that of a cooperative, as is the case we studied. The cooperative meets the needs of two customers: final consumer and retail partners. It is on this latter where the addition of services to the own supply of products becomes crucial. It is in the context of the management of the supply chain (see Figure 1) where improved communication and information sharing between partners of the chain occupy a key position (Reiner & Trcka, 2004).

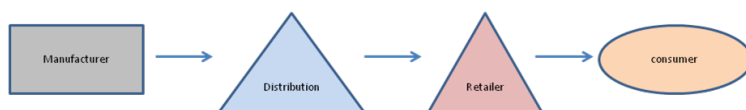


Figure 1. Retailer Supply Chain

In the scientific literature, there is a shortage of specific studies that include food cooperatives retailers. Our goal is to study a case of digitization and servitization within a large cooperative in Spain in the field of food industry retailers according to its specific objectives in improving the gaps between service partners and the final consumers.

Covirán is a cooperative born in Granada in the sixties. Currently it runs over 2,500 supermarkets in Spain and Portugal being top 10 of the large national distribution by turnover. One of the major objectives of the digitization of Covirán is to improve service partner and final customer relationships providing an appropriate assortment in the different supermarkets while foreseeing demand through what the company calls "buying missions ". Covirán since its inception in 1961 it has gone from being a central purchasing body to become a value provider to its partners as a service center. Covirán takes advantage of the fact that there may be certain homogeneity in relation to the products served by the big distributors to small retail stores but when focusing on specific services it is possible to benefit from competitive advantages (Bustinza et al., 2015).

### **Research Context and Methodology**

The study follows a qualitative approach on the Covirán Cooperative practices. This methodology allowed us to study the case considering the history of the company, its institutional setting, its products and services and its value chain and supply. Data collection was performed in the discussion session of the Coviran strategic plan in 2016 and in the sessions of in-depth interviews with the CEO and the members of the Steering Committee.

We find ourselves in a market dominated by large companies in a mostly non-cooperative sector. In our case Covirán owners remain as partners. Partners are mostly small family businesses of about 100 square meters that operate as local supermarkets in the cities and rural areas. Covirán is implemented in more than 1,300 municipalities in which over 75% are rural.



## Findings

Most of the sector companies are pursuing digitization and servitización, however, Covirán is at an encouraging starting point in this process when considering digitization as being transverse to the company and affecting the entire value chain, as described in figure 2.

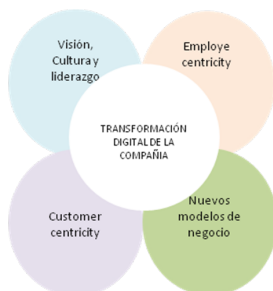


Figure 2. Transversal digitalization process (Covirán)

For the elements described in Fig. 2 it would be necessary to add another substantive element as is the need for a technological momentum of the organization through its own resources or alliances with expert companies in these technological developments as in the case of Covirán and its partner Microsoft. Technology is a key to carry out the implementation of product services (Vendrell-Herrero et al., 2016a, 2016b).

## Conclusions

This work demonstrates how Covirán Cooperative is improving its service to partners and end customers through the digitization of the company in all processes of the supply chain and value chain. The diversity of the retailer Covirán is very large and that is why so Covirán must use all the information available through various information sources such as ERP, CRM, etc. for business decisions purposes. Covirán intends to ensure, at lower cost, adequate supply to meet the growing retail and consumer preferences variables by

demand planning systems. For all that it is necessary not only to process information but to strengthen the communication link between providers, partners, employees and customers, increasing the motivation of human resources of the company in this direction, and driving a rapid transformation of the organization digital reality thereby achieving a competitive advantage over its competitors by improving their service.

## References

- Akram, A. (2012). Towards servitization in the age of digital innovation: A case from vehicle industry. In *The 35th Information Systems Research Seminar in Scandinavia (IRIS 2012)*. Sigtuna, Sweden.
- Bustinza, O.F., Bigdeli, A.Z., Baines, T., & Elliot, C. (2015). Servitization and competitive advantage: The importance of organizational structure and value chain position. *Research-Technology Management*, 58(5), 53-60.  
<https://doi.org/10.5437/08956308x5805354>
- Bustinza, O.F., Parry, G., & Vendrell-Herrero, F. (2013). Supply and demand chain management: The effect of adding services to product offerings. *Supply Chain Management: An International Journal*, 18(6), 618-629. <https://doi.org/10.1108/SCM-05-2013-0149>
- Parry, G., Bustinza, O., & Vendrell-Herrero, F. (2012). Servitisation and value co-production in the UK music industry: An empirical study of consumer attitudes. *International Journal of Production Economics*, 135(1), 320-332.  
<https://doi.org/10.1016/j.ijpe.2011.08.006>
- Reiner, G., & Trcka, M. (2004). Customized supply chain design: Problems and alternatives for a production company in the food industry. A simulation based analysis. *International Journal of Production Economics*, 89(2), 217-229.  
[https://doi.org/10.1016/S0925-5273\(03\)00054-9](https://doi.org/10.1016/S0925-5273(03)00054-9)

- Schmidt, R., Zimmermann, A., Möhring, M., Nurcan, S., Keller, B., & Bär, F. (2015). Digitization: Perspectives for conceptualization. In *European Conference on Service-Oriented and Cloud Computing* (pp. 263-275). London: Springer International Publishing.
- Vendrell-Herrero, F., Myrthianos, V., Parry, G., & Bustinza, O.F. (2016a). Digital dark matter within product service systems. *Competitiveness Review, In Press*.
- Vendrell-Herrero, F., Bustinza, O.F., Parry, G., & Georgantzis, N. (2016b). Servitization, digitization and supply chain interdependency. *Industrial Marketing Management, In Press*.  
<https://doi.org/10.1016/j.indmarman.2016.06.013>

## **The Potential of Public Procurement of Innovation to Trigger Servitization**

**María Concepción Peñate-Valentín, Ángeles Pereira, María del Carmen Sánchez-Carreira, Xavier Vence**

Universidade de Santiago de Compostela

### **Abstract**

Public Procurement of Innovation (PPI) has a significant potential to spur innovation of products and services. In this sense, PPI could become a relevant instrument to trigger servitization. The size of public sector as consumer and the effects of PPI in the economy are key factors of this potential. Services are a small part of PPI, however the number of cases is increasing in health and environment. The aim of this paper is to study the potential of PPI to trigger the servitization of companies based on their ability to provide eco-efficient services. We carry out a literature review and identify the main linkages between PPI and servitization and analyse a set of successful cases in Spain.

**Keywords:** Public procurement of innovation, servitization, result oriented business-model.

## **Introduction**

The aim of this paper is to analyse the role of public procurement of innovation (PPI onwards) to trigger servitization, focusing on opportunities and challenges of this policy tool. It also attempts to identify key factors for increasing effectiveness of this tool to promote eco-efficient services, through successful cases from Spain and other European Union countries.

Traditionally, the literature on innovation policies has not paid enough attention to the demand-side. The EU shows a growing interest on the demand-side, due to the perception of relative failures in the prevalent supply-side policies (Zelenblanic, 2015). Nowadays, the European Union is driving the two aspects, but it is necessary to make progress in the coordination of both elements.

The relevant role of public sector as consumer is showed by its dimension (18% GDP in EU in 2014), and its indirect effects on economic activities. Its impact differs by country and activity. The driving role of public sector as consumer is crucial in innovative goods and services. Public sector acts as key player through different ways: as first user, improving the final product; and as launch market. Public procurement is relevant for innovation in health, environment, education, and ICT fields. Its importance is larger in services than in industrial activities, differing from the traditional focus of innovation on industrial activities, set aside services.

PPI can drive innovation through several ways (Van Meerveld et al., 2015), such as developing new markets through demand-pull. Result oriented servitization is the most innovative way of providing services to satisfy the customer's needs. It may consist of pay per use schemes, activity management and functional results (Tukker, 2004).

One important dimension of servitization is its potential to greening the value proposal. The idea behind servitization is that services may contribute to dematerialization and being designed to produce resource and energy savings (Goedkoop et al., 1999; White et al., 1999). From this viewpoint, public policy could play a role in promoting these companies as a tool to promote eco-innovative services.

## **Methodology**

The role of PPI for triggering servitization is analysed from a theoretical perspective. The paper also provides successful cases that show its effectiveness to achieve specific results. One example of result oriented servitization are ESCOs (Energy Saving Companies), companies that provide energy efficient solutions. Successful experiences are relevant for promoting innovation in services through PPI (Stern et al., 2011).

## **Results**

PPI is more focused on goods and technologies than on services. The number of cases is increasing recently, mainly in environment and health sectors. PPI of innovative services has lower visibility than products (Stern et al., 2011). One main reason is the difficulty of public sector to identify innovative services.

Servitization offers several advantages to the consumer, such as the possibility to get a customised solution, to avoid acquisition and maintenance costs as well as transaction costs (Halme et al., 2007).

In addition, it may contribute to achieve environmental gains. The shift to servitization implies that the provider extends its responsibility for the product-service performance along the whole product life-cycle. There are several situations where the provider finds incentives to improve the eco-efficiency of the value proposal through/ recuperation activities, eco-efficient design and other mechanisms. In particular, this happens when the product is a source of costs rather than benefits and when it has a significant end-of-life value (White et al, 1999).

Companies usually find several barriers that hinder their shift to servitization, among others, the reticence to internalise use related costs, an extended time to get to the market, uncertainty about the cash flow and difficulties to balance environmental objectives and customer satisfaction (Mont, 2002).

Through public procurement, public sector may promote these eco-innovative services and address some barriers that hinder the shift to servitization in the market.

The effectiveness of PPI to trigger servitization depends on the institutional framework. Some obstacles refer to management of the PPI process from public sector; asymmetric information (Valovirta, 2015; Van Meerveld et al., 2015), demonstration of the value of new services; and dependence on provider. Setting an adequate institutional framework is necessary to reduce these barriers and trigger servitization.

## References

- Goedkoop, M.J., Van Halen, C.J.G., Riele, H.R.M., & Rommens, P.J.M. (1999). Product-Service systems: Ecological and economic basics. *Report for the Dutch ministries of Environment (VROM) and Economic Affairs (EZ)*. The Hague. Retrieved from [http://teclim.ufba.br/jsf/indicadores/holan Product Service Systems main report.pdf](http://teclim.ufba.br/jsf/indicadores/holan%20Product%20Service%20Systems%20main%20report.pdf)
- Halme, M., Anttonen, M., Kuisma, M., Kontoniemi, N., & Heino, E. (2007). Business models for material efficiency services: Conceptualization and application. *Ecological Economics*, 63(1), 126-137. <https://doi.org/10.1016/j.ecolecon.2006.10.003>
- Mont, O. (2002). Drivers and barriers for shifting towards more service-oriented businesses : Analysis of the PSS field and contributions from Sweden. *The Journal of Sustainable Product Design*, 2, 89-103. <https://doi.org/10.1023/B:JSPD.0000031027.49545.2b>
- Stern, P., Hellman, J., Rijnders-Nagle, M., Terrell, M., & Åström, T. (2011). *How public procurement can stimulate innovative services*. Stockholm: Nordic Innovation Centre (NICE).
- Tukker, A. (2004). Eight types of product–service system: Eight ways to sustainability? Experiences from SusProNet. *Business Strategy and the Environment*, 13(4), 246-260. <https://doi.org/10.1002/bse.414>

- Valovirta, V. (2015). Building capability for public procurement of innovation: A conceptualization. In C. Edquist, N. Vonortas, J. Zabala-Iturriagoitia, & J. Edler (Ed.), *Public Procurement for Innovation* (pp. 65-87). Cheltenham: Edward Elgar Publishing. <https://doi.org/10.4337/9781783471898.00009>
- Van Meerveld, H., Nauta, J., & Whyles, G. (2015). Forward commitment procurement and its effects in perceived risks in PPI projects. In C. Edquist, N. Vonortas, J. Zabala-Iturriagoitia, & J. Edler (Ed.), *Public Procurement for Innovation* (pp. 110-147). Cheltenham: Edward Elgar Publishing. <https://doi.org/10.4337/9781783471898.00011>
- White, A.L., Stoughton, M., & Feng, L. (1999). *Servicizing: The quiet transition to extended product responsibility*. Retrieved from <http://infohouse.p2ric.org/ref/17/16433.pdf>
- Zelenbatic, D. (2015). Fostering innovation through innovation friendly procurement practices: A case study of Danish local government procurement. *Innovation: The European Journal of Social Science Research*, 28(3), 261-281. <https://doi.org/10.1080/13511610.2015.1056724>





## **The Potential of the Internet of Things and Data Analytics for Creating New Servitized Business Models**

**Carlos Galera Zarco, Marco Opazo Basáez**

University of Granada

### **Abstract**

Over the last years Servitization is proving to be an increasingly accepted strategy developing new business models and gaining competitive advantage in diverse business sectors under the premise of adding value to a company's offering through the inclusion of services and intangible goods (Vandemerwe & Rada, 1988). At present, we are witnessing the emergence of the Internet of Things (IoT); a technological (r)evolution characterized by sensing capabilities and interconnectivity between different technologies that merge together in order to form an ecosystem where the real and digital world meet and are continuously in symbiotic interaction (Borgia, 2014), a technological breakthrough with the capacity to redefine business models and competitive boundaries across industries (Galera-Zarco et al., 2015)

It's adoption for servitization strategies should be meticulously studied, principally because IoT will represent an essential tool for the successful implementation of new service strategies, which from now and on will be increasingly connected to the IoT technological development (Helo et al., 2017). By adopting IoT, companies will overcome the management of internal processes, allowing the optimization of their overall functions (e.g. Supply Chain Management functions) as never experienced before. But above all, IoT will empower companies with the possibility of knowing in-real-time both, the performance of their products and the use that their customers make/give of/to them (Lee & Lee, 2015). The economic and strategic potential of the information flows generated through IoT adoption can be considered as unprecedented, opening a new dimension hitherto unknown for the provision of highly customized

services, developed according to the particular customers' preferences and/or behavioral patterns (Bustinza et al., 2013; Opresnik & Taisch, 2015).

For that purpose, the use of new technology advancements such as Cloud computing infrastructure and its conjunction with Big data analytics plays an essential role storing, managing, filtering, and analyzing vast streams of information that will configure new servitized business strategies and business models (Hashem et al., 2015). The new technological integration opens a real chance to offer an innovative range of services, highly adapted to meet unique customer's needs and requirements. To this aim, it becomes preponderant for companies across different productive sectors to evaluate the advantages and disadvantages of this technological leap and be prepared to adapt their business models to these new technological advancements (Vendrell-Herrero et al., 2016).

Firstly, this article aims to provide key technological elements and features for creating service strategies based on advanced services and structured under the adoption of new and disruptive technologies. Secondly, it proposes a conceptual framework for implementing service-oriented business models embracing these technological advancements. Finally, through a multiple-case study it attempts to test the proposed framework and provide insights about how the Internet of Things and new technological advancements impact and promote the development of a servitization strategy.

**Keywords:** Advanced services, Internet of Things, Cloud computing, Big data, Strategic management.

## References

- Borgia, E. (2014). The Internet of Things vision: Key features, applications and open issues. *Computer Communications*, 54, 1-31. <https://doi.org/10.1016/j.comcom.2014.09.008>
- Bustinza, O.F., Parry, G., & Vendrell-Herrero, F. (2013). Supply and demand chain management: The effect of adding services to product offerings. *Supply Chain Management: An International Journal*, 18(6), 618-629. <https://doi.org/10.1108/SCM-05-2013-0149>
- Galera-Zarco, C., Bustinza, O., & Perez, V.F. (2016). Adding value: How to develop a servitisation strategy in civil engineering. *Proceedings of the Institution of Civil Engineers-Civil Engineering*, 169(1), 35-40. <https://doi.org/10.1680/jcien.15.00023>
- Hashem, I.A.T., Yaqoob, I., Anuar, N.B., Mokhtar, S., Gani, A., & Khan, S.U. (2015). The rise of “big data” on cloud computing: Review and open research issues. *Information Systems*, 47, 98-115. <https://doi.org/10.1016/j.is.2014.07.006>
- Helo, P., Gunasekaran, A., & Rymaszewska, A. (2017). Role of technology in servitization. *Designing and Managing Industrial Product-Service Systems*, 57-71. [https://doi.org/10.1007/978-3-319-40430-1\\_8](https://doi.org/10.1007/978-3-319-40430-1_8)
- Lee, I., & Lee, K. (2015). The Internet of Things (IoT): Applications, investments, and challenges for enterprises. *Business Horizons*, 58(4), 431-440. <https://doi.org/10.1016/j.bushor.2015.03.008>
- Opresnik, D., & Taisch, M. (2015). The value of Big Data in servitization. *International Journal of Production Economics*, 165, 174-184. <https://doi.org/10.1016/j.ijpe.2014.12.036>
- Vandermerwe, S., & Rada, J. (1989). Servitization of business: adding value by adding services. *European Management Journal*, 6(4), 314-324. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)
- Vendrell-Herrero, F., Bustinza, O.F., Parry, G., & Georgantzis, N. (2016). Servitization, digitization and supply chain interdependency. *Industrial Marketing Management*, In Press. <https://doi.org/10.1016/j.indmarman.2016.06.013>



## **Upgrading of Manufacturing SME to New Technologies through Service Embedding**

**Mario Volpe, Giancarlo Corò, Dejan Pecic**

University of Venice Ca' Foscari

### **Abstract**

We investigate the use of new technologies by SME's in a manufacturing specialized region, Regione Veneto in Italy. Through a direct survey, using a statistical significant sample, we try first to understand how new technologies, in particular additive manufacturing, are known by companies in different sectors. Then we try to assess if and how they are used into the productive process. The theoretical hypothesis is that local system of production could better use local skills and local externalities through the use of digital technologies, useful to implement new business models. A first empirical evidence shows the heterogeneity among different sectors. In general, additive manufacturing seems to be only partially integrated in the internal productive process. We also investigate whether the new technologies come into SMEs as a service bought from external service specialized companies. The paper also tries to suggest potential policy to induce companies in traditional sectors to upgrade their sector technological frontier.

**Keywords:** New technologies, additive manufacturing, SMEs.



## **Servitization: Synthesis and Direction Forward**

**Willem Harmsen<sup>1</sup>, Rodrigo Rabetino<sup>1</sup>, Marko Kohtamäki<sup>1,2</sup>**

<sup>1</sup>University of Vaasa

<sup>2</sup>Luleå University of Technology

### **Abstract**

This literature review makes an attempt to synthesize existing research on servitization and integrated solutions. Using an exhaustive and systematic methodology, a total of 180 articles are identified as relevant and of high impact in the field. An integrative framework of servitization is developed and the antecedents, processual elements, outcomes, and the linkages between them are identified and discussed. The results show that servitization is complex and that it is contingent on a multitude of different elements. These range from industry-related and customer-related factors, to organizational configuration, product elements, service culture, employee characteristics and several others. The article finds however, that the literature on servitization is often shallow in nature and that research needs to take steps in the right direction in order to deepen our understanding of the process by focusing on more specific research questions and by applying different methodologies and theories. Both general research considerations as well as specific suggestions for research are proposed here. The article concludes by offering some theoretical and managerial implications.

**Keywords:** Servitization, integrated solutions, product-service systems, service infusion, product-service integration, literature review.



## **Objective**

Current research on servitization can be characterized as heterogeneous in nature (Lightfoot et al., 2013), and so far, there have been a few common deficiencies in literature reviews on servitization: some have failed to use a systematic methodology (e.g. Pawar et al., 2009), others are holistic and broad (e.g. Velamuri et al., 2011), and others yet focus only on a narrow subset of research (e.g. Eloranta & Turunen, 2015; Rabetino et al., 2015). This review, in contrast, examines and discerns the servitization process as a whole. By exploring the different linkages that exist between influencing factors identified by previous research, the article aims at developing an integrative framework that sheds light on how the servitization process actually operates. The key interlinkages between factors in servitization are explored, something that constitutes an essential part of processual research (Pettigrew, 1997). Moreover, after the development of the integrative framework, the article evaluates the state of the current literature and provides suggestions for future work in the field.

## **Methodology**

Following Tranfield et al. (2003), this review takes on a systematic, objective and critical methodology to identify the relevant literature. This study considers the research field of servitization as a whole (i.e. no topics are excluded a priori), but the sample is subject to a set of objective criteria for exclusion/inclusion. It should be noted that previous reviews have identified several communities of researchers writing on product-service integration from different perspectives and from different backgrounds (e.g. environmental, IT, and service science scholars) (cf. Lightfoot et al., 2013). Studies from these perspectives were not deliberately excluded, but because the current review takes on a management or organizational perspective, the research design and keywords were focused to a larger extent on this. As a first step, only peer-reviewed journals with publications in English published before 2016 were considered. Second, two different databases, Scopus and Web of Science, were utilized. Third, two different sets of keywords were created based on previous research and previous literature reviews / bibliometric

analyses. This was done in order to 'tier' the search into two different layers and to ensure substantive relevance of the sample. Fourthly, after conducting the search in the databases, the articles that were returned were checked for basic relevance to the theme of servitization in general by looking at the journal, the title, and the subject area. Next, as step number five, the articles were required to have been published in journals with an impact factor of 1.00 or higher (as measured by Thomson Reuters Journal Citation Reports [JCR]). Finally, the abstracts of the remaining articles were read in order to see if the articles were related to the servitization process or context, or to the outcomes of servitization. In the end, the final samples consisted of 180 articles. These articles were read, and the integrative framework of servitization was developed based on results and interlinkages identified in them.

### **Results and Implications**

The review offers a picture of the state-of-the-art of the research in the field, and shows what progress has been made in which area. By summarizing extant studies, this review shows that there are roughly three groups of literature in servitization. The first group deals with the antecedents of the servitization process. Dealing with the servitization process itself, the second group involves different elements such as the organization structure, factors related to the integration of product/service offerings, the intangible organization's assets, and managers' and employees' characteristics. Finally, the third group of literature deals with the process conclusion of servitization and the specific outcomes that are obtained. Although there are many elements in the developed integrative framework of servitization, the aim of this review is to show the linkages between different elements. The overview of the processual elements of servitization is a major step in processual analysis in order "to catch reality in flight" (Pettigrew 1997, p.347).

A second core contribution of this review is an elaboration on the direction for future research. Based on the integrative framework of servitization, key underexplored research areas are identified by using a conceptual matrix as a core instrument. For each perspective and element in the integrative framework new directions for

research have been suggested. Besides this, general suggestions to advance and mature studies on servitization have been provided too. Hopefully, this review will help current and future scholars by providing a synthesis of current research that will enable them to contribute to research on servitization while deepening the understanding of the whole process.

## References

- Eloranta, V., & Turunen, T. (2015). Seeking competitive advantage with service infusion: A systematic literature review. *Journal of Service Management*, 26(3), 394-425.  
<https://doi.org/10.1108/JOSM-12-2013-0359>
- Lightfoot, H., Baines, T.S., & Smart, P. (2013). The servitization of manufacturing: A systematic literature review of interdependent trends. *International Journal of Operations & Production Management*, 33(11/12), 1408-1434.  
<https://doi.org/10.1108/IJOPM-07-2010-0196>
- Pawar, K.S., Beltagui, A., & Riedel, J.C.K.H. (2009). The PSO triangle: Designing product, service and organisation to create value. *International Journal of Operations & Production Management*, 29(5), 468-493. <https://doi.org/10.1108/01443570910953595>
- Pettigrew, A.M. (1997). What is processual analysis? *Scandinavian Journal of Management*, 13(4), 337-348.  
[https://doi.org/10.1016/S0956-5221\(97\)00020-1](https://doi.org/10.1016/S0956-5221(97)00020-1)
- Rabetino, R., Kohtamäki, M., Lehtonen, H., & Kostama, H. (2015). Developing the concept of life-cycle service offering. *Industrial Marketing Management*, 49, 53-66.  
<https://doi.org/10.1016/j.indmarman.2015.05.033>
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence: Informed management knowledge by means of systematic review. *British Journal of Management*, 14(3), 207-222. <https://doi.org/10.1111/1467-8551.00375>

Velamuri, V.K., Neyer, A.-K., & Möslein, K.M. (2011). Hybrid value creation: A systematic review of an evolving research area. *Journal für Betriebswirtschaft*, 61(1), 3-35.  
<https://doi.org/10.1007/s11301-011-0070-5>



## **The Nature of Emerging Digital Business Models in Sub-Saharan Africa: A study of Cameroonian Cases**

**Dev Kumar Boojihawon<sup>1</sup>, Michael Ngoasong<sup>2</sup>**

<sup>1</sup>University of Birmingham

<sup>2</sup>The Open University

### **Abstract**

Digital business models are increasingly being created in Sub-Saharan Africa, thanks to the digital revolution currently taking place across the continent. Whilst academic efforts in understanding such business models is still nascent, we use the explicit case of Cameroon in this paper to provide in-depth qualitative evidence of the nature of business models from the perspective of digital entrepreneurs. We note that although there is a considerable success in developing digital business models capable of creating both economic and societal value, these entrepreneurs face major challenges for value capture as they rely on weak notions of sustainable business models. By uncovering the type of value created and the value capture issues, we develop a framework that accommodates the managerial and policy implications for encouraging successful digital business models in SSA.

**Keywords:** Business model, digital, Cameroon, Africa.

## Introduction

Africa is proving to the world that it can lead the innovative application of technology, possibly, not in industrial or high-end engineering, but in other areas such as finance, communication, energy generation, agribusiness. Africans are indeed making a continuous effort to find more home-grown digital solutions to problems that may seem alien to the West (Wall, 2013). The range and scope of application of digital technology now span several areas, continues to grow and have provided inspiration to many business models.

In the midst of these developments, a new generation of digital entrepreneurs are also seen to emerge in Cameroon. An example of this can be seen in a recently created ICT Hubs model called Activspaces Model with branches in Buea (South West Region), Douala (Littoral Region) and Yaounde (Central Region) of Cameroon to tap into the university communities in these regions. It is these types of entrepreneurs and businesses that are of interest in this study, which focus on their views and experiences on the opportunities, impact and challenges of deploying and implementing digital business models in Cameroon. This research takes an academic standpoint and proposes to get behind the scenes of these digital innovations to understand the significant entrepreneurial and business patterns, processes, actions and behaviour that characterise digital entrepreneurship in sub-Saharan Africa. The central question it asks is as follows:

*RQ: What characterises the nature of digital business models in SSA, and how is value-created and value-captured in these business models.*

## Business Models: A Brief Literature Review

The business model concept is used in many ways, such as to describe how firms function, a framework for analytical purposes, a practical design utilised by a firm to achieve strategic fit across different types of business units (e.g. Baden-Fuller & Morgan, 2010; Teece, 2010). While there is broad acceptance of the core elements of a business model, there is no agreed theoretical and practical

definition of a business model (Coombes & Nicholson, 2013). However, when studying how business models shape the marketing practices of firms, it is important to consider the full range of the main elements that constitute the business model (Chesbrough & Rosenbloom, 2009; Mason & Spring, 2011; Ehret, Kashyap & Wirtz, 2013).

## **Methodology**

Regarding methodology, the study adopts a case-base approach to producing some best practice/success stories of digital business models that are distinctly African, using Cameroon as a starting point, albeit acknowledging that this might not be representative of SSA as a whole. Based on a cross-sectoral selection of cases, we recruited study 31 participants through one of the co-author's local professional network of contacts in Cameroon (in the case of existing enterprises) and through Activespaces incubator (in the case of start-ups).

## **Findings and Discussion**

### **What is the nature of digital business models?**

There is evidence of a wide variety of digital platforms similar to those found in traditional business models of small enterprises. In the fuller paper, we provide further descriptions of the primary business models to bring their nature to life. For example:

- "Buy-sell mobile phone airtime from large telecom providers to call boxes."
- "e-payment and e-commerce platform accessed via the web and mobile app."
- "Online chatroom for people to discuss what they are watching on TV."

There is also evidence of how the nature and operations of the business models vary depending on ownership and governance. For example, some of these firms are formal (Ltd companies), others are Common Initiative Group (CIG) while some are informal



(unregulated). Examining each of these three categories reveals distinctive characteristics of the nature of digital business models in an African context, such as Cameroon. We use some rich quotations to illustrate these points in the fuller paper.

### **How is value-created by digital business models?**

What emerges from the interviews is how the entrepreneurs describe their business models in terms of value creation for the entrepreneurs/owners (financial/economic returns) and societal value creation (helping to solve societal problems). The majority of the entrepreneurs emphasised the societal value creation more than economic value creation and this in many ways appears to influence the commercial viability of the business models (especially for nascent entrepreneurs).

### **How is value-captured by digital business models?**

Much of the data point to challenges rather than successes in value capture. Despite creating business models that have value-creating potential, most of the entrepreneurs collect payments directly (cash in hand) rather than using their business model infrastructure. The primary challenge here concerns reduced interface with linkages and financial institutions (e.g. banks) which are still slow with adopting internet banking.

There is also the issue of low internet and mobile penetration rate. Although mobile phone usage has increased in Cameroon, the majority of people still do not have access to the mobile internet that can enable them to undertake commercial transactions (such as e-payments) online successfully. The entrepreneurs describe some innovative ways in which they are trying to resolve this (e.g. through SMS messaging, group purchase, reliance on relative's bank details and off-line intranet).

Such preliminary insights lead to uncover some novel perspectives on how business models are conceived and implemented in practice (particularly considering the emerging context of Cameroon or wider

SSA in the midst of a digital awakening). We take these thoughts further in our fuller paper.

## References

- Baden-Fuller, C., & Morgan, M.S. (2010). Business models as models. *Long Range Planning*, 43(2/3), 156-171.  
<https://doi.org/10.1016/j.lrp.2010.02.005>
- Chesbrough, H., & Rosenbloom R. (2009). *Open innovation: The new imperative for creating and profiting from technology*. Boston: Harvard Business School Press.
- Chesbrough, H. (2011). *Open Services innovation: Rethinking your business to grow and compete in a new era*. San Francisco: Jossey-Bass. <https://doi.org/10.1007/978-88-470-1980-5>
- Conhaim, W. (2001). The global digital divide. *Inf. Today*, 18(1), 56.
- Coombes, P.H., & Nicholson, J.D. (2013). Business models and their relationship with marketing: A systematic literature review, *Industrial Marketing Management*, 42(5), 656-664.  
<https://doi.org/10.1016/j.indmarman.2013.05.005>
- Ehret, M., Kashyap, V., & Wirtz, J. (2013). Business models: Impact on business markets and opportunities for marketing research. *Industrial Marketing Management*, 42(5), 649-655.  
<https://doi.org/10.1016/j.indmarman.2013.06.003>
- Mason, K., & Spring, M. (2011). The sites and practices of business models. *Industrial Marketing Management*, 40(6), 1032-1041.  
<https://doi.org/10.1016/j.indmarman.2011.06.032>
- Morris, M., Schindehutte, M., & Allen, J. (2005). The entrepreneur's business model: Toward a unified perspective. *Journal of Business Research*, 58(6), 726-735.  
<https://doi.org/10.1016/j.jbusres.2003.11.001>
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43(2/3), 172-194.  
<https://doi.org/10.1016/j.lrp.2009.07.003>

Wall, Q. (2013). What can western entrepreneurs learn from East African startups? [WWW Document]. the Guardian. URL <http://www.theguardian.com/media-network/media-network-blog/2013/jul/09/digital-entrepreneurs-east-african-startups> (accessed 10.10.13)

# **The Impact of Enabling Employees to be Included in Company Processes on the Financial Performance of Servitizing Companies**

**Jessica Tina Wewer<sup>1</sup>, Lambert J.M. Nieuwenhuis<sup>1,2</sup>**

<sup>1</sup>University of Twente

<sup>2</sup>Fontys International Business School

## **Abstract**

Today more and more manufacturing companies decide to expand their traditional offering of products by providing customized services of different kinds. The role that employees play in this servitization process is significant. By enabling employees to work in favour of the new strategy, companies can contribute to employees shifting their minds in a favourable way, which may ultimately lead to an increased financial performance. To operationalize this measurement, the correlation between the two independent variables (1) supportive learning environment and training and (2) integrating and informing employees about company strategies, and the dependent variable firms' percentage of revenue gained through services is investigated. This is done by a cross-sectional survey study with 42 manufacturing companies. A significant positive relationship between the second variable and the percentage of revenue gained through services could be found. No relationship between the first variable and the revenue gained was discovered. Companies thinking about or currently starting to innovate with services need to take into account the important role that employees play in this transformation process.

**Keywords:** Servitization, manufacturing, performance, mindset shift employees.

## **Introduction**

Vandermerwe and Rada (1989) were the first to define “servitization” as a business practice. Other authors name this phenomenon “product-service systems” (Mont, 2002; Tukker & Tischner, 2006), “integrated solutions” (Davies, Brady & Hobday, 2007; Windahl, 2007), “service infusion” (Brax, 2005) and “tertiarization” (Leo & Philippe, 2001) as interchangeable terms (Lay et al., 2010). As already stressed by Zeithaml, Berry and Parasuraman in 1988, service quality depends to a large extent on the performance of a company’s employees. Literature further agrees that service quality is related to benefits in profit and cost savings (Rudie & Wansley, 1985; Thompson, DeSouza & Gale, 1985; Zeithaml et al., 1988). This leads to the idea that employee performance is an important indicator of company profits.

Lay et al. (2010) show that servitizing companies are not fully able to generate a satisfactory turnover with services. Gebauer et al. (2005) call this phenomenon the “Service Paradox” (p. 14). Munck (2001) as well as Baines et al. (2009) explain the importance of cultural and corporate changes. By unionizing the workforce one can achieve loyalty and strong commitment from the side of the employees (Pfeffer, 2005). Weeks (2010) show that the development of skills as another essential component. So, changing employees’ mindsets becomes a major challenge for servitizing companies (Neely, 2009). Nudurupati, Lascelles, Yip and Chan (2013) stress the importance of building new people skills, as well as technologies and capabilities.

This paper aims at investigating to what extent the percentage of revenue through services, which is an indicator for financial performance of servitizing companies is influenced by 1) providing a supporting learning and training environment for employees and 2) informing and integrating employees into the company strategies.

## **Research Method and Results**

We used a questionnaire to conduct interview at 42 manufacturing companies in the Netherlands, operating in nine different industries. With respect to size, 17 companies are small (<50 employees), 8 are medium (50-250) and 15 are large (>250).

Companies were asked to make a choice from a 7-answer scale. Using Cronbach's Alpha, we found that all questions in a cluster fit together very well and could be used for further analyses.

We found that providing a supporting learning and training environment is not statistically correlated to the percentage of revenue through services (Pearson's  $r = .30$ ;  $p = .08$ ). This means that how a company increases the training for its employees is not associated with higher or lower earnings by services.

On the other hand, we did find that informing and integrating employees into the company strategies is statistically positively correlated to percentage of revenue through services (Pearson's  $r = .45$ ;  $p < .05$ ). This means that if employees are more closely integrated and better informed about what is currently going on in the company, the firm can expect to gain more revenue by the provision of services.

We have also conducted regression analysis and found that these relationships are not moderated by the companies' overall focus on employees.

## Conclusions

This paper is contributing to Neely's research about "exploring the financial consequences of the servitization of manufacturing" (2009). It validates the various literatures emphasizing the importance that employees play in the process of servitization.

## References

- Baines, T.S., Lightfoot, H.W., Benedettini, O., & Kay, J. M. (2009). The servitization of manufacturing: A review of literature and reflection on future challenges. *Journal of Manufacturing Technology Management*, 20(5), 547-567.  
<https://doi.org/10.1108/17410380910960984>

- Brax, S. (2005). A manufacturer becoming service provider – challenges and a paradox. *Managing Service Quality*, 15(2), 142-155. <https://doi.org/10.1108/09604520510585334>
- Davies, A., Brady, T., & Hobday, M. (2007). Organizing for solutions: Systems seller vs. systems integrator. *Industrial Marketing Management*, 36(2), 183-193. <https://doi.org/10.1016/j.indmarman.2006.04.009>
- Gebauer, H., & Fleisch, E. (2007). An investigation of the relationship between behavioural processes, motivation, investments in the service business and service revenue. *Industrial Marketing Management*, 36(3), 337-348. <https://doi.org/10.1016/j.indmarman.2005.09.005>
- Gebauer, H., & Friedli, T. (2005). Behavioural implications of the transition process from products to services. *Journal of Business & Industrial Marketing*, 20(2), 70-80. <https://doi.org/10.1108/08858620510583669>
- Gebauer, H., Fleisch, F., & Friedli, T. (2005). Overcoming the service paradox in manufacturing companies. *European Management Journal*, 23(1), 14-26. <https://doi.org/10.1016/j.emj.2004.12.006>
- Lay, G., Copani, G., Jäger, A., & Biege, S. (2010). The relevance of service in European manufacturing industries. *Journal of Service Management*, 21(5), 715-726. <https://doi.org/10.1108/09564231011092908>
- Leo, P.-Y., & Philippe, J. (2001). Offer of services by goods exporters: Strategic and marketing dimensions. *The Service Industries Journal*, 21(2), 91-116. <https://doi.org/10.1080/714005023>
- Mont, O. (2002). Clarifying the concept of product-service system. *Journal of Cleaner Production*, 10(3), 237-245. [https://doi.org/10.1016/S0959-6526\(01\)00039-7](https://doi.org/10.1016/S0959-6526(01)00039-7)
- Munck, B. (2001). Changing a culture of face time. *Harvard Business Review*, 79(10), 125-132.
- Neely, A. (2009). Exploring the financial consequences of the servitization of manufacturing. *Operations Management Research*, 1(2), 103-118. <https://doi.org/10.1007/s12063-009-0015-5>

- Nudurupati, S.S., Lascelles, D., Yip, N., & Chan, F.T. (2013). Eight challenges of the servitization. In *Proceedings of the Spring Servitization Conference* (pp. 8-14).
- Pfeffer, J. (2005). Changing mental models: HR's most important task. *Human Resource Management*, 44(2), 123-128.  
<https://doi.org/10.1002/hrm.20053>
- Rudie, M.J., & Wansley, H.B. (1985). The Merrill Lynch Quality Program. *Services Marketing in a Changing Environment*.
- Thompson, P., DeSouza, G., & Gale, B.T. (1985). The Strategic Management of Services Quality. *Cambridge, Massachusetts: Strategic Planning Institute*.
- Tukker, A., & Tischner, U. (2006). Product-services as a research field: Past, present and future, reflections from a decade of research. *Journal of Cleaner Production*, 14(17), 1552-1556.  
<https://doi.org/10.1016/j.jclepro.2006.01.022>
- Vandermerwe, S., & Rada, J. (1989). Servitization of business: Adding value by adding services. *European Management Journal*, 6(4), 314-324. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)
- Weeks, R. (2010). The culture and skills challenges associated with servitization: A South African perspective. *Journal of Contemporary Management*, 7, 110-128.
- Windahl, C. (2007). Integrated solutions in the capital goods sector: exploring innovation, service and network perspectives. *Linköping Studies in Science and Technology. Dissertation No. 1098*.
- Zeithaml, V.A., Berry, L.L., & Parasuraman, A. (1988). Communication and control processes in the delivery of service quality. *The Journal of Marketing*, 35-48.  
<https://doi.org/10.2307/1251263>





## **Capability Development for Servitization Using a Service-Dominant Logic Lens**

**Chris Raddats**

University of Liverpool

### **Abstract**

Many manufacturers are adding value to their traditional product-based businesses by developing services, a transition termed servitization (Vandermerwe & Rada, 1988). Some research (Raddats & Burton, 2014) has likened servitization to a move from goods-dominant logic (GDL) to service-dominant logic (SDL) (Vargo & Lusch, 2004).

An important approach to analysing servitization has been through an assessment of the capabilities manufacturers require to make this change (Visnjic Kastalli & Van Looy, 2013). However, existing research has not specifically considered this change in light of GDL/SDL. The purpose of this paper is to consider, through using a SDL lens, the capabilities required by manufacturers for servitization.

Vargo and Lusch (2004) state that what a company supplies to its customers should not be delineated between products and services; so, in the context of servitization manufacturing is seen as part of the service provision process. Indeed, Vargo and Lusch (2004) even reject the term 'services' because it is seen as part of the goods-based model of exchange. In a later paper, Vargo and Lusch (2008) characterise two positions; GDL, which is based on tangible products as units of output (although it could also include intangible services) and SDL, in which service is the basis of economic exchange. The concept of 'service' facilitates a consideration of 'value-in-use' and the co-creation of the customer offering (Vargo & Lusch, 2004). These concepts seem particularly relevant when considering solutions (Brady et al., 2005) and availability- or performance-based

services that some manufacturers are offering to their customers (Baines & Lightfoot, 2014); all of which require close cooperation between buyers and suppliers.

Capabilities refer to a firm's ability to deploy combinations of resources to achieve a desired goal (Amit & Shoemaker, 1993). It is possible that a consideration of SDL may obscure the capabilities that manufacturers need for solutions, availability- and performance-based services. For example, if a corporate customer buys printers from a manufacturer, the manufacturer needs capabilities to not only design, build and sell the printers but also provide product-attached services such as installation, maintenance and technical support. If instead of buying the printers and product-attached services, the customer buys a printing 'solution' from the manufacturer, charged on a pay-per-use basis (and does not therefore own the printers but pays for the number of prints/copies made), then the manufacturer needs additional capabilities; for example, contract design, risk management and solution selling. The customer also needs additional capabilities in terms of procuring the solution and risk management. Thus, the 'value-in-use' for the customer is similar in both situations (i.e., printing and copying), but the capabilities needed by both actors vary considerably between these two scenarios.

This work has developed an integrative framework that can link service strategy and concrete operation practices. In particular, we provide a new contribution to theory by developing a process framework for business model innovation that integrates the quite dispersed literature on the subject. Moreover, the proposed toolkit can be support practitioners in service design, organizational design and organizational transformation. In fact, this work can help managers providing a useful framework to structure their new business model idea and manage the relevant element and critical requirements that have to be taken into account in the servitization journey.

**Keywords:** Capabilities, servitization, S-D logic.

## References

- Amit, R., & Shoemaker, P. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33-46. <https://doi.org/10.1002/smj.4250140105>
- Baines, T., & Lightfoot, H. (2014). Servitization of the manufacturing firm. Exploring the operations practices and technologies that deliver advanced services. *International Journal of Operations Management*, 34(1), 2-35. <https://doi.org/10.1108/IJOPM-02-2012-0086>
- Brady, T., Davies, A., & Gann, D.M. (2005). Creating value by delivering integrated solutions. *International Journal of Project Management*, 23(5), 360-365. <https://doi.org/10.1016/j.ijproman.2005.01.001>
- Raddats, C., & Burton, J. (2014). Creating multi-vendor solutions: The resources and capabilities required. *Journal of Business and Industrial Marketing*, 29(2), 132-142. <https://doi.org/10.1108/JBIM-04-2012-0061>
- Vandermerwe, S., & Rada, J. (1988). Servitization of business: Adding value by adding services. *European Management Journal*, 6(4), 314-324. [https://doi.org/10.1016/0263-2373\(88\)90033-3](https://doi.org/10.1016/0263-2373(88)90033-3)
- Vargo, S., & Lusch, R. (2004). The four service marketing myths. Remnants of a goods-based, manufacturing model. *Journal of Service Research*, 6(4), 324-335. <https://doi.org/10.1177/1094670503262946>
- Vargo, S., & Lusch, R. (2008). From goods to service(s): Divergences and convergences of logics. *Industrial Marketing Management*, 37(3), 254-259. <https://doi.org/10.1016/j.indmarman.2007.07.004>
- Visnjic Kastalli, I., & Van Looy, B. (2013). Servitization: Disentangling the impact of service business model innovation on manufacturing firm performance. *Journal of Operations Management*, 31(4), 169-180. <https://doi.org/10.1016/j.jom.2013.02.001>



## **Author Index**

Aranda, Daniel	117
Arimany-Serrat, Nuria	75
Ariu, Andrea	107
Arróniz, Iñigo	29, 33
Baines, Tim	37
Bellandi, Marco	13
Biazzo, Stefano	95
Bigdeli, Ali Z.	37
Boojihawon, Dev Kumar	141
Bouhrir, Bassam	63
Bustinza, Oscar F.	37, 43, 111, 117
Cachón García, Cristina	23
Campos, Tontxu	29, 33
Castellón-Orozco, Helen	85
Corò, Giancarlo	133
Coreynen, Wim	17
De Castro, Valeria	23
De Crescenzo, Alberto Maria	95
De la Calle Vicente, Alberto	55
De Rijck, Roel	17
Dewit, Ivo	17
Díaz-Garrido, Eloísa	23
Dieste, Marcos	95
Ferràs Hernandez, Xavier	75

Freije Obregón, Inmaculada	55
Galera Zarco, Carlos	129
Ganz, Christopher	101
Gomes, Emanuel	43
Guitart-Tarrés, Laura	85
Guzzo, Giovanna	111
Harmsen, Willem	135
Haro-Domínguez, Carmen	63
Hurtado Jaramillo, Carlos H.	75
Jarúa-Chacón, Natalia	85
Jovanovic, Marin	65
Kamp, Bart	81
Kjil, Björn	89
Kohtamäki, Marko	135
Kuenzli, Michelle	101
Kujawski, Dominik	101
Larrinaga Ojanguren, Miguel Ángel	55
Marcos, Esperanza	23
Martín Peña, María Luz	23
Matthyssens, Paul	17
Mayneris, Florian	107
Meijide Vidal, Dulcinea	75
Müller, Christopher	89
Narvaiza, Lorea	29, 33
Neely, Andy	65
Nieuwenhuis, Lambert J.M.	147

Ngoasong, Michael	141
Opazo-Basaez, Marco	117, 129
Ortega-Egea, Teresa	63
Ouertani, Zied M.	101
Panizzolo, Roberto	95
Parenti, Mathieu	107
Parry, Glenn	71
Pecic, Dejan	133
Peñate-Valentín, María Concepción	123
Pereira, Ángeles	49, 123
Pitarello, Arianna	111
Pitingaro, Serafino	111
Rabetino, Rodrigo	135
Raddats, Chris	153
Ruiz de Olano, David.	29,33
Sánchez-Carreira, María del Carmen	123
Sánchez-Montesinos, Francisco	117
Santini, Erica	13
Tarba, Shlomo Y.	43
Vence, Xavier	49, 123
Vendrell Herrero, Ferran	37, 43, 111
Visnjic, Ivanka	65, 89
Volpe, Mario	133
Walker, David	71
West, Shaun	101
Wewer, Jessica Tina	147
Wood, Zena	71



Servitization has affected a wide range of product firms, which are consciously transforming their businesses models through adding advanced services to generate competitive advantage. Servitization is grounded on the value-in-use paradigm shift and generate capabilities that are distinctive and sustainable over competitors.

The servitization of manufacturing is expected to allow Western economies to resume growth and sustain long-term competitiveness. In this fifth edition, following the success of previous editions, the **International Conference on Business Servitization** (ICBS) held in the University of Granada (23th to 25th November, 2016) had as overarching theme “**Servitization and the Competitiveness of European Manufacturers**”.

During the conference attendants have discussed and analysed the process of servitization over eleven separated sessions, including a roundtable of southern Spanish firms debating on servitization experiences. This book of abstracts collects all relevant information about participants and contains the summaries of the academic papers presented in the event. The central themes discussed over the different presentations where industry 4.0, firm internationalization and business model innovation.

This conference welcomed relevant keynote speakers as Prof. Marko Kohtamäki and Dr. Shlomo Tarba who provided insights on how strategy as practice, firm agility and firm ambidexterity can enhance our understanding of business servitization. Additionally, the conference was sponsored by the European H2020 project MAKERS. The principal investigator of the project, Prof. Lisa de Propris, led a steering board meeting that opened the opportunity to discuss different aspects regarding the renaissance of EU manufacturing sector.



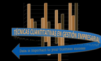
MAKERS



Universidad de Granada



FACULTAD DE CIENCIAS DEL TRABAJO  
Universidad de Granada



ISBN: 978-84-945603-8-5

[www.omniascience.com](http://www.omniascience.com)

**OmniaScience**