

UNIVERSIA BusinessReview



Servitization: academic research and business practice
Servitización: investigación académica y práctica empresarial

María Luz Martín-Peña & Ali Ziaee Bigdeli.

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Jose Ruizalba, Anabela Soares & Javier Morales

A preliminary investigation of the reserve service continuum
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When services are offered by small and medium retailers: what is the customer's perception?

Cuando los pequeños y medianos detallistas ofrecen servicios: ¿cuál es la percepción del cliente?

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

Diseño de servicios para la servitización. Experiencias con empresas manufactureras vascas a través de la colaboración universidad-empresa

Service design for servitization. University-business collaboration case studies in basque manufacturing companies

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How Does Music as a Digital Service Affect Consumer Attitude and Behaviour?

Servitización Digital: Actitud y Comportamiento del Consumidor en la Industria Musical

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SUMARIO / SUMMARY N° 49



Servitization: academic research and business practice

18-31

Servitización: investigación académica y práctica empresarial

María Luz Martín-Peña & Ali Ziaee Bigdeli.



Services in product-oriented companies: past, present, and future

32-53

Servicios en empresas orientadas a productos: pasado, presente y futuro

Heiko Gebauer, Simon Joncourt & Caroline Saul.



¿Es la servitización tan rentable como puede parecer? Evidencias de empresas manufactureras españolas durante dos décadas

54-95

Is servitization really profitable? Two decades of evidence from Spanish manufacturing companies

Alberto de la Calle e Inmaculada Freije.



Servitization and co-opetition in the pharmaceutical distribution: Back to Basics?

96-115

Servitización y co-opetición en la distribución farmacéutica: ¿vuelta a los orígenes?

Jose Ruizalba, Anabela Soares & Javier Morales



A preliminary investigation of the reserve service continuum

116-131

Una investigación preliminar del continuo servicios

Sara Mountney, Abhishek Asthana, Kashif Mohammed & Mark Almond



When services are offered by small and medium retailers: what is the customer's perception?

132-145

Cuando los pequeños y medianos detallistas ofrecen servicios: ¿cuál es la percepción del cliente?

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



Diseño de servicios para la servitización. Experiencias con empresas manufactureras vascas a través de la colaboración universidad-empresa

146-181

Service design for servitization. University-business collaboration case studies in basque manufacturing companies

Ion Iriarte, Daniel Justel, Alazne Alberdi, Ester Val e Itsaso Gonzalez



How Does Music as a Digital Service Affect Consumer Attitude and Behaviour?

182-199

Servitización Digital: Actitud y Comportamiento del Consumidor en la Industria Musical

Vasileios Myrthianos, Ferran Vendrell-Herrero, Oscar F. Bustinza & Glenn Parry

CARTA DEL DIRECTOR
NÚMERO 49 UNIVERSIA BUSINESS REVIEW

Universia Business Review inicia su decimotercer año cumpliendo fielmente la periodicidad y garantizando los principios de calidad editorial internacionalmente reconocidos. Queremos insistir en el compromiso del Comité de Dirección por esta apuesta para seguir indexados en la principales bases de datos internacionales y que UBR siga siendo considerada una revista científica de calidad contrastada. UBR está categorizada como revista A y ocupa la posición 31 de las 233 (1/11 de las revistas de Empresa) revistas españolas de ciencias humanas y sociales en Web of Science y/o SCOPUS (ISOC-CSIC). Por esta razón, estamos en proceso de ser revaluados por el *Social Science Citation Index* y somos optimistas en relación a la posibilidad de que en un plazo de tiempo, no excesivamente largo, la revista vuelva a ser aceptada.

Esta apuesta por la calidad ha permitido que UBR posea el certificado de revista **EXCELENTE** concedido por Fundación Española para la Ciencia y Tecnología, Ministerio de Ciencia e Innovación (FECYT); que esté indexada en SCOPUS (*Elsevier Bibliographic Databases. Scimago Journal Rank 2014 (SJR) : 0,230 Q3; Category: Business, Management and Accounting.* Posición 133 de 236; y que actualmente ocupe la tercera posición de 65 revistas españolas del área de economía (Índice H de las Revistas Científicas Españolas según *Google Scholar Metrics*, 2010-2014). Animamos a los autores a enviar artículos, que cumpliendo los requisitos exigidos, permitan que los directivos y empresarios encuentren respuesta a sus reflexiones, inquietudes y problemas.

Como todos los primeros números de cada año queremos agradecer, muy sinceramente, la labor de los editores asociados y de los profesores que, durante este último año, con su trabajo como evaluadores, han sido la mejor garantía formal del rigor de los trabajos de la revista, proponiendo mejoras en los trabajos y garantizando el mantenimiento de los niveles de exigencia. Durante 2015 hemos recibido 95 artículos, siendo la tasa de aceptación, sobre los artículos evaluados, del 15,3%.

Los artículos publicados en el número 49 de *Universia Business Review*, forman un monográfico sobre la “Servitización: estrategia, innovación e impacto”. Los trabajos publicados fueron presentados al “*call for papers*” y defendidos en la *4th International Conference on Business Servitization (ICBS 2015)* (noviembre 2015) tras un riguroso proceso de selección. Los artículos seleccionados fueron remitidos a UBR para que iniciasen el proceso de revisión editorial establecido. El Comité de Dirección desea

ARTÍCULOS (situación a 31 de diciembre de 2015)					
Artículos recibidos durante 2015	95	100 %	Artículos Evaluados	72	100 %
Artículos evaluados	72	75,8 %	Artículos aceptados	11	15,25 %
			Artículo no aceptados	61	84,72 %
Artículos en evaluación	23	24,2 %	Tasa de aceptación, sobre los artículos evaluados, del 15,3%		

publicados con el tópico servitización y cómo han contribuido mediante el estudio de casos a acercar el mundo de la academia al profesional.

El número especial comienza con el artículo de los profesores Heiko Gebauer, Simon Joncourt, Caroline Saul (Eawag, Swiss Federal Institute of Aquatic Research) en el que se plantean el pasado, presente y futuro de los servicios en empresas orientadas al producto. Alberto de la Calle e Inmaculada Freije (Universidad de Deusto) se estudian si ¿es la servitización tan rentable como puede parecer?. Jose Ruizalba, Anabela Soares y Javier Morales (University of West London) analizan el proceso de servitización en la distribución farmacéutica y se preguntan si se está volviendo a los orígenes. Sara Mountney, Abhishek Asthana y Kashif Mohammed (Sheffield Hallam University) Mark Almond (B S Stainless) analiza otras alternativas, en las que aparentemente se invierte el continuo, una pyme de servicios que ha desarrollado capacidad de manufactura para mejorar la oferta al cliente. Lorea Narvaiza, David Ruiz de Olano, Tontxu Campos e Iñigo Arroniz (Universidad de Deusto) se centran en el estudio de la percepción de los clientes de las empresas minoristas en los servicios que les son ofrecidos. Ion Iriarte, Daniel Justel, Alazne Alberdi, Ester Val, e Itsaso González (Universidad de Mondragón) investigan el diseño de servicios para la servitización en empresas manufactureras a través de la colaboración Universidad-Empresa. Y, por último, Vasileios Myrthianos (Universidad Politécnica de Cataluña), Ferran Vendrell-Herrero (University of Birmingham), Oscar F. Bustinza (Universidad de Granada), Glenn Parry (University of the West of England) analizan la actitud y comportamiento del consumidor en la industria musical a través de la servitización digital.

Les animo a leer todos los artículos. Esperamos durante el año que empieza seguir contando con la confianza de todos: Editores Asociados, miembros del Comité Científico, Consejo Editorial, evaluadores, autores-colaboradores, empresas y sobre todo de los lectores, tanto de la Universidad como del mundo empresarial.

José Ignacio López

Director de Universia Business Review

LETTER FROM THE EDITOR IN CHIEF NUMBER 49 UNIVERSIA BUSINESS REVIEW

Now in its thirteenth year, *Universia Business Review* has never been late going to print and has earned international renown for its editorial quality. The Management Committee firmly intends to ensure that UBR remains indexed on the main international databases and continues to be widely seen as a journal of outstanding scientific quality. UBR is categorised as a journal A and is ranked 31 out of the 233 (1/11 in business journals) Spanish publications on the subject of human and social sciences according to Web of Science and/or SCOPUS (ISOC-CSIC). We are currently being reassessed by the Social Science Citation Index and we are confident that before too long the journal will once again be accepted.

This ongoing commitment to quality has earned UBR the badge of **EXCELLENT** from Fundación Española para la Ciencia y Tecnología (Spanish Foundation for Science and Technology) attached to the Ministry of Science and Innovation (FECYT); enabled it to be indexed on SCOPUS (Elsevier Bibliographic Databases. Scimago Journal Rank 2014 (SJR): 0.230 Q3; Category: Business, Management and Accounting. Position 133 of 236; and last but not least earned it third place out of the 65 Spanish economic journals (h-index of Spanish scientific journals under Google Scholar Metrics, 2010-2014). We encourage authors to send articles that meet the required standards of quality to provide executives and business owners with responses and valuable insight in relation to their own business concerns and problems.

As is customary in the first edition of the year, we would like to express our sincerest gratitude for the hard work of all the associate editors and professors in evaluating the contributions made to the journal during the year, thus guaranteeing the quality and scientific rigour of the articles published in the journal, while proposing improvements to the work and ensuring that our strict requirements are met. In 2015, we received a total of 95 articles, 15.3% of which were accepted after due evaluation.

Issue 49 of *Universia Business Review* is essentially devoted to the subject of "Servitization: strategy, innovation and impact". The published articles were submitted in response to the "call for papers" and defended at the 4th International Conference on Business Servitization (ICBS 2015) (November 2015) following a rigorous selection process. The selected articles were then sent to UBR ahead of the start of the editorial review process. The Management Committee wishes to thank the guest editors for their hugely valuable work, namely Professor María Luz Martín-Peña (Universidad Rey Juan Carlos) and Professor Ali Ziaee Bigdeli (Aston University), who were without doubt the driving force behind this special edition by expertly handling the entire process of editing the published work.

In their editorial for the issue, Professors Martín-Peña (Universidad Rey Juan Carlos) and Bigdeli (Aston University) explain what we understand by servitization and how the concept can help companies become more competitive while bringing them closer to their customers. They review the articles published on the subject of servitization and explain

through case studies how they have helped bring the academic community closer to the business world.

The special edition starts with an article by Professors Heiko Gebauer, Simon Joncourt, Caroline Saul (Eawag, Swiss Federal Institute of Aquatic Research), in which the authors discuss the past, present and future of product-oriented services within companies. Alberto de la Calle and Inmaculada Freije (Universidad de Deusto) then attempt to answer the question of whether servitization is really as profitable as it might seem. Jose Ruizalba, Anabela Soares and Javier Morales (University of West London) analyse the servitization process in relation to pharmaceutical distribution and ask if it is returning to its roots. Sara Mountney, Abhishek Asthana and Kashif Mohammed (Sheffield Hallam University) and Mark Almond (B S Stainless) analyse other alternatives, including a services SME that has bucked the trend by developing manufacturing capacity to improve its range of products and services for customers. Lorea Narvaiza, David Ruiz de Olano, Tontxu Campos and Iñigo Arroniz (Universidad de Deusto) focus on how customers perceive the services offered to them by retail companies. Ion Iriarte, Daniel Justel, Alazne Alberdi, Ester Val and Itsaso González (Universidad de Mondragón) investigate the design of services for servitization in manufacturing companies through university-company partnerships. And last but not least, Vasileios Myrthianos (Universidad Politécnica de Cataluña), Ferran Vendrell-Herrero (University of Birmingham), Oscar F. Bustinza (Universidad de Granada) and Glenn Parry (University of the West of England) analyse consumer attitudes and behaviour in the musical industry through digital servitization.

I would encourage you to read all the articles. We hope to continue to inspire the trust of everyone as we move through 2016: associate editors, members of the Scientific Committee, Editorial Board, evaluators, authors and contributors, and above all our readers from both the university community and the business world.

José Ignacio López

Editor in Chief of Universia Business Review

AGRADECIMIENTO A LOS EVALUADORES EXTERNOS/ ACKNOWLEDGMENT TO THE EXTERNAL REVIEWERS

Universia Business Review desea manifestar públicamente su agradecimiento a los profesores doctores, expertos externos a la entidad editora, que han participado en el doble proceso de evaluación de los trabajos recibidos durante 2015. Sin su esfuerzo, dedicación y conocimiento este proyecto no sería una realidad.

Muchas gracias a todos,
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MISIÓN DE UBR

Universia Business Review no es una publicación exclusiva del mundo académico en sentido estricto, sino que su misión principal **es trasladar a quienes tienen la responsabilidad de dirigir empresas y negocios las ideas y desarrollos más innovadores que el ámbito científico y académico sea capaz de generar.**

Por otro lado, *Universia Business Review* no renuncia a dar servicio a la comunidad universitaria y científica como la publicación de referencia, en la que los especialistas puedan efectuar un seguimiento sistemático de las aportaciones novedosas de los colegas de su misma especialidad. En particular, esta revista pretende ser un vehículo de unión y comunicación de las comunidades universitarias de habla latinoamericana dedicadas al estudio de la Empresa.

PROCEDIMIENTO EDITORIAL

Los originales recibidos y admitidos por el Comité de Dirección, serán enviados al Editor del área correspondiente para que analice si el trabajo debe continuar el proceso editorial y ser remitido a dos evaluadores anónimos (expertos ajenos a la entidad editora), de reconocido prestigio en el campo de estudio. Para desarrollar su labor se le envía el listado de evaluadores de los últimos años, pudiendo seleccionar e incluir aquellos nuevos revisores que el Editor de Área considere más acorde con el trabajo para su evaluación.

Una vez recibidas las dos evaluaciones el Editor de Área elevará al Comité de Dirección su propuesta de aceptar o rechazar el artículo para su publicación en UBR. Se pretende que, mediante la implantación de sucesivos "filtros" de calidad, el lector obtenga garantías de que la revista publica sólo aportaciones de nivel y de actualidad.

NORMAS PARA LOS ARTÍCULOS

UBR está abierta a la recepción para su publicación de originales preparados por miembros del mundo universitario, escuelas de negocios de todo el mundo, directivos y empresarios. Para que los trabajos puedan ser publicados los autores deberán atenerse a las siguientes normas:

- **Los artículos, que serán inéditos**, tendrán una extensión alrededor de 5.000 palabras, incluyendo notas a pie de página y bibliografía. **No deberá utilizarse un número excesivo de referencias bibliográficas.** Se considera que no deben superar las veinticinco.

- El artículo debe estar redactado de forma que facilite la lectura y comprensión de los contenidos a un público no académico. Se **debe evitar utilizar un lenguaje de corte excesivamente especializado**, en beneficio de una más fácil comprensión de las ideas expuestas y en la medida de lo posible, el abuso de términos muy académicos (metodología, hipótesis, etc.) y funciones matemáticas, aunque esto haya podido servir para que los evaluadores analicen el alcance de su investigación. Las **conclusiones no deben ser un resumen del trabajo**, sino una aplicación, una lección que se está trasladando a los responsables de las empresas para que estos la puedan considerar como un "buen consejo", y lo que es más importante, que lo puedan entender y aplicar.

Si es necesario, o el evaluador lo requiere, se puede adjuntar como un fichero complementario (o anexo) todos los datos, técnicas econométricas, etc..., que hayan podido utilizar los autores para alcanzar las conclusiones de su investigación.

Una vez dado el visto bueno al trabajo, dicho fichero (o anexo) no se incorporaría en el artículo editado. Los autores deben hacer un esfuerzo para adaptar su trabajo a nuestros lectores, a los empresarios y directivos, no sólo al mundo académico.

• Los autores deberán subir un **fichero adicional “Archivo complementario”** respondiendo a las siguientes preguntas:

1. ¿cuál es el mensaje o idea principal del artículo? ¿pueden aplicarla los empresarios y directivos?
2. ¿por qué cree que los directivos deben conocer su artículo? ¿para qué tipo de empresas serviría y para qué tipo no?
3. ¿qué investigación se ha llevado a cabo para argumentar su propuesta? ¿sobre qué trabajos (artículos, teorías, etc...) fundamenta su propuesta?
4. ¿cuál es su experiencia personal, académica y/o profesional que avale sus conocimientos sobre el tema?

• Cada artículo deberá ir precedido del título, de un pequeño resumen, en castellano e inglés, de unas ochenta palabras en cada caso y de cinco palabras clave en ambos idiomas. Además se incorporará la clasificación del trabajo conforme a los descriptores utilizados por el *Journal Economic Literature*.

• Los **artículos se publicarán en inglés y castellano**. Los autores pueden enviar el artículo en castellano, pero una vez finalizado el proceso editorial y antes de su aceptación definitiva, los autores se comprometen a enviar la versión íntegra en inglés para publicarse en los dos idiomas.

• **No deberá aparecer el nombre del autor/es en ninguna hoja**, con el fin de facilitar el proceso de evaluación, ya que los datos se incorporarán en el formulario digital.

• Los originales, que deberán incorporar el título del trabajo, estarán editados electrónicamente en formato requerido en la aplicación, y se **enviarán por vía electrónica mediante acceso a la siguiente dirección: ubr.universia.net**. Los autores deberán rellenar sus datos en la ficha electrónica.

• Las **referencias bibliográficas** se incluirán en el texto indicando el nombre del autor, fecha de publicación, letra y página. La letra, a continuación del año, sólo se utilizará en caso de que se citen obras de un autor pertenecientes a un mismo año. Se incluirán, al final del trabajo, las obras citadas en el texto según lo previsto en las normas **APA style guide**:

- o Takeuchi, H. (2013). “Knowledge-Based View of Strategy”. *Universia Business Review*, 40, 68-79.
o Guillén, M., García-Canal, E. (2012). “*Emerging markets rule*”. New York: McGraw-Hill.

• Una vez recibido el artículo, **UBR acusará recibo**, por correo electrónico, e iniciará el proceso de selección anteriormente mencionado. Finalizado el mismo se comunicará al autor de contacto la decisión sobre su aceptación o rechazo por parte del Comité de Dirección.

• La revista se reserva la **posibilidad de editar y corregir los artículos**, incluso de separar y recuadrar determinadas porciones del texto particularmente relevantes o llamativas, respetando siempre el espíritu del original.

• Los autores deberán estar en disposición de ceder a Universia Business Review los **derechos de publicación de los artículos**.

MISSION

As stated in our mission, *Universia Business Review (UBR)* is not a publication dedicated strictly and exclusively to the academic world; its primary mission is **to transmit the most innovative ideas and developments generated by the scientific and academic communities to business leaders.**

Nevertheless, UBR does not neglect to provide a service to the university and scientific community, as a publication of reference through which specialists can systematically follow the latest contributions made by colleagues in their field. In particular, the journal seeks to be a vehicle of communication and union among university communities that speak Latin American languages and are dedicated to the study of Business.

EDITORIAL PROCEDURE

The originals received and accepted by the Management Board will be sent to the Associate Editor for the relevant area who will determine whether the work should proceed through the editorial process and be forwarded to two anonymous evaluators (experts external to the publishing entity), renowned for their work in the field. The list of evaluators from the last few years is provided to support their work by enabling them to select and include new reviewers that the Associate Editor considers most appropriate for evaluation of the work.

Once the Associate Editor receives the two evaluations, they will submit a proposal to the Management Board to accept or reject the article for publication in UBR. It is intended that, through the implementation of successive quality "filters", the reader will be assured that the magazine only publishes contributions that are high quality and current.

STANDARDS FOR ARTICLES

UBR is open to receiving original documents for publication prepared by members of universities, business schools from around the world, and business owners and executives. To ensure that the work is suitable for publication authors must abide by the following rules:

- Check that **the articles, which must be unpublished**, are limited to around 5,000 words, including footnotes and bibliography. **There should not be an excessive number of bibliographical references**, which must not exceed twenty-five.
- Particular attention should be paid to the fact that the article must be worded in a way that enables the content to be read and understood by a non-academic audience. **The use of very specialised language should be avoided** in order to make the ideas presented more easily understood, as should the overuse of very academic terms (methodology, hypothesis, etc.) and mathematical functions as far as possible, even if that may have helped evaluators to analyse the scope of the research. **Conclusions should not be a summary of the work**, but an application: learning that is transferred to business leaders so that they will consider it "good advice" and, more importantly, something they can understand and apply.

If necessary or required by the evaluator, all of the data, econometric techniques, etc. that may have been used by the authors to reach the conclusions of their research may be attached as a supplementary file (or annex).

Once the work has been approved, the file (or annex) will not be incorporated as part of the edited article. The authors must make an effort to adapt their work to our readers –business owners and executives– not just the academic world.

• The authors must upload an **additional “Supplementary file”, responding to the following questions:**

1. What is the primary message or idea in your article? Can business owners and executives apply it?
2. Why do you think executives should see your article? Which kinds of companies would it be of use to, and which not?
3. What research have you undertaken in order to argue your proposal? What pieces of work (articles, theories, etc.) is your proposal based on?
4. What personal, academic and/or professional experience do you have to endorse your knowledge on the subject?

• Each article must be preceded by the title, a short summary in Spanish and English of approximately 80 words in each case, and five key words in both languages. It should also incorporate a classification of the work according to the descriptors used by the Journal of Economic Literature.

• **Articles will be published in English and Spanish.** Authors can send the article in Spanish, but once the editorial process is completed and before it is finally accepted, the authors must undertake to send the full version in English for publication in both languages.

• **The author’s name should not appear on any page** in order to simplify the process of evaluation, since the data will be incorporated into the digital form.

• The originals, which must include the title of the work, will be published electronically in the format required by the application, and **will be sent electronically by accessing the following address: ubr.universia.net.** Authors must fill in their details in the electronic file.

• **Bibliographical references** will be included in the text, indicating the name of the author, date of publication, letter and page. The letter, over the course of the year, will only be used when citing the works of an author published in the same year. The works cited in the text will be included at the end of the work, as set out in the **APA Style Guide**:

- o Takeuchi, H. (2013). “Knowledge-based view of Strategy”. *Universia Business Review*, 40, 68-79.
- o Guillén, M., García-channel, E. (2012). “Emerging markets rule: Growth Strategies of the New Global Giants”. New York: McGraw-Hill.

• Once the article has been received, **UBR will acknowledge receipt** by email and begin the abovementioned selection process. Once completed, the decision on acceptance or rejection by the Management Board will be communicated to the author.

• The journal reserves the right **to edit and correct articles**, including separating and cropping certain portions of the text that are particularly relevant or striking, always respecting the spirit of the original.

- The authors must be willing to cede **the publication rights for the articles** to UBR.

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- **IN-RECS** (Índice de Impacto de Revistas Españolas de Ciencias Sociales). Categoría: Economía. Índice de impacto 2011: 0,268; Q1; posición 15 de 133 revistas. UBR es revista fuente.
- **Repositorio Español de Ciencia y Tecnología (RECYT)**. Fundación Española para la Ciencia y Tecnología, Ministerio de Ciencia e Innovación (FECYT). En junio de 2013 ha renovado el certificado de revista científica de calidad contrastada habiendo sido calificada de “**EXCELENTE**”.
- **Índice H de las Revistas Científicas Españolas según Google Scholar Metrics** (2010-2014). H:12. Posición UBR: 3/65 revistas del área de Economía y Empresa (Julio 2015).
- **Categorización de las revistas españolas de ciencias humanas y sociales en Web of Science y/o Scopus (ISOC-CSIC)** Categoría: A; 21 puntos; Posición total revistas: 31/233; Posición revistas Empresa: 1/11 (junio 2015)
- Directorio, Catálogo e Índice **LATINDEX** (cumpliendo el 100% de los 33 criterios de calidad).
- **DICE** (Difusión y Calidad Editorial de las Revistas Españolas de Humanidades, Ciencias Sociales y Jurídicas, CSIC-ANECA). Cumpliendo los 33 criterios Latindex y todas las condiciones exigidas por DICE.
- **Red ALyC** (Red de revistas Científicas de América Latina y el Caribe).
- **EBSCO Publishing's databases** (*Business Source Complete; Academic Search Complete; Fuente Académica*).
- **ABI / Inform** (*ProQuest*).
- **Directory of Open Access Journal (DOAJ)**.
- **Ulrich's Periodicals Directory**
- **ISOC-Ciencias Sociales y Humanidades (CSIC)**.
- **RESH** (Revistas Españolas de Ciencias Sociales y Humanidades).
- **ECONIS** (ZBW. German National Library of Economics)
- **IBSS** (International Bibliography of Social Sciences)
- **DIALNET**
- **COMPLUDOC**

Universia Business Review ha estado indexada durante el período 2008-2012 en el *Journal Citation Report-Social Sciences Citation Index* (Category: Business). 2010 Factor de impacto: 0,228; 2011 Factor de Impacto: 0,150; 2012 Factor de impacto: 0,138 (actualizado junio de 2013).

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- **IN-RECS**. (Impact Index of Spanish Social Science Journals). First quartile. 2011 Impact Factor: 0.268, Q1. Position: 15/133) UBR is a source journal.
- **Spanish Repository of Science and Technology (RECYT)**. Spanish Foundation for Science and Technology (FECYT). UBR bears the seal of an “**EXCELLENT**” journal.
- **H Index Spanish Science Journals, Google Scholar Metrics** (2010-2014): 12. UBR position 3/653. Area: Economic (July 2015).
- **Categorización de las revistas españolas de ciencias humanas y sociales en Web of Science y/o Scopus (ISOC-CSIC)** Categoría: A; 21 puntos; Posición total revistas: 31/233; Posición revistas Empresa: 1/11 (junio 2015)
- Directory, Catalogue and Index **LATINDEX** (meeting 100% of the 33 quality criteria).
- **DICE** (Dissemination and Editorial Quality of Spanish Journals of Humanities, Social Science and Law, CSIC-ANECA).
- **Red ALyC** (Network of Latin American and Caribbean Scientific Journals).
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- **ABI / Inform** (ProQuest).
- **Directory of Open Access Journal (DOAJ)**.
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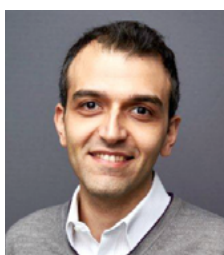


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Servitization: academic research and business practice

Servitización: investigación académica y práctica empresarial

18



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I. INTRODUCTION

Servitization is seen as the process of increasing value by adding services to products (Vandermerwe and Rada, 1988). It is a means to create value-added capabilities that are distinctive and sustainable over competitors (Baines and Lightfoot, 2013). Authors such as Neely (2008) claim that the process of servitization can be seen as the development of an organization's innovation capabilities in the sense that, rather than merely offering products, it can provide customers with complete product-service systems (Visnjic and Van Looy, 2013). It is normally configured as a process of innovation as part of the business model of an organization, which would lead to improved performance and customer satisfaction, as well as enhanced competitive advantage (Suarez et al., 2013).

In times of economic crisis, such as the one that many parts of the world are still undergoing, the value chain of goods manufacturers is becoming less attractive as the demand for products becomes increasingly stagnated. Under such circumstances, companies are aware of the value inherent in offering the services needed for running and maintaining the products they manufacture (Wise and Baumgartner, 1999). Davies, Brady and Hobday (2007) indicate that services provide more constant income, higher profit margins and require less asset allocation than manufacturing.

In their approach towards a successful servitization process, companies need to redesign their business model (Baines et al., 2009a). The addition of service offerings to the portfolio of traditionally product-oriented companies is of growing importance, with innovative



EXECUTIVE SUMMARY

In recent years, the servitization of manufacturing has become a topic of interest to both academics and practitioners. Indeed, companies are realising that servitization is a way to enhance their competitive advantage and get closer to their customers. Several empirical studies have attempted to explain why and how to servitize. They provide important insights to better understand the processes of servitization. The connection between academia and business practices is decisive in the foundation of this research topic. This foundation will allow continuing with its development, contributing in turn to improve the implementation in companies. Hence, this special issue aims to contribute to the theoretical and practical aspects of servitization.

RESUMEN DEL ARTÍCULO

En los últimos años, la servitización de la manufactura ha llegado a ser un tópico de interés tanto a nivel académico como empresarial. Así, las empresas están contemplando que la servitización es una forma de mejorar su posición competitiva y estar más cerca de sus clientes. Diferentes estudios empíricos han intentado explicar por qué y cómo se servitiza. Facilitan información clave para entender mejor el proceso de servitización. La conexión entre la academia y la práctica empresarial es decisiva en los fundamentos de este tópico de investigación. La fundamentación del mismo, permitirá continuar con su desarrollo y a la puesta en práctica en las empresas. Así, este número especial pretende contribuir en el avance de la teoría y práctica de la servitización.

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new business models and novel organizational structure. Icons in this world are companies such as Rolls-Royce Aerospace with Power-by-the-hour, and Xerox with document management. These are all examples of 'advanced services' (Baines & Lightfoot, 2013) incorporating maintenance, repair and overhaul contracts where revenue generation is directly linked to the asset availability, reliability and performance.

The commercial benefits of servitization are convincing and promising, the environmental arguments are compelling, and the opportunities immense. However, there is still lot to be learnt and discovered by both academics and practitioners. The lack of a common language, effective tools, techniques and methodologies for servitization still play a significant challenge.

Companies, especially those involve in manufacturing, find servitization as a way to increase value and differentiate from competitors. In the literature, studies increasingly try to explain why and how to servitize. The connection between academia and practice is decisive in the foundation of this research topic. This foundation will allow continuing with its development, contributing in turn to improve the implementation in companies.

In this introductory paper, we first propose a short introduction to the topic of servitization, and explain the key academic communities that are addressing this stream of research. Subsequently, we focus on the papers published in this special issue, followed by short summary of each paper.

2. SERVITIZATION AND ACADEMIA

The servitization of the manufacturing can be considered as an emerging area of research that has attracted an increasing amount of attention in management, marketing and operations literature. Approaches from a variety of disciplines have led to insightful studies on the practical implications for businesses. **Figure 1** shows the evolution of publications on the topic of servitization in the period of 1992 to 2015, which has been taken from the multi-disciplinary academic database, Web of Science (WoS). It can be observed an upward trend: in the period 1992-2007 an average of 3 articles were published per year, in the period 2008-2015 an average of 40 articles were published per year.

In terms of the study of servitization, only eight papers exist that seek to provide a review of the literature. Five of these reviews are principally of a qualitative nature (Pawar et al., 2009; Bertokovic et al., 2011; Cavalieri and Pezzotta, 2012; Park et al., 2012 and Beuren, Gomes Ferreira and Cauchick Miguel, 2013) and three of them are quantitative (Lightfoot et al., 2013; Boehm and Thomas, 2013 and Park and Yoon, 2015). There is no general consensus on the theoretical and empirical development of the research. The literature on servitization has been increasing at a notable rate with contributions from different fields and theories, hitherto dominated by studies that use the case study method (Beuren et al., 2013). Research in the field of servitization has, for some time, taken place in five principal research communities (Baines et al., 2009a): Services marketing, service management, operations management, product-service system and service science management and engineering. The constitution and focus of these communities continues to evolve (Lightfoot et al, 2013).

KEY WORDS

Servitización,
Academic research,
Practicioners.

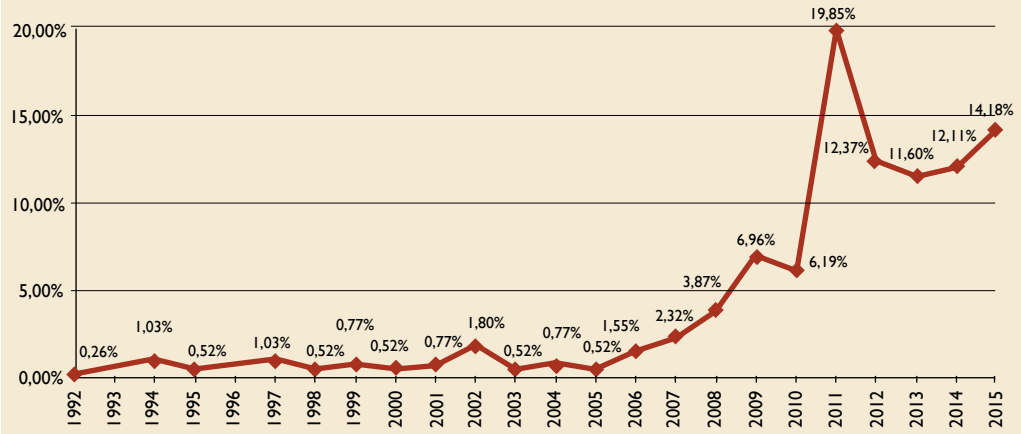
PALABRAS CLAVE

Servitización,
Investigación
académica, Práctica
empresarial.

3. SERVITIZATION AND PRACTITIONERS

The servitization of manufacturing has become a common business practice that enables the offering of product-service propositions which best suited to the needs of customers, and in addition, strengthen the position in the supply network and the market (Baines, Lightfoot, Peppard, et al., 2009a). It is a means of creating

Figure 1. Evolution of publications on the topic servitization



value added capabilities that are distinctive and sustainable in comparison with competitors (Baines et al., 2009b).

The manufacturing industry has undergone a profound transformation, marked by the contribution of services to turnover (more than 50% in some industries) and by the amount of workers involved in service functions (between 65% and 75%) (Doultsinou, Roy et al., 2009).

When undertaking the servitization process, firms need to move towards a “product-service continuum” (Oliva and Kallenberg, 2003; Neu and Brown, 2005; Gebauer, 2008; Baines et al., 2009a). At one extreme lies the traditional manufacturer who only offers goods, while services are complements or add-ons for their products; turnover and profit are generated principally through the products that are sold and the contribution of services is reasonably low. At the other extreme are the service providers, where services represent the basis of the value creation process and tangible goods are added to satisfy customer needs; these goods represent just a small part of the total value (Gebauer and Friedli, 2005). Firms must define their position along this continuum by offering combinations of products-services. The trend is growing, so that companies today compete on the basis of product-service combinations, seen as solutions to the customer.

In the literature, analysis of business practice about servitization is reflected in studies using case studies. In **Table 1** a compilation of studies of cases is presented.

4. ARTICLES IN THIS SPECIAL ISSUE ON SERVITIZATION: STRATEGY, INNOVATION AND IMPACT

The call for papers in this Special Issue was issued during the autumn of 2015, with a submission deadline of November 30, 2015. The submitted papers were then blind reviewed by at least two reviewers following the Universia Business Review's guidelines. The call for papers invited submissions on a broad range of sub-topics within the area of servitization, including:

- Theories underpinning servitization strategies
- Servitization as a complement for existing strategies
- Servitization and Customer Relationship Management, customer value perception and client satisfaction
- Servitization, sustainability and product design
- Implications of servitization in business models



Tabale I. **Study of Cases (as link between academic and business practice)**

PAPER	TOPIC	OBJETIVES	THEORY CONTEXT	METHODOLOGY
Chesbrough and Rosenbloom (2002)	Business model; innovation, value creation	To explore the role of the business model in capturing value from early stage technology	Strategy management	Study case, Xerox
Davies (2004)	Integrated solutions/ business model	To analyze business strategies for integrated solutions in terms of how a firm moves base in the industry value stream	Strategy management/ Firm's Theory	Davies (2004)
Windahl et al. (2004)	Integrated solutions	To analyze the new challenges facing companies in terms of customer interaction and competences requirements.	Strategy management	Three study cases, BT; ABB facilities management; Alfa Laval
Brax (2005)	Servitization Industrial services	To provide a perspective on the nature of service infusion in manufacturing companies	Strategy management	A qualitative single-case study. A manufacturer of industrial equipment introduces maintenance management
Gebauer and Friedli (2005)	Service management/ behavioral management	To provide a better understanding of behavioral processes and their impact on the transition from products to services	Behavioral processes	Study Cases. Five German and Swiss product manufacturers, whose products require a high level of customer investment
Davies; Brady and Hobday (2006; 2007)	Integrated solutions/ business model	To understand how systems integrators are developing service capabilities to meet the needs of large business and government customers	Strategy management/ Organizational Structure	Qualitative research; five international companies based in manufacturing and services: Alstom Transport, Ericsson, Thales Training & Simulation, Cable & Wireless Global and W5 Atkins
Gebauer and Fleisch (2007)	Service management/ behavioral management	To analyze managerial motivation to extend the service business in manufacturing companies and to create	Behavioral processes; management motivation	Qualitative research approach, five focus groups and ten in depth

PAPER	TOPIC	OBJETIVES	THEORY CONTEXT	METHODOLOGY
Windahl et al. (2006)	Integrated solutions	To contribute to the sparsely investigated area of developing integrated solutions by the relationships within the business network.	Strategy management, stakeholders	Two case studies of projects in the capital goods industry
Neu and Brown (2005; 2008)	Service strategy	To isolate and characterize factors that enables the formation of successful business-to-business (B2B) services in goods-dominant firms.	Contingency Theory “resource-advantage Theory of competition”	Multicase research. Four substantive cases of Fortune 500 firms in which B2B service development
Johnstone, Dainty and Wilkinson (2009)	Service strategy	To explore the evolution of ‘product-service’ (P-S) strategies in the aerospace sector	Strategy management	Presents an in-depth case study of an international aerospace Original Equipment Manufacturer (OEM), referred to as ‘JetCo’.
Aamed, Inohara and Kamoshida (2012)	Service strategy	To develop a conceptual model of firm process transition from pure manufacturing to a product-service operation. To identify the change factors toward implementing servitization strategy.	Strategy management	Study Case: IBM
Bandinelli and Gamberi (2012)	Service strategy	Research focusing on how and by how much new Product-Service System (PSS) development methodologies and tools can help companies moving towards product-oriented PSS, in the oil and gas equipment manufacturers industry.	Strategy management	A single case study: Nuovo Pignone S.p.a., a brand of the “GE Oil & Gas” company

- Servitization and supply chain management
- Servitization processes and organizational performance indicators
- Strategic Services Management
- Service Operations Management
- Service System and Service Network Design
- Service Innovation Management
- Advanced business services and practices off/for servitization
- Organizational change processes and models related to the

implementation of servitization practices

- Impact of advanced business services, servitization and business model innovation practices for the competitiveness
- KIBS and servitization and Factories of the Future and Advanced Manufacturing development strategies
- Servitization in SMEs and regional development
- Human factors of servitization
- Development of methods and indicators to measure and assess quantitatively the degree of servitization

High-quality proposals were received, and were initially rejected if didn't aim to act as a bridge between the academic and the business communities. In general, the topic of servitization is investigated from an approach of business practice, as demonstrated in the work outlined concerning case studies, and this was evident in the submissions. We would like to express our sincere gratitude to all who submitted papers to our Special Issue. In addition, we want to thank the reviewers for their time and effort in reviewing the submitted papers in the Special Issue.

The Special Issue resulted in the publication of seven papers. We are convinced that each makes a good contribution to research and practice on servitization. The papers address diverse topics within the area. Conceptual and also qualitative and quantitative papers are included. Together, they enhance our present knowledge on servitization and indicate the way for future research.

The first article titled "Services in product-oriented companies: past, present, and future" by Heiko Gebauer, Simon Joncourt and Caroline Saul, discusses the evolution of servitization, recognising that services in product-oriented companies have become one of the most active research areas in the service domain and that practitioners have become advocates for service business development. Research domain on services in product-oriented companies remains open to a variety of conceptualizations and interpretations such as hybrid offerings, solution providers, and transition from products to services, system suppliers, product-service systems (PSS), servitization. This article reflects on the past, present, and future of service research in product-oriented companies and explores the way in which the literature on services in product-oriented firms has been evolving and taking shape, expose the underlying key concepts, and describe future research directions.

In the article titled "Is servitization really profitable? Two decades



***The interest of
the companies
is confirmed
by attempting
servitization process
and the difficulty
of implementing
this strategy; the
relationship is
significant added
value to the level of
servitization,
regardless of
company size***

of evidence from Spanish manufacturing companies”, Alberto de la Calle and Inmaculada Freije investigate the question: Is the servitization as profitable as it may seem? And therefore addresses the so-called paradox of services, very important for managers who are already engaged in the process or they are considering it. It is analyzed the evolution of the Spanish servitization manufacturing, its dependence on variables such as the size of the organizations or the perception of stability market and its relationship with parameters that determine business performance. For this purpose a descriptive and exploratory study of a database of 670 Spanish manufacturing companies is done in a period of study comprising 17 years, from 1994 until 2010. The interest of the companies is confirmed by attempting servitization process and the difficulty of implementing this strategy; the relationship is significant added value to the level of servitization, regardless of company size. It is significant the relationship between added value and level of servitization, regardless of company size. But this relationship is reversed when considering the added value of production where smaller and less servitized companies get the best results. It is proposed as a future line of research the analysis on the particular type of services offered distinguishing its nature, fit into the overall strategy of the company, if they are mainly instrumental to support traditional business or if instead, open up new business opportunities.

In the article titled Servitization and co-opetition in the pharmaceutical distribution: Back to Basics, José Ruizalba, Anabela Soares y Javier Morales approach servitization at sectorial level, so, discusses how the pharmaceutical distribution sector has evolved in the past decades and the role of servitization in an ever changing market led by big players. An empirical analysis was conducted on Portuguese and Spanish distributors which enabled the identification of a detailed portfolio of services currently offered by the industry. These companies were compared in terms of current service provision, levels of implementation of added-value services, main reasons for implementation and levels of co-operation within the sector. Some differences between both countries have been found in terms of their level and reasons for the implementation of value adding services. Major findings refer to the tendency of distributors

to further develop their base services provision in the future aiming at achieving increased competitive advantage and loyalty. This raises concerns given that it can be interpreted as a “back to basics” strategy of low differentiation which may not consistent with long term competitiveness.

The article titled “A preliminary investigation of the reserve service continuum” by Sara Mountney, Abhishek Asthana, Kashif Mohammed and Mark Almond investigates the paradigm of the organisation as service provider. Most work focuses on the adoption of services by product-centred organisations, promoting the concept of a service continuum. This paper explores whether alternatives are possible. The investigation and identification of organisations engaged in, or moving towards, ‘productisation of services’ in terms of product development and manufacturing therefore presents an interesting research challenge. Who are these companies? What has motivated them to transform their businesses in this way and what are the mechanisms which have enabled them to achieve it? Furthermore, given their service-based history, what can organisations at the other side of the continuum – the product-based organisations aiming to servitize – learn from their experiences? A case study is documented which apparently ‘reverses’ this continuum – a service-based SME which has developed in-house manufacturing capability to improve the customer solution. The findings suggest that this could develop the current understanding of servitization. The relationship between servitization and productisation and how productisation can contribute to the servitization process should therefore be a subject of further research.

The article titled “When services are offered by small and medium retailers: what is the customer’s perception?” by Lorea Narvaiza, David Ruiz de Olano, Tontxu Campos and Iñigo Arroniz, explores the concept of servitization in the retail sector. The purpose is to measure what are the perceptions that customers have towards local small and medium retailers regarding the services they offer. The paper also compares the profile of the customers that consider products and services the most important factor when choosing a retailer with the rest of the sample. Their findings show that there are a few differences between customers who would prefer more services compared to customers who state that services are not their priority. The identification of the customer’s perception and the possibility to offer new services in order to increase the value

offered could increase the competitiveness of the small and medium retailers. So, they should try to identify these customers that want to get more services and identify ways to co-create value with them.

The article titled “Service design for servitization. University-business collaboration case studies in basque manufacturing companies” by Ion Iriarte, Daniel Justel, Alazne Alberdi, Ester Val and Itsaso Gonzalez poses that manufacturing companies need practical methodologies and tools in order to design integrated product-service offers. Service design has been suggested as an enabler for servitization. This article assesses the results gathered from the application of service design within six manufacturing companies immersed in servitization processes. The Data which was collected by participatory observation and semi-structured interviews infers that service design allows manufacturing companies overcome product oriented mindsets and address the integral design of the value proposition through the experience offered to the customer. In addition, it is concluded that service design can be applied to design more customer-cantered value propositions without implying a transition to services as the core offer. However, companies indicate the need to incorporate within service design all the change elements inherent to servitization. The usefulness of the approach and tools to design services seems obvious in servitization processes, both B2B and a B2C context, as long as this process is aligned with strategies already underway.

Finally, the last paper in this special issue titled “How Do Music as a Digital Service Affect Consumer Attitude and Behaviour?” by Vasileios Mirthinaos, Ferran Vendrell-Herrero, Oscar F. Bustinza and Glenn Parry, approaches an interesting topic, the quantification and economic assessment of consumer misbehaviour. So, illegal file Sharing violates property rights, constitutes consumer misbehaviour, and has been cited as the main cause of lost revenue in the creative industries. Existing empirical evidence is silent on the individual beliefs associated to the legitimacy of copyright infringement. A new concept dubbed the ‘Robin Hood’ tendency is developed as a quantitative measure of the belief that illegally copying and distributing digital resource is legitimate behaviour. Analytical applications are developed which exploit a unique dataset comprising 18,000 data points for music consumers from ten countries. Results identify that countries with strong institutions have fewer consumers who demonstrate the Robin Hood tendency. Furthermore, evidence

also suggests that copyright law enforcement should be coupled with efforts to educate consumers as to the effect of misbehaviour on content creators. The applications proposed are important for consumer insight departments in creative industries and other contexts, including those industries interested to understand why some consumers give little value to the concept of corporate social responsibility.

5. CONCLUSIONS

Servitization of manufacturing has become a common business practice that enables clients to obtain product-service combinations adapted to their needs. It enables firms to position themselves better on the market (Baines et al., 2009a). The literature on servitization has increased considerably, fed by different disciplines and theories; to date it has been dominated by case studies (Beuren et al., 2013). Servitization can be defined as an emerging research field, with many interesting opportunities (Lightfoot et al., 2013). Servitization is a cross-cutting theme, and many linkages exist with established topics across engineering and management. Hence, research should be focused to a greater extent on developing empirical studies that will demonstrate the results of the servitization strategy in an objective long-term manner.



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Services in product-oriented companies: past, present, and future

Servicios en empresas orientadas a productos: pasado, presente y futuro

32



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I. INTRODUCTION

Services in product-oriented companies have become one of the most active research areas in the service domain (Ostrom *et al.*, 2010). The basic proposition is that traditional product-oriented companies shift from developing, manufacturing, and selling products towards innovating, selling, and delivering services (Davies, 2004; Oliva & Kallenberg, 2003; Neu & Brown, 2005; Gebauer *et al.*, 2010; Tukker, 2002; Vandermerwe & Rada, 1998; Ulaga & Reinartz, 2011). These products and services are combined into customer-specific solutions, in which the value contribution in terms of revenue, profit, and customer satisfaction are increasingly attributed to services.

There has been a sharp rise in academic contributions. Publication rate on services in product-oriented companies has reached about 100 articles per year (see **Figure 1**). Practitioners have become advocates for service business development. Historically, this service business development is associated with *IBM*. In the early 90s, *IBM*'s mainframe business was in the maturity phase and *IBM*'s entry in the early phase of emerging PC industry came too late. *IBM* was in a major crisis. *IBM*'s shift from products to services ensured its survival. Until 2001, *IBM* increased the share of service revenue



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EXECUTIVE SUMMARY

Services in product-oriented companies have become one of the most active research areas in the service domain. Practitioners have become advocates for service business development. Research domain on services in product-oriented companies remains open to a variety of conceptualizations and interpretations such as hybrid offerings, solution providers, transition from products to services, system suppliers, product-service systems (PSS), servitization. In this article, we reflect on the past, present, and future of service research in product-oriented companies. We explore the way in which the literature on services in product-oriented firms has been evolving and taking shape, expose the underlying key concepts, and describe future research directions.

RESUMEN DEL ARTÍCULO

Los servicios en las empresas orientadas a servicios se han convertido en un ámbito de investigación muy activo en el ámbito de los servicios. Los profesionales abogan por el desarrollo de servicios. El dominio de investigación sobre servicios en empresas orientadas a productos está abierto a una variedad de conceptualizaciones e interpretaciones, como oferta híbrida, oferta de soluciones, transición de productos a servicios, proveedores de sistemas, sistemas producto-servicio, servitización. En este artículo, se plantea el pasado, presente y futuro de la investigación en servicios en empresas orientadas a productos. Se analiza la forma en la que la literatura en servicios en esta empresas ha surgido e ido tomando forma, destacando los conceptos clave y describiendo líneas futuras de investigación.

on the total revenue to 40%. Today, *IBM* is a technology company, in which two business units focus only on services. Global Technology Services (\$37.1 billion) and Global Business Services (\$17.8b) have generated 59% of the total revenue (\$92.8b) in 2014. Overall, services have become an important factor for revenue growth and profitability. Companies such as *ABB*, *Caterpillar*, *General Electric*, or *Rolls-Royce* have a strong service business growth. Today, service revenues account for nearly 50% of the total revenues.

However, research also pointed out that moving from products to services is not a one-way street. In some situations, companies might reduce their service orientation, or, in other words, deservitize

and decrease the value contribution of services (Finne *et al.* 2013) For example, Amazon was a service provider, but with its Kindle reader, it introduced its first product into the market and links this product to information services.

From the intensity of this research effort and the strong management interest, one might surmise that there exists a common theoretical perspective. This is still far from the case. Research domain on services in product-oriented companies remains open to a variety of conceptualizations and interpretations such as hybrid offerings, solution providers, transition from products to services, system suppliers, product-service systems (PSS), and servitization (Davies, 2004; Oliva & Kallenberg, 2003; Neu & Brown, 2005;

Gebauer *et al.*, 2010; Tukker, 2002; Vandermerwe & Rada, 1998; Ulaga & Reinartz, 2012). While such variations have contributed to the richness of the service research in product-oriented companies, they might constrain also progress on the theoretical front and prevent empirical work from cumulating.

In this article, we reflect on the past, present, and future of service research in product-oriented companies. Section 2 explores the way in which the literature on services in product-oriented firms has been evolving and taking shape. Section 3 exposes the underlying key concepts and research domains. Sections 4 and 5 describe future research directions in terms of necessary theoretical perspectives, relevant research questions, and promising empirical fields. The article ends with a conclusion.

*From the intensity
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2. LEVOLUTION OF THE RESEARCH DOMAIN ON SERVICES IN PRODUCT-ORIENTED COMPANIES

Our interpretation of the evolution of the research domain is based on the articles published. Analyzing the number and content of articles suggest that two tipping points divide the evolution of service research in product-oriented companies into three phases.

Phase 1: Minor topic in Business-to-Business (B2B) Marketing.

Phase 1 starts with the early contribution in late 80s and continues until the late 90s. Publication rate remains relatively low in Phase 1. The corresponding articles consider services as customer service. Customer service is an important part of the B2B marketing and buyer-seller-relationship. Services are an add-on to the product. They augment the product offering, increase customer satisfaction

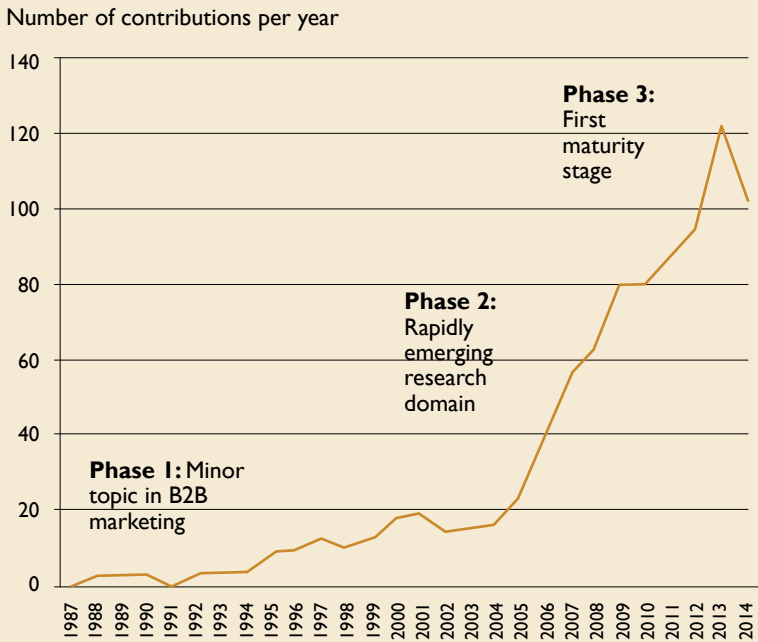
KEY WORDS

Services, Product-oriented companies, Product-service-system, Solutions, Service strategy, Research questions

PALABRAS CLAVE

Servicios, Empresas orientadas a productos, Sistemas producto-servicio, Soluciones, Estrategia de servicios, Preguntas de investigación

Figure 1. Evolution of the research domain on services in product-oriented companies².



² Your query : ((REF("Managing the transition from products to services") OR TITLE-ABS-KEY("Product service systems") OR TITLE-ABS-KEY("Industrial services") OR TITLE-ABS-KEY("Transition from products to services") OR TITLE-ABS-KEY("Service business development") OR TITLE-ABS-KEY("Solution provider") OR REF("A framework for analyzing customer service orientations in manufacturing") OR REF("Restructuring towards a service orientation: the strategic challenges") OR REF("Go downstream: the new imperative in manufacturing") OR TITLE-ABS-KEY("Servitization") OR TITLE-ABS-KEY("The role of soft factors in implementing a service-oriented strategy in industrial marketing companies") OR REF("Service strategies within the manufacturing sector: benefits, costs and partnership") OR TITLE-ABS-KEY("After sales service")) AND DOCTYPE(ar) AND SUBJAREA(MULT OR ARTS OR BUSI OR DECI OR ECON OR PSYC OR SOCI) AND PUBYEAR > 1987 AND PUBYEAR < 2015)

and strengthen customer loyalty (Bowen *et al.*, 1989, Martin & Horne, 1992, Vandermerwe & Rada, 1988).

Phase 2: *Rapidly emerging research domain.* Phase 2 starts around 2000 and ends 2009. The former emphasis on customer service is replaced with other types of services (e.g., after-sales services, value-added services, services supporting the product, or services supporting the customer). Research shifts emphasis from services to augment the product offering to service growth (Mathieu, 2001a; Wise & Baumgartner, 1998). Companies increase the share of service revenue on the total revenue. These service revenues are highly profitable and compensate for eroding product margin (Cohen *et al.*, 2007). Confronted with the tendency that products become a commodity, services become a new source of competitive advantages.

A prominent example is Oliva and Kallenberg's (2003) transition line from products to service. On one extreme, the authors assume a product manufacturer, which produces core products, with services purely as an add-on to the product. Product-oriented companies use services as one of the main differentiating factors in the product marketing strategy. Profits and revenue are generated mainly through the company's core products and the contribution of services is quite low in terms of revenue, profit and customer satisfaction. At the other extreme, the authors assume a service provider whose products are merely an add-on to services. Products represent only a small part of total value contribution. The main share of total value contribution stems from services (e.g. share of service revenue to total revenue is more than 30%). Further conceptualizations include solution providers, servitization, product-service-systems (PSS), or service business development.

Besides this variety of research domains, phase 2 also led to the recognition that services in product-oriented companies are far from easy. A „service paradox“ discussion emerges, in which companies invested in extending service business leading to increased service offering and higher costs but these investments do not generate the corresponding higher returns (Gebauer *et al.*, 2005; Brax, 2005, Neely 2009).

Phase 3: *First maturity stage.* Phase 3 started around 2010 when the number of research contributions has reach a level of maturity with around 100 articles per year. On one hand, phase 3 embeds the discussion on services in product-oriented companies into other

management theories. Ulaga and Reinartz (2011), for example, argue that service and product form hybrid offerings. According to the resource-based view, creating competitive advantages through hybrid offering requires resources and capabilities for deploying them. Cusumano *et al.* (2015) link services in product-oriented companies to the industry lifecycle. Gebauer *et al.* (2011) integrate service differentiation into innovativeness and customer centricity for increasing company performance (Gebauer *et al.*, 2005).

3. KEY CONCEPTS ON SERVICES IN PRODUCT-ORIENTED COMPANIES

3.1. Service business development in product-oriented companies

Service business development in product-oriented companies is one of the key concepts. This concept defines different types of services and addresses the value proposition related to the services offered. This concept discusses specific types of service offerings and the bundling of products and services (Martin & Horne, 1992). Service offerings follow a specific sequence starting with basic customer service and continuing towards more complex and more advanced services (Baines & Lightfoot, 2013). There is variety of service types. The most prominent and accepted distinction is about services supporting the product and services supporting the customers (Mathieu, 2001b). Beside this distinction, types of services range from customer service, after-sales services, operational services, customer support services, services for the installed base, advanced services or R&D-oriented services (Gebauer, 2008; Homburg *et al.*, 2003; Oliva & Kallenberg, 2003). Service offerings are aggregated into service strategies in product-oriented companies such as: customer service strategy, after-sales service strategy, customer-support service strategy, development partner, and outsourcing partner (Gebauer *et al.*, 2010; Windahl & Lakemond, 2006).

The *customer service strategy* augments the product by offering customer service. It is consistent with the belief that customer service enhances both the quality of the product and its reputation by increasing the general quality of the interaction between the buyer and seller (Mathieu, 2001a). The *after-sales service strategy* involves offering product-related services (or basic services for the installed base) with a few services as add-ons to the products. It ensures the





proper functioning of the product. It is similar to the notion of product services as well as entering the service market for the installed base (Mathieu, 2001a; Oliva & Kallenberg, 2003). The *customer support service strategy* attaches great importance to maintenance services such as preventive maintenance, maintenance agreements and process-oriented optimization. The focus is on preventing breakdowns instead of merely reacting when these events have occurred. Such prevention of failures and breakdowns increases the availability of the product within customer processes. Therefore, the value proposition is about increasing the efficiency and effectiveness of customer processes.

To succeed with the *customer support service strategy*, companies separate product and service business (Oliva *et al.*, 2012; Neu & Brown 2005). Service business becomes a strategic business unit (SBU), which takes over the responsibility for developing, promoting, selling, and delivering services. As a SBU, service business has its own profit-and-loss responsibility. *Wärtsilä Corporation*, a manufacturer of ship and plant engines established a separate SBU for services. This SBU has its own revenue and service target. In 2014, this SBU generated revenues of 1.9b Euro corresponding to 41% of *Wärtsilä's* total revenue. In this SBU, *Wärtsilä* set-up specific education programs for the technical and communication skills necessary to promote and deliver maintenance, optimization, and refurbishment services. *Wärtsilä* trains people to act in terms of preventing, but not as pure trouble-shooters. Incentives are based on Mean-Time-Between-Failure (MTBF) and not on Mean-Time-To-Repair (MTTR).

A *development partners'* value proposition is based on providing research and development (R&D)-oriented services in the phase prior to the actual acquisition of the product. A development partner does not only develop its own products but also offers customers its development competencies as a service. Such services allow development partners to align themselves as strategic partners of the customers. Creating customized designs or development allows specific knowledge to be transferred between the customer and development partner. This knowledge is hard to replicate and, in effect, excludes competitors from gaining access to the customer. *Bühler*, a manufacturer of diecasting equipment is a typical example. Instead of selling its diecasting equipment, *Bühler* develops the diecasting process for its customers including the robots and data

integration. *Bühler's* equipment is just one part of the solution (Fischer *et al.* 2012).

Outsourcing partners take on the responsibility of carrying out an entire customer process (Windahl & Lakemond 2006). Assuming responsibility for an entire customer process means that a customer pays exclusively for the service rendered. An outsourcing partner combines cost leadership with service and product differentiation in order to offer attractive prices for operational services. The aim is to assume the operating risk and full responsibility for the customer's operating processes. The value proposition is based on reducing the capital employed by the customer and managing the corresponding risks. *Dürr*, is a typical outsourcing partner. Instead of selling its paint finishing equipment, *Dürr* takes over the responsibility for operating and maintaining the equipment. Customers get paid for every painted car, or even, further for every painted square meter.

Independent from the actual service strategy, research highlights various factors to succeed with the shift from products to services. Service orientation can be triggered the organizational structure, human resources, or corporate culture. Service-orientation in the organizational structure can be extended by setting-up a separate business unit for services or integrating product and service business (Oliva & Kallenberg, 2003; Neu & Brown, 2005; Gebauer *et al.*, 2010). Human resources are discussed in terms of service mind-set and service competences (Homburg *et al.*, 2003; Neu & Brown 2005). These factors are linked to performance outcomes. Service orientation in organizational structures, corporate culture, and human resource management increases service revenues and profits. The technology provider, *Ericsson Operating Systems*, uses small anecdotes to facilitate more service-oriented values in the corporate culture. *Ericsson* argues that „selling services is just like selling seats in the airplane. You cannot sell the seats from yesterday. You always have to take the opportunities.“ In addition, *Ericsson* sets-up a Global Services Division in 1999. Its creation was a major step that the top management called “the evolution of services”. The evolution of service began by selling products and giving away services, and culminated with the total solution being sold as a service. Bearing this vision of the evolution of service in mind, the top management triggered *Ericsson's* transition from being a product manufacturer towards being a service provider. In 2010, *Ericsson* generated about 39% of its revenue through the provision of services.

3.2. Product-service systems (PSS)

Shifting from products to services corresponds with the idea on product-service systems (PSS). PSS consists of ‘tangible products and intangible services, which are combined to fulfill specific customer needs (Tukker, 2004). There are three types of PSS: product-oriented, user-oriented, and results-oriented. Product-oriented PSS is still mainly geared towards product sales, with some basic services as an add-on. Relevant services support product sales and ensure product functionality (Mathieu, 2001b; Tukker, 2004). In use-oriented PSS, product ownership remains with the provider. Product usage is made available as a service to actual users (Ulaga & Reinartz, 2011; Tukker, 2004). For example, Xerox remains responsible for operation & maintenance, while users pay for plain-paper copies (Cusumano *et al.*, 2015). Rolls-Royce’s power-by-the-hour service, where customers pay a fixed fee for actual usage rather than paying for jet engines and maintenance services individually, is another example of PSS. Result-oriented PSS means that customers and providers agree on a result and/or performance, and there is no pre-determined product involved. Value proposition focuses on the promise to achieve a certain customer performance. As a performance provider, companies build a profound knowledge of the customer’s core processes in order to manage customer operations (Helander & Möller, 2008, Windahl & Lakemond, 2006). An illustration is *Michelin Solutions* with its EFFITIRES™ and EFFIFUEL™ solutions. With EFFITIRES™, *Michelin Solutions* guarantees a certain price per very 1000 kilometer, the tire is actually used. In case of EFFIFUEL™, *Michelin Solutions* makes an agreement with customers for reducing the fuel consumption for trucks and busses. In both cases, *Michelin Solutions*’ customers no longer purchase tires, but rather sell usage (pay-per-kilometer) or performance (pay-per-reduction in fuel consumption).

3.3. Solution providers

Solution providers utilize innovative combinations of products and services, leading to high-value unified responses to the needs of the customer. Solution providers are successful in implementing and combining the different service strategies. The industrial automation division of *ABB* offers its customers “performance solutions”, i.e. solutions that are tailored according to the individual needs of the customer. The offerings can embrace (1) simple product-related



services associated with being an after-sales service provider, (2) maintenance services associated with a customer support service strategy, and (3) outsourcing the whole maintenance activities to *ABB*, which thus becomes an outsourcing partner. Again, *ABB*'s performance solutions are composed of implementing individual service strategies.

Relying on the implementation of the various service strategies allows solution providers to support customers throughout the whole life-cycle of the product, starting with the pre-sales phase and ending at the product usage phase. Solution providers also cover reconfiguration as well as the extension of service support in the customer's value activities. Solution providers include a large number of services in the overall package; since most services are customized to meet the needs of individual customers, solution providers also have to integrate products and services into customized solutions (Davies, 2004; Tuli *et al.*, 2007). Solution providers affect the services offered in the sales phase in two ways. Firstly, performance offerings change the revenue models, thereby making financial services necessary: "pay-for-performance" services, for example, require financial arrangements to be made so that the actual performance can be paid for. Payments for maintenance services are based on service-level agreements (SLAs) in which the benefits and/or sacrifices of achieving/missing the targets are shared between the supplier and the customer. Secondly, the increasing number of service components embraced by the solution requires the integration of services (Davies, 2004). These include customizing activities that ensure that all of the product and service components interact and can be reconfigured according to the needs of the customer. The emphasis is on integrating and not bundling product and services into customer-specific solutions.

Companies are concerned largely with capabilities for defining, delivering and selling solutions. Capabilities range from organizational structures to organizational competences, which should be aligned to enhance customer centricity (Galbraith, 2002). Solution providers move not along the continuum for products to services in a specific sequence of solutions. Instead, research discusses how the movement towards solutions influences the marketing activities. Marketing activities have to change from transactional to relational orientation (Tuli *et al.*, 2007). In the relational processes, marketing capabilities go beyond the pure

customer relationship management. Marketing competences have to ensure the in-depth understanding of customer requirements, appropriate customization and integration of products and services into customer-specific solutions and deployment of solutions in cooperation with the customers (Tuli *et al.*, 2007; Storbacka, 2011). For example, when Xerox introduced the new plain-paper copying machines in the 1960s, it remained responsible for maintaining them, while customers just paid for copier usage (e.g., pay-per-copy). Xerox's pay-per-use service converted new copying technologies into a business opportunity (Cusumano *et al.* 2015). Today, Xerox is positioned as a solution provider for business processes and document management solutions. In 2014, Xerox generated 54% of the total revenue (\$19b) through services. Xerox's business model has moved from pay-per-use to an annuity-based business model. Annuity-model provides significant recurring revenue and cash generation.

Ulag & Reinartz (2011) describe resources and capabilities that are required to commercialize and provide hybrid offerings (solutions) successfully. Resources include data on product usage and process for the installed base, product development and manufacturing, sales and distribution network as well as customer service organization. Skills relate to data processing and interpretation, risk management and design-to-service. Capabilities required for selling a combination of products and services also contribute to the success of hybrid offerings.

3.4. Service Paradox

Increasing service revenues and profits require substantial investment into the service business (Brax, 2005; Gebauer *et al.* 2005). These investments might not always pay off leading to a situation where costs outperform expected service benefits. While financial service performance such as service revenue is discussed mostly, fewer articles concentrate of service profitability or even non-financial service performance such as customer loyalty and customer satisfaction (Homburg *et al.*, 2003 and Fang *et al.*, 2008).

The service paradox suggests that instead of moving along the continuum products to services, companies fail to stay on the transition track. They are unsuccessful in their service efforts and are confronted with the situation, in which companies invested in extending service business leading to increased service offering and higher costs but

these investments do not generate the corresponding higher returns.

Airbus, for example, was ambitious in extending the share of service revenue in its commercial airplane business. However, *Airbus* could not increase its share of service revenues to more than 4% between 2003 and 2014, despite of having a huge installed bases and a highly complex product. *Airbus'* competitor Boeing creates 15% of its revenues from services. Its suppliers for jet engines (e.g., General Electric, Rolls-Royce) and entertainment systems (e.g. Panasonic) increased the share of service revenue to about 50%.

One reason for the service paradox is that companies underestimate the complexity of the service business. Service demand can be very unpredictable. Basic services associated with the installed base are highly unpredictable, resulting in their demand being very sporadic. It is difficult to predict product failures that lead to basic services. When it does occur, a service employee must react as quickly as possible to the customer request. This makes the management of the service resources very complex. More advanced services become increasingly heterogeneous. Each of these services is highly customized, making it difficult to standardize the service elements and to control the cost of their delivery. Regarding the service knowledge, in the service business, companies offer services for 10-15 product generations. This implies that the products to be served may be up to 25 years old and use outdated software, mechanical components and technologies. Service business therefore has to ensure that it retains the technical competencies for serving such old product generations (Fischer *et al.*, 2012).



4. SERVICES IN THE INDUSTRY LIFECYCLE

These various conceptualizations (e.g., service business development, PSS, solutions have been embedded into the discussion of the industry lifecycle. Future research could go beyond the maturity phase.

4.1. Early, transition, and maturity phase

Early (ferment), Transition, and Maturity phase represent the three main industry lifecycle phases (Cusumano *et al.*, 2015). The early phase represents the beginning of an industry lifecycle, and it is characterized by a high level of uncertainty, since the technology is still being developed. Customers and producers are uncertain as to how the technology will perform. Companies often experiment

with different technical designs and business models to find the most suitable technologies in markets where both technology and customers are in a state of a flux. The transition phase describes the period from ferment to maturity, during which a dominant design emerges. Companies experience growing market demand around stabilized technologies and customer needs. Low levels of technology and market uncertainty characterize the maturity phase. Companies face an increasing product commoditization with the associated cost-based competition.

The research domains discussed above concentrate mostly on services as a countermeasure to product commoditization in the maturity phase (Cusumano *et al.*, 2015). Existing empirical work focuses mostly on the maturity phase. The general argument is that companies should shift from product-oriented to user-oriented and, finally, performance-oriented PSS (Tukker, 2004) when they reach the maturity phase.

Cusumano *et al.* (2015) propose the following relationship between industry lifecycle and PSS. Under extreme cases of uncertainty and high costs, some product firms will offer use-oriented PSS and are much more likely to offer product-oriented PSS during the early phase. Use-oriented and result-oriented PSS would play only a minor role.

For the transition phase, Cusumano *et al.* (2015) propose that user-oriented and result-oriented PSS play an even more minor role than in the ferment phase. During the maturity phase, companies would increasingly substitute the purchase of the product and services with use-oriented and result-oriented PSS. In the maturity phase, use-oriented and result-oriented PSS are argued to extend the product demand into new customer segments.

4.2. Services in the early industry lifecycle: Example for the water sector

Our work in the water sector shows that manufacturers of decentralized water treatment systems concentrate on use-oriented PSS in the early phase of industry lifecycle. Decentralized water systems are used in particular in rural areas in low-income countries, where the population has no access to safe drinking water. Technologies such as reverse osmosis or ultrafiltration make it possible to construct small decentralized plants and allow a new industry arise.



The use-oriented PSS is about “water as a service” idea. Companies do not sell the system, but get paid for the cubic meter of water the equipment is producing. An illustration is the company *SwissFreshWater*. Instead of selling the equipment, *SwissFreshWater* installs, owns, and maintains the equipment in Senegal. These systems treat brackish water, which is barely drinkable and harms health due to the high salinity of people. *SwissFreshWater* remains the owner of the system. Local partners, who are entrepreneurs from the community, who has no access to safe and affordable drinking water, operate the system.

We identified the following resources and capabilities that are necessary to implement of use-oriented PSS (pay-per-use model). Resources include financial resources, technology resources, social capital and service resources. To deploy the financial resources, companies must develop the following capabilities. Due to the early stage of the industry life cycle, these companies should be able to attract funding from investors. Companies also need capabilities for developing financing mechanisms for use-oriented PSS in collaboration with banks. An essential component of the financial mechanism is risk management. Companies must be able to assess, evaluate, and mitigate the risks in the use-oriented PSS of an individual customer. The risks include uncertainties in operating and maintenance costs as well as the water sales. This risk should be included in the calculation of the “pay-per-use model.” This applies to both the “pay-per-use model,” a single system and the bundling of the risks across multiple systems.

To use the technological resources companies need to deploy the following capabilities: They must be able to develop multiple water treatment technologies, since it is not clear which technology and system becomes the dominant design in the emerging market. The need to manage multiple technologies has two consequences: On the one hand, companies need to build service capabilities for all technologies. The various technologies have different requirements in operation and maintenance, so that companies need to build a variety of service capabilities. On the other hand, the development of various technologies is difficult to finance. Therefore, companies minimize the value creation and specialize on the development and provision of core components. Most components come from suppliers, which should be involved in the use-oriented PSS. It means that supplier of the pump does not sell the pumps to the

manufacturer of water treatment systems, but is paid for each cubic meter of water pumped through the systems. Another capability of use-oriented PSS is the implementation of remote services. Remote services enable the monitoring of the operation and the water production. Because the data determine, how much drinking water was produced and how much the entrepreneur has to pay back to the manufacturer.

Social capital can be deployed through following capabilities: Companies need to be able to engage customers (entrepreneurs and/or communities) and end-customers (households) into an in-depth dialogue about technical, functional, easily perceivable needs as well as social, hardly pronounced and less tangible needs. These capabilities are about “sensing” the customer’s needs and then communicating and involving them (Kindström, 2010). Less tangible needs, for example, include the water distribution concept. Customers, who have a higher income, want to get the water delivered, to stand out socially over other household with lower incomes. However, they would not communicate this need directly. Households with very low income explain not easily that they sometimes cannot afford a whole 20-liter container with drinking water itself. Often they only have money for five liters of water. This means that the company should advice the entrepreneur operating the water business to offer water in smaller quantities.

Service resources can be deployed through following capabilities. Companies should be able to share responsibilities for operation and maintenance with the local partners. In addition, the company must be able, to customize the sharing of responsibilities according to the operation and maintenance skills of the local partners. Simultaneously, the service processes need to be standardized to be cost efficient (Kowalkowski *et al.*, 2015). Companies need to be able to build a services network to successfully deliver the necessary operation and maintenance services (Gebauer *et al.*, 2013). This is not easy, because companies still have a small installed base. Such a small number makes it difficult to establish a cost efficient spare-part-distribution network and field service organization. Continuous technological changes limit the knowledge of product reliability and usage, which makes it difficult to define spare parts and service requirements. The sales force faces frequent changes in customer needs, making it difficult to gain experience in sales practices for products and services.

Furthermore, companies concentrating on the early phase of the industry life cycle experience that investors focus on the number of installed systems creating pressure on selling use-oriented PSS. However, companies must avoid situations in which the service organization is not able to guarantee the costs of running and maintenance of the location the new customers. The agreed price per cubic meter of water and the water sales would then not cover the costs and the investments and costs of the systems cannot be recovered.

5. FUTURE RESEARCH ON SERVICES IN PRODUCT-ORIENTED COMPANIES

Identifying the resources and capabilities required for expanding the service business in the early stage of the industry life cycle is a first step to better understand the role of services in the industry life cycle. But more research is needed to answer following questions:

- What is the role of services for each of the stages of the industry life cycle?
- How do services increase the success of businesses in the individual stages?

Another future research questions is linked to a better foundation of strategic level. So far, research efforts have assumed that the services business grows organically (Kowalkowski *et al.*, 2015; Raddats, 2011). But companies can also grow externally. Rather than investing in their own service capabilities, companies can also acquire them externally. From a corporate perspective, it may make economic sense to acquire specialized service companies. For example, *Ericsson Operating Systems*, a manufacturer of equipment for mobile networks, bought *Edgecom*, a consulting firm for telecommunication companies, to expand its service portfolio. Equally interesting are M&As with other product manufacturers in order to increase the installed base. For example, *Bosch Packaging* relies on an acquisition strategy and has bought other manufacturers regularly in recent years (e.g. *Osgood Industries Inc.* (2015), *Tecnor Machines and Systèmes SAS* (2013), *Industrial Pharmaceutical Resources Inc.*, *Eisai Machinery Co. Ltd.* (2012)). The number of installed machines for which services can be offered grows continuously. Companies can also achieve efficiency gains in the service organization. The installed base of a packaging machinery manufacturer can also be broadened through acquirement of



further manufacturers of machinery and equipment (for example automation, robotics, etc.) for the packaging process. The company widens the range of services for these machines and plants and is able to cover more customer needs. An interesting research question is:

- What is the role of mergers & acquisitions (M&As) during the expansion of the services business?

It is also interesting to better understand how services can create sustainable competitive advantages. Possible research questions are:

- How can companies create a direct competitive advantage through their service capabilities?
- How can companies develop these capabilities and turn them into their core competencies?

Sustainable competitive advantages arise not only from service capabilities, but from a combination of product and service capabilities (Ulaga & Reinartz, 2011). To better understand how services capabilities create competitive advantages, it is advisable not to look at services from an isolated perspective. Service capabilities and the resulting differentiation should be combined with other factors of competitive differentiation (for example market and customer orientation, innovation and product differentiation) (Gebauer *et al.*, 2011). Customers influence service capabilities. Specialized service capabilities are developed jointly together with customers, which form a barrier to entry for competitors. These specific skills cannot automatically be applied to other customers, since they are in a competition. Customers have little interest that other customers benefit from a solution that was developed exclusively for them. Such customization of competencies can be detrimental to strategic innovation. Strategic innovations enable new value constellations and open up radically new ways to satisfy customer needs. Customers do not necessarily appreciate such innovations and are often in favor of incremental improvements (Matthyssens & Vandendempt 2010). A research question would be:

- How does the transition from product manufacturer to service provider influence the ability for strategic innovation?

Strategic innovations play an important role in new technologies as it is the case for example with industry 4.0. Industry 4.0 is a collective term for technologies in the context of the fourth industrial revolution (Allmendinger & Lombreglia, 2005; Evans & Annunziata, 2012). It

includes the *Internet of Things*, smart grids, buildings, logistics and mobility, the digitization of business processes, cloud computing, etc. The intelligent factory is at the heart of these developments. Industry 4.0 changes the boundaries of industries. In recent years, manufacturers of tractors such as JohnDeer have invested in new technologies to make their products smarter. Using this intelligence, these companies can link up products and assess their condition in real time. This includes not only tractors, since all products that are used in an agricultural enterprise (for example harvesters, transplanter, soil management machines) can be linked up together. Embedding products into networks goes beyond the actual machine. Further, weather data as well as information on seeds or water supply are integrated in a virtual management system of a farm (Porter & Heppelmann, 2014). JohnDeer has taken a step in this direction with its MyJohnDeer Operations Center. The routes of machinery on the farm site or the variable application of seed and fertilizer are optimized through this approach. Research should take industry 4.0 into account when considering the transition from producer to service provider.

The transition from products to services alters the industrial boundaries and extends the boundaries of the enterprise, since companies expand their value activities and competences. This extension of competencies questions the focus on a few core competencies. Research on such transitions can make an important contribution to the discussion on the boundary of the enterprise and its core competencies. A research question would be:

- How does the transition from producer to service provider impact the boundaries of the firm?

The transition from product manufacturers to service providers not only affects companies in the industrialized markets. The example of *SwissFreshWater* shows that these transitions are also relevant for low-income countries. Because of the financial restrictions, customers in those countries do not invest in plants or buy products. They pay only for the performance or the usages as in result-oriented and use-oriented PSS.

For example, the company *Mobisol* realized that the rural population in low-income countries cannot afford the price of a private solar module. In *Mobisol's* PSS, solar modules and the electrical equipment are installed and pre-financed. Purchase of the module is made through small but frequent payments over



a period of three years. To minimize the transaction costs, these clients use mobile payment systems. *Mobisol* gives a guarantee for the entire system during the three years. The remote monitoring system of the solar module informs local technicians about technical malfunctions. After three years, the customer becomes the owner of the whole installment. Future research activities should deepen the understanding how the key concepts such as service business development, solutions, PSS and so on can be deployed in low-income countries and specially in industries in the early industry life-cycle. Promising future research question would be:

- How does the transition from producer to service provider occurs in the early industry lifecycle?
- How do product manufacturers from low-income countries deploy different PSS?

6. CONCLUSION

Product commoditization, stagnating product sales and declining product margins force product-oriented companies to look for new opportunities for achieving competitive advantages and differentiation. Extending the service business and shifting from manufacturing products to providing services is a promising way to create sustainable competitive advantages. The transition from products to services is often implemented with different service strategies that are being developed for the different phases of customer activities (pre-sales, sales, and after-sales). These strategies form the basis of product-, use- and result-oriented PSSs. Whether the transition to service provision succeeds depends on several factors. The set of required resources and capabilities varies according to the type of services and the value proposition. The transition from a product manufacturer to a service provider is important for the success of a company not only in the maturity phase of the industry life cycle. But depending on the phase other success factors are important. For example, companies in the early stage of the industry life cycle have not a sufficiently broad installed base, cannot rely on already established structures and often have little experience in actual product usage. These factors influence what resources and capabilities are important for the company and determine on to which service strategies and PSS it should focus. Future research questions concern the role of services in the industry life cycle. Questions arise also regarding business



strategies, strategic innovations and the role of service capabilities in the creation of sustainable competitive advantages. The increasing role of industry 4.0 and the growing number of potential companies in low-income countries represent also new areas that are currently opening up for research. The anecdotal examples in article also shows why the transition from a product manufacturer to a service provider across sectors has a high practical relevance for companies.

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NOTES

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¿Es la servitización tan rentable como puede parecer?

Evidencias de empresas manufactureras españolas durante dos décadas



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Is servitization really profitable? Two decades of evidence from Spanish manufacturing companies

I. INTRODUCCIÓN

El crecimiento de la importancia de los servicios en la actividad empresarial es una realidad desde hace décadas. Aunque persistan los problemas relativos a la configuración de las estadísticas oficiales y el debate respecto a los sectores específicos que se incluyen en los epígrafes industria y servicios respectivamente, la tendencia es innegable. El peso de la industria en el Producto Interior Bruto (PIB) se ha ido reduciendo tanto en España como en muchos otros países de su entorno. En España en concreto, el porcentaje ha caído drásticamente desde los años 70. Y sigue cayendo. Ha pasado del 18,7% en 2000 al 15,8% en 2012, según



RESUMEN DEL ARTÍCULO

En las últimas décadas ha crecido el interés de las empresas manufactureras en la servitización tanto como vía para proteger sus mercados de productos tradicionales como para abrirse a nuevas oportunidades de negocio. Sin embargo, los resultados de esta estrategia se muestran esquivos. El estudio realizado en una base de datos de empresas manufactureras españolas en el periodo 1994-2010 confirma la dificultad de rentabilizar la estrategia incluso en empresas con un nivel de servitización del 30% y experiencia de más de una década en el proceso.

EXECUTIVE SUMMARY

There has been a surge of interest in servitization by manufacturing companies in recent decades. Incorporating additional services into a firm's offerings allow them to protect traditional product markets and enter new business areas. This research focuses on a database of Spanish manufacturing companies over the period 1994-2010. Data analysis highlights the difficulty in profiting from this strategy. Even companies operating with a level of servitization in excess of 30% for over a decade struggle to achieve success through servitization.

datos del Instituto Nacional de Estadística-INE.

Sin embargo, como ha destacado la Comisión Europea (2014) la importancia económica de las actividades industriales va más allá de su contribución al PIB, destacando su peso en la exportaciones, en el esfuerzo en Investigación y Desarrollo de origen privado así como su capacidad de creación de empleo.

Además las interacciones de la industria con el resto del tejido económico se extienden aguas arriba hacia las materias primas y aguas abajo hacia los servicios empresariales (como los logísticos o financieros), servicios a consumidores (como los servicios post-venta de bienes duraderos) o los relacionados con

el turismo, multiplicando su efecto en la economía. Las actividades industriales están integradas en complejas y crecientemente sofisticadas cadenas de valor en las que se relacionan empresas de diferentes tamaños, países y sectores. Por todo ello, la Comisión enfatiza la necesidad de disponer de una fuerte base industrial que sea clave en la recuperación económica y la competitividad de Europa.

Observamos por tanto que junto con un incremento del peso de los servicios en la actividad económica general se produce un incremento de los servicios ligados a la producción. Algunos autores (Orkestra, 2013) distinguen dentro del fenómeno de la servitización, por un lado, el aumento del peso de los servicios en la economía llegando a superar a la industria y por otro, la creciente contribución de los servicios a la propia industria manufacturera. Es en este último enfoque en el que vamos a centrar nuestro trabajo que se circunscribirá a la industria manufacturera española.

Las actividades industriales están integradas en complejas y crecientemente sofisticadas cadenas de valor en las que se relacionan empresas de diferentes tamaños, países y sectores

2. LA SERVITIZACIÓN DE LA INDUSTRIA MANUFACTURERA COMO NECESIDAD Y OPORTUNIDAD

La separación entre actividad industrial y servicios no es tan clara como parece indicarse hasta ahora. En algunos sectores industriales de economías desarrolladas la presión de competidores provenientes de países de bajo coste ha conducido a la clara disminución del tamaño del sector (en algunos casos incluso la práctica desaparición de la actividad manufacturera en el país). Consecuentemente, tanto las autoridades públicas como las propias empresas han centrado sus esfuerzos en la búsqueda de estrategias adecuadas para garantizar la viabilidad futura de las

empresas y construir y aprovechar nuevas oportunidades de futuro. En este contexto, los desarrollos tecnológicos y la creciente sofisticación de productos y procesos proporcionan una oportunidad de diferenciación que debe considerarse, no sólo para defender la competitividad de las empresas en los negocios actuales sino para penetrar en nuevos mercados, tanto de productos como de servicios.

Desde los años 80, se han identificado oportunidades para la industria manufacturera por medio de la servitización que consiste en añadir beneficios a la propuesta de valor a través del ofrecimiento de paquetes más completos incorporando junto con los productos, servicios, soporte o conocimiento, siendo además objeto de atención de muchos académicos e investigadores (Vandermerwe y Rada, 1988; Neely et al., 2011, Manzini et al., 2001; Baines et al., 2007). Pero la servitización no se limita a añadir servicios a los productos sino que permite abrirse a nuevas actividades sobre la base de los productos tradicionales. La incorporación de servicios por parte de una empresa industrial ofrece oportunidades muy variadas desde la mera cobertura de necesidades relacionadas con la propia venta del producto como transporte, instalación, formación o venta de componentes hasta servicios más complejos como los contratos de mantenimiento completo o la consultoría y contratos de gestión de los repuestos, el mantenimiento u otras operaciones (véase la **Tabla I** en la que se avanzaría en este sentido desde la celda superior izquierda hasta la celda inferior derecha). Si consideramos ratios base instalada-nuevas unidades como las citadas por Wise y Baumgartner (1999) de 13 a 1 para automóviles, 15 a 1 para aviación civil ó 22 a 1 para locomotoras, el potencial de los mercados parece claro.

La servitización se configura, en consecuencia, como una vía de oportunidad tanto para mejorar la competitividad en los negocios y mercados actuales como para abrir nuevas áreas de negocio. Sin embargo, conlleva importantes transformaciones en las empresas implicadas que deberán definir nuevos modelos de negocio para incorporar servicios y nuevos elementos intangibles a su oferta.

El objetivo de este trabajo es analizar el proceso de incorporación de servicios a la oferta de las empresas manufactureras españolas desde 1994 hasta 2010 y su impacto en sus resultados y crecimiento. La forma de medida del nivel de servitización que se utiliza es su peso en la facturación de las empresas manufactureras

PALABRAS CLAVE

Servitización, España, Industria manufacturera, Estrategia de negocio, Resultados empresariales

KEY WORDS

Servitization, Spain, manufacturing industry, Business strategy, Business performance.

Tabla 1. **Servicios sobre la base instalada. Basado en Oliva y Kallenberg (2003).**

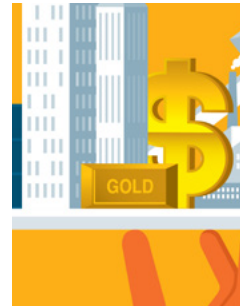
	SERVICIOS ORIENTADOS AL PRODUCTO	SERVICIOS ORIENTADOS AL USUARIO FINAL
Servicios basados en transacciones	Servicios básicos de la base instalada • Documentación • Transporte hasta el cliente • Instalación • Formación sobre el producto • Servicio de Asistencia Técnica • Inspección y Diagnóstico • Reparaciones/Reposición de piezas • Actualizaciones del producto • Restauración del producto • Reciclaje	Servicios profesionales • Ingeniería de proceso (test, optimización y simulación) • Procesos orientados a la I+D • Gestión de piezas de recambio • Formación orientada al proceso • Formación orientada al negocio • Consultoría orientada al proceso • Consultoría orientada al negocio
Servicios basados en relaciones	Servicios de Mantenimiento • Mantenimiento preventivo • Monitorización • Gestión de piezas de recambio • Contrato total de mantenimiento	Servicios operativos • Gestión del mantenimiento • Gestión de las operaciones

estudiadas. El enfoque es principalmente descriptivo, se trata de conocer a través de su efecto en la cifra de negocio de las empresas el avance real de la servitización en las empresas manufactureras españolas. A pesar de la ya extensa literatura en esta área los estudios basados en datos no son tan frecuentes y los resultados no son claros. La paradoja de la servitización (Neely et al., 2011) se refleja en el debate sobre sus efectos económico-financieros. Mientras algunos autores presentan evidencias de los beneficios de la servitización, basados habitualmente en el estudio de casos concretos, estudios más recientes indican que en la práctica la complejidad de los retos de la implementación de la estrategia puede incluso provocar caídas de resultados. Los estudios que valoran la servitización desde una perspectiva más cuantitativa, confirman que los servicios no son por si mismos garantía de rápidos resultados y que el cuidado de la implementación de la estrategia es imprescindible. Por último, cabe destacar que algunos autores han identificado la necesidad de llegar a una mínima masa crítica para conseguir obtener el impacto económico en la estrategia (Visnjic et al., 2013).

3. SERVITIZACIÓN: LUCES Y SOMBRAS

A pesar del acuerdo general sobre la tendencia a la servitización de la industria manufacturera diferentes autores (Manzini et al., 2001; Neely et al., 2011) han advertido de la dificultad de los cambios requeridos y del gran reto que supone. En la transición de productos hacia servicios las empresas se apalancan en capacidades actuales pero también deben incorporar nuevas capacidades y competencias. Requieren nuevos procesos, estructuras y capacidades para pasar de modelos de negocio basados en la transacción a otros basados en la relación, así como un cambio de mentalidad empresarial y una apuesta decidida por parte de la dirección. Este esfuerzo implica consecuentemente una menor atención y dedicación de recursos al desarrollo de productos, la tradicional fuente de ingresos de la empresa. En la literatura se observa un interés creciente por la naturaleza de la conexión entre las capacidades de servicios y producción (Benedettini et al, 2015). Como contrapartida, la complejidad de la transformación apunta posibilidades mayores de sostenibilidad de las ventajas competitivas obtenidas. Resulta claramente más sencillo imitar una actividad o elemento concreto que transformar el modelo de negocio, especialmente cuando implique cambios en el conjunto de las actividades y especialmente si supone renuncias sobre productos o mercados en los que opera la empresa (Porter, 1996; Casadesus-Masanell, 2004; Ricart, 2009). Incluso sin llegar a considerar los cambios precisos, algunas características de los servicios indican una mayor sostenibilidad, como por ejemplo su intangibilidad (Heskett, 1987) ya que aumentan las posibilidades de ambigüedad causal como elemento de la inimitabilidad (Barney, 1991). Las capacidades intangibles pueden ser más difíciles de apreciar por la competencia y consecuentemente también es más complejo identificar la raíz de la ventaja competitiva que es el primer paso para poder replicarla.

Por otra parte, cabe identificar otros aspectos que pueden aconsejar a una empresa manufacturera explorar la servitización como estrategia: los servicios tienden normalmente a presentar márgenes mayores que los productos (Anderson et al., 1997), a ser más estables en cuanto a la producción de ingresos (Quinn et al., 1990) (especialmente si se comparan con bienes de inversión y productos de consumo duraderos), a requerir menos activos (Wise y Baumgartner, 1999) y se pueden desarrollar con apoyo en una



base instalada de productos con un largo ciclo de vida histórico y esperado (Potts, 1988; Oliva y Kallenberg, 2003).

De la misma manera es importante destacar la habitual mayor exigencia de proximidad al mercado en los servicios frente a muchas de las actividades manufactureras en las que los competidores pueden acceder a mercados muy alejados de sus establecimientos productivos. Esta condición unida a la mayor importancia de la base relacional, el mayor potencial de adaptación a las peculiaridades del cliente o customización y su mayor duración en el tiempo lo que exige un esfuerzo continuado, eleva barreras de entrada para nuevos competidores procedentes de países alejados y en especial supone limitaciones importantes para competidores especializados en la fabricación de productos de bajo coste.

Con base en lo expuesto en las líneas anteriores podemos concluir que en los mercados actuales crecientemente competitivos y dinámicos, la servitización abre a las empresas manufactureras oportunidades de crear nuevas y más sostenibles fuentes de diferenciación, sostenibilidad y diversificación de riesgos. El interés será por tanto mayor en mercados maduros de lento crecimiento y alta rivalidad competitiva donde crece la necesidad de búsqueda de nuevas vías para captar y fidelizar mercados. De hecho, algunos autores han identificado subsegmentos en que los altos márgenes de los productos suponen una falta de incentivación para la entrada en servicios (Shapiro y Varian, 1998 en Suarez et al., 2013).

Aunque habitualmente se asocia la introducción de servicios con la madurez, Suárez et al. (2013) consideran que también en fases tempranas del ciclo de vida puede ser interesante porque ayuda a la empresa a reducir la incertidumbre acerca de las necesidades de los clientes y la tecnología.

Sin embargo, el proceso de servitización no está exento de dificultades y riesgos. Implica un cambio estratégico de diversificación y como tal de largo plazo e importantes transformaciones dentro de la empresa. Según algunas investigaciones aunque la mayoría de las empresas ha optado por alguna forma de expansión a servicios (80%) únicamente una quinta parte ha conseguido el éxito (Moscoso y Lago, 2008). Incluso se ha asociado la servitización con mayores riesgos de quiebra (Neely, 2008). Otros autores advierten de la lentitud del proceso de servitización (Oliva y Kallenberg, 2003).

Por otra parte, aunque permita una mayor sostenibilidad, las

barreras no son nunca infranqueables y las economías de bajos costes también están moviéndose en este terreno. Si en 2007 en China menos del 1% de las empresas habían servitizado, en los 4 años siguientes la cifra alcanzada superaba el 19% en parte debido al impulso del gobierno (Neely et al., 2011), lo que demuestra una vez más la necesidad de contar con el dinamismo de la competencia mundial.

4. LA SERVITIZACIÓN DE LA EMPRESA MANUFACTURERA ESPAÑOLA: EVIDENCIAS EMPÍRICAS

En este contexto este trabajo trata de analizar la evolución de la servitización en la industria manufacturera española, su dependencia o no de variables como el tamaño de las organizaciones o la percepción de estabilidad de un mercado así como su relación con parámetros que determinan el rendimiento empresarial. Con este objeto se realiza un estudio descriptivo y exploratorio de una base de datos de 670 empresas manufactureras españolas en un periodo de estudio que comprende 17 años, desde el año 1994 hasta 2010.

La fuente de información sobre la que se ha analizado la evolución de la servitización en el contexto de la industria manufacturera española es la Encuesta sobre Estrategias Empresariales (ESEE). La gestión y actualización de esta base de datos la desarrolla la Fundación SEPI perteneciente al Ministerio de Hacienda y Administraciones Públicas del Gobierno de España. Esta fundación pretende que la base de datos ESEE sea una muestra representativa de empresas manufactureras españolas para lo que intenta reducir el deterioro de la muestra inicial contemplando los cambios en la estructura societaria de las empresas (fusiones, adquisiciones, escisiones, absorciones, etc.), evitando el decaimiento en la colaboración de empresas e incorporando nuevas. Las empresas son seleccionadas por muestreo estratificado por sector y tamaño.



4.1. Caracterización de la muestra

La variable que se toma como referencia para depurar la base de datos es el nivel de servitización que se mide de la pregunta de la encuesta ESEE que recoge la proporción que la oferta de servicios u otras actividades distintas de la fabricación significa sobre las ventas de la empresa. Esta variable se mide con una periodicidad

cuatrienal: 1994/97, 1998/01, 2002/05, 2006/09 y 2010/13. El criterio para configurar la base de datos para el análisis es el de contar con información de esta variable para el total de los años en estudio. Así, la muestra resultante la componen un total de 670 empresas disponibles en la encuesta utilizada, de las aproximadamente 1.650 empresas que responden de media cada año.

El análisis descriptivo de los datos arroja unos resultados interesantes. La representatividad de las pymes crece desde el año 1994 al 2010, pasando del 64,4% al 71,5% del total de empresas que conforman la muestra. Además, todos los sectores que se contemplan en esta base de datos quedan representados. Destacan el sector de productos metálicos (12,7% del total de empresas), productos alimenticios y tabaco (11%), y con una representatividad en torno al 7% cada uno los siguientes tres sectores: la industria química y productos farmacéuticos, productos de caucho y plástico y productos minerales no metálicos.

Con datos de 2010 la forma jurídica más utilizada es la sociedad anónima (60%), seguida de la sociedad limitada (37%) y a mucha distancia las cooperativas de trabajo (1,8%). El resto de empresas se enmarcarían en otras formas jurídicas (1,2%). Las empresas familiares representan el 42,4% de la muestra, considerando como empresa familiar aquella en la que un grupo familiar participa activamente en el control y/o gestión de la empresa.

Respecto al número de mercados en los que operan las empresas de la muestra se observa cómo la mayor parte de ellas (64%) operan en uno o dos mercados, mientras que el 20% lo hace en tres y el resto se reparte de manera equilibrada entre cuatro y cinco mercados (en torno al 8% en cada segmento). No se observan cambios significativos en cuanto al número de empresas que aumentan o disminuyen el número de mercados en los que operan. Otro aspecto importante es el ámbito del mercado. En este sentido se observa que la mayor parte de las empresas trabajan en el ámbito nacional (alrededor del 40%), sin embargo este porcentaje decrece en un 7,6% en el periodo en estudio, mientras que aumenta de manera significativa el número de empresas que trabajan tanto el mercado interior como el exterior (del 20,6% de las empresas en 1994 al 30,6% en 2010) y el porcentaje de empresas que operan sólo en mercados extranjeros (de un 6,1% en 1994 al 8,7% en 2010).

En relación al mercado también resulta interesante observar cuál ha sido la evolución de las empresas de la muestra respecto a su cuota de participación en el principal mercado en el que desarrollan su actividad. Concretamente el porcentaje de empresas que señala que su representatividad en el mercado es insignificante (con una cuota de mercado prácticamente de cero) pasa de un 43,5% en 1994 al 62,7% en 2010, reduciéndose en el resto de casos. Por ejemplo, el porcentaje de empresas que ostentaba una cuota de mercado superior a cero pero inferior al 10% pasa del 13% en 1994 al aproximadamente 8% en 2010.

4.2. Evolución del nivel de servitización

Como se ha definido en el apartado anterior, el nivel de servitización se mide en función de la proporción que la oferta de servicios u otras actividades distintas de la fabricación significa sobre las ventas de la empresa. Del conjunto de empresas que conforman la muestra (670), el 74,5% servitiza en al menos uno de los periodos en los que se pregunta por este indicador, acercándose a valores indicados por algunos autores (Moscoso y Lago, 2008). Aproximadamente el 26% (175 empresas) servitizan algo durante todos los periodos. La tendencia general en lo que respecta al nivel de servitización en el periodo 1994-2013², atendiendo a su valor medio en cada uno de los cuatrienios en los que se mide la variable, es positiva pero muy discreta y con una gran variabilidad (**Tabla 2**). Se puede por tanto decir que en general las empresas servitizan más con el transcurso del tiempo. Sin embargo, cabe destacar que también se incrementa el número de empresas que no servitizan en absoluto con el paso de los años. Así en el año 1994 el 47,6% de las empresas presenta

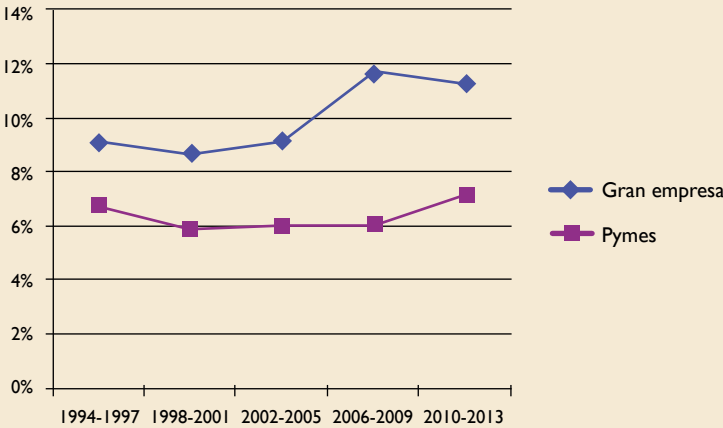
Tabla 2. Principales estadísticos descriptivos para la variable nivel de servitización

PERIODOS	MEDIA	DESV.TÍP.	MÍNIMO	MÁXIMO
1994-1997	7,46	13,62	0,0	95,0
1998-2001	6,72	11,22	0,0	60,0
2002-2005	6,96	11,72	0,0	80,0
2006-2009	7,67	12,86	0,0	85,0
2010-2013	8,35	14,61	0,0	81,0

un porcentaje de servicios sobre el total de ventas nulo, mientras que en el año 2013 pasa a ser el 53,3% lo que parece estar indicando el abandono del proceso de servitización. Se observa en consecuencia el mayor peso de las empresas que persisten en el proceso ya que, aunque en valor absoluto es menor el número de empresas que servitizan, las que sí lo hacen han aumentado el porcentaje de ingresos por servicios.

La progresión en el nivel de servitización de las empresas que sí servitizan es también diversa. El porcentaje de empresas con un nivel de ingresos por servicios de entre 1 y el 25% de la facturación, cae en el periodo 1994-2013 en torno al 9%, de un 43% a un 34% del total de empresas de la muestra. El porcentaje de empresas que se sitúa con unos ingresos por servicios de entre el 25 y 50% de su facturación experimentan un ligero crecimiento de algo más de 3 puntos porcentuales en el conjunto del periodo, pasando de 6,9 al 10%. El porcentaje de empresas con ingresos por servicios superior al 50% cae de manera importante durante el periodo 1998-2001 para volver a los valores de origen en el cuatrienio 2010-2013. Como en estudios anteriores (Neely, 2008), el tamaño de empresa se erige como una variable que parece condicionar el nivel de servitización (**Gráfico 1**). Cabe destacar, que la tasa de crecimiento inter-cuatrienal tanto para las grandes como para las pequeñas y medianas empresas es contenida, lo que refleja que la transición hacia una mayor oferta de servicios es lenta y pausada (Oliva y Kallenberg, 2003).

Gráfico 1. Evolución del porcentaje medio de servicios sobre facturación por tamaño de empresa



La comparación de medias mediante pruebas no paramétricas permite afirmar con un nivel de confianza del 95% que existen diferencias significativas entre el nivel de servitización de las pymes y de las grandes empresas para todos los periodos en estudio. Por otra parte y coincidiendo con Lodefalk (2012) se aprecia que el ámbito geográfico de las empresas que servitizan es más amplio que el de las empresas que no lo hacen. Este resultado podría relacionarse con el hecho de que las empresas que más servitizan son las grandes empresas que cuentan con menores restricciones para poder trabajar en mercados exteriores y operan generalmente en varios mercados. Sin embargo, un análisis específico de los datos permite afirmar que también en las pymes se da este mismo resultado, es decir, las pymes que servitizan operan en ámbitos geográficos más amplios que las que no servitizan.

Por sectores la evolución en cuanto al nivel de servitización es desigual. De los 20 sectores que se clasifican a las empresas en la base de datos de la ESEE, 12 presentan un CAGR³ positivo calculado para el periodo 1994-2013 (**Tabla 3**).

Cabe destacar por su tasas de crecimiento los sectores de industria de la madera (CAGR= 7,6%), textiles y confección (CAGR= 3,1%) e industria del papel (CAGR= 2,9%). Por una lado estos sectores pueden identificarse como sectores maduros y de alta rivalidad competitiva lo que, como ya se ha comentado, incrementa la necesidad de búsqueda de nuevas vías para captar y fidelizar mercados. Por otro lado es interesante tener en consideración que estos sectores parten con unos niveles medios de servitización en el año 1994 de los más bajos entre el conjunto de los sectores lo que restaría importancia a los crecimientos.

Asimismo se ha analizado si la percepción que las empresas tienen respecto a la estabilidad o no del principal mercado en el que operan influye en el nivel de servitización. Tomando como base las empresas que sí servitizan y tras el análisis de las variables para los periodos 2002-2005 y 2006-2009 no se puede afirmar que exista tal relación dado que no resulta estadísticamente significativa. Los dos periodos analizados se han elegido por ser los consecutivos de mayor estabilidad económica general⁴.

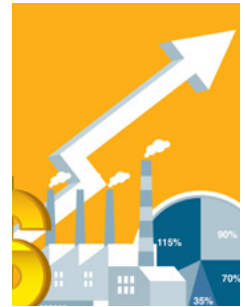


Tabla 3. CAGR de servitización para los 20 sectores industriales

	NIVEL MEDIO DE SERV. 1994	CAGR 94_13	CAGR 94_05	CAGR 06_13
1. Industria cárnica	9,8	-0,5%	-3,9%	4,8%
2. Productos alimenticios y tabaco	8,5	0,0%	-1,7%	-0,6%
3. Bebidas	9,3	1,1%	-0,4%	-1,4%
4. Textiles y confección	5,1	3,1%	1,1%	3,6%
5. Cuero y calzado	0,7	2,4%	-2,9%	4,8%
6. Industria de la madera	2,2	7,6%	4,1%	5,5%
7. Industria del papel	4,7	2,9%	1,7%	-1,0%
8. Artes gráficas	2,0	0,3%	-15,9%	10,5%
9. Industria química y productos farmacéuticos	10,6	2,1%	2,5%	2,0%
10. Productos de caucho y plástico	7,1	-0,2%	1,7%	-2,9%
11. Productos minerales no metálicos	7,4	-0,3%	-0,7%	1,9%
12. Metales férreos y no férreos	3,1	-0,5%	1,5%	-3,4%
13. Productos metálicos	6,0	-0,5%	-0,7%	3,2%
14. Máquinas agrícolas e industriales	9,1	0,5%	1,8%	-2,6%
15. Productos informáticos, electrónicos y ópticos	11,3	-0,4%	-4,0%	5,4%
16. Maquinaria y material eléctrico	9,0	0,6%	1,1%	0,0%
17. Vehículos de motor	8,2	-1,3%	-2,7%	0,5%
18. Otro material de transporte	28,0	-3,6%	-10,6%	-1,3%
19. Industria del mueble	5,8	2,5%	0,0%	3,6%
20. Otras industrias manufactureras	3,9	6,8%	6,2%	6,2%

5. EL IMPACTO DE LA SERVITIZACIÓN SOBRE EL RENDIMIENTO EMPRESARIAL

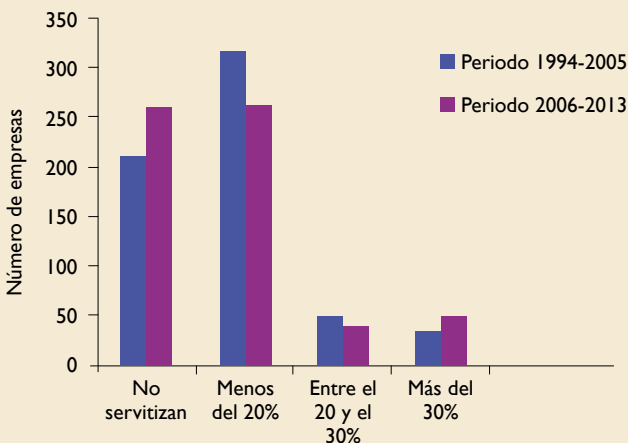
Como se ha indicado anteriormente, como la mayoría de las estrategias de diversificación, el proceso de servitización es complejo y lento y exige alcanzar una masa crítica para poder rentabilizarlo. Algunos autores han cifrado en un 30% el nivel mínimo necesario para invertir la tendencia a la disminución de resultados (Visnjic et al., 2013). Por su parte, Suarez et al. (2013) señalan como punto de inflexión para revertir la tendencia a la caída en el margen operativo niveles superiores al 56%. Los autores de este último estudio basado en los datos de 500 empresas cotizadas en el sector de los paquetes de software reconocen además diferencias entre subsegmentos de la misma industria.

Para considerar el efecto de la masa crítica en el impacto en el rendimiento en nuestro análisis se configuran cuatro grupos: (1) las empresas que no servitizan; (2) las empresas con unos ingresos medios por servicios inferiores al 20% de la facturación; (3) las

empresas con un nivel de servitización entre el 20 y el 30%; y (4) las empresas que servitizan más, las que presentan unos ingresos medios en el periodo que suponen más del 30% de su facturación. La variable que se ha utilizado como referencia para comparar el desempeño de las empresas es la intensidad de servitización en el periodo 1994-2005. Se toma este periodo para poder realizar la comparación con el periodo posterior hasta 2010, suponiendo por tanto que las empresas de la muestra han realizado un cierto recorrido en el proceso de servitización.

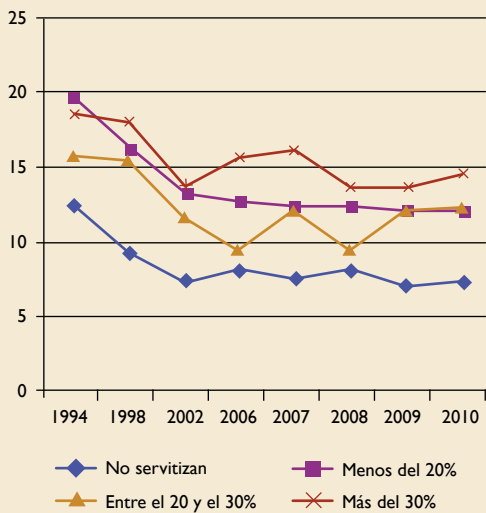
Las empresas que presentan una determinada intensidad de servitización en el periodo de análisis 1994-2005 no tienen por qué mantener la misma intensidad para periodos posteriores (**Gráfico 2**). De hecho, se observa cómo, en línea con lo esperado, aumenta el número de empresas que no servitizan a costa de, principalmente, las empresas que pertenecen al grupo de intensidad de servitización inferior al 20% (79 empresas pasan a no servitizar desde quienes servitizaban menos del 20% hasta 2005). El aumento en el número de empresas que servitizan más del 30% viene motivado principalmente por empresas que servitizaban en el periodo anterior entre el 20 y 30% (15 empresas) y las que pasan de servitizar menos del 20% a más del 30% (17 empresas). Así, los flujos de cambio más importantes se dan entre grupos contiguos.

Gráfico 2. Evolución del número de empresas en cada categoría de intensidad de servitización entre periodos (hasta 2005 y desde 2006 a 2013)



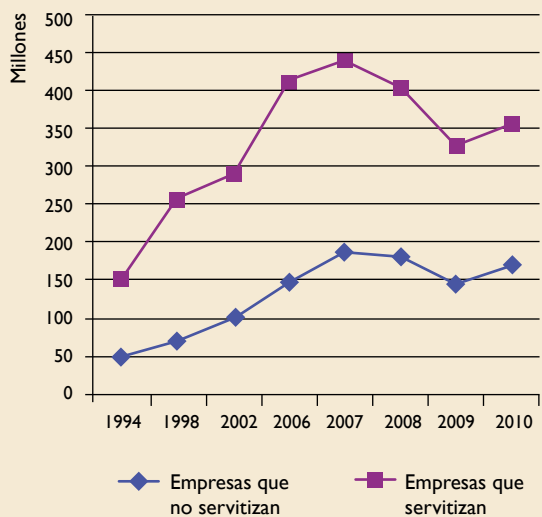
Teniendo en cuenta estos grupos se analiza en primer lugar el impacto de la intensidad en servitización en resultados a través de la cuota de mercado (AmoaKo-Gyampaah y Acquaah, 2008). La tendencia general, independientemente del grado de intensidad en servitización es negativa, es decir, el conjunto de empresas pierde cuota de mercado. Sin embargo, se puede observar (**Gráfico 3**) cómo las empresas con una mayor intensidad en servitización muestran una caída más suave. El CAGR del conjunto del periodo (1994-2010) para los grupos de empresas que servitizan más del 30% y entre el 20 y 30% es del -1,5%, mientras que para los que no servitizan o lo hacen en menor medida (menos del 20%) la tasa de crecimiento compuesta es el doble (-3%).

Gráfico 3. Evolución de la cuota de mercado en función de la intensidad de servitización



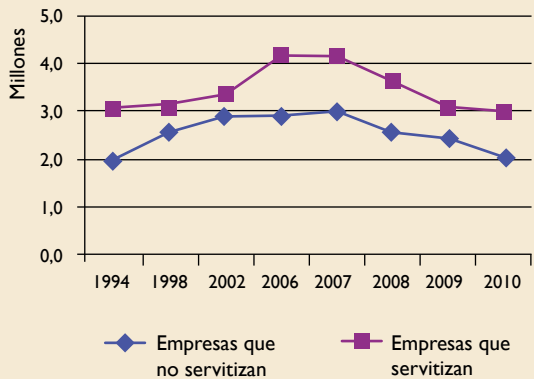
En segundo lugar se analiza la evolución de las ventas en función de los niveles de servitización. En este caso se encuentran diferencias significativas entre los grupos de empresas que servitizan (los tres grupos) y los de las que no lo hacen. Puede pensarse que se trata de una relación lógica teniendo en cuenta la previamente establecida relación entre tamaño y servitización. Sin embargo, como se puede observar en el **Gráfico 4**, considerando sólo las grandes empresas, las diferencias son también estadísticamente significativas.

Gráfico 4. Evolución de las ventas para el grupo de empresas grandes diferenciando entre quienes servitizan y no lo hacen en el periodo 1994-2005



El efecto de la servitización sobre el valor añadido es aún más claro que sobre las ventas. Los grupos de empresas servitizadas presentan mayores valores en todos los periodos, e igualmente ocurre cuando se consideran las empresas agrupadas por su tamaño. Concretamente para las pymes se observan diferencias estadísticamente significativas a partir del año 2006 entre las empresas que servitizan y las que no lo hacen (**Gráfico 5**).

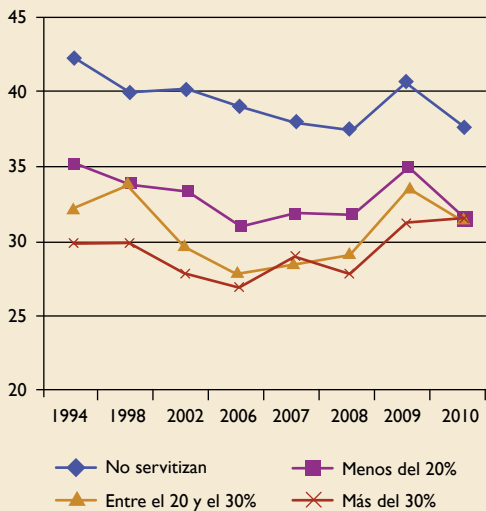
Gráfico 5. Evolución del valor añadido para el grupo de pequeñas y medianas empresas diferenciando entre quienes servitizan y no lo hacen en el periodo 1994-2005



Hasta el momento se ha observado cómo las empresas con cierto nivel de servitización presentan un mejor rendimiento que las empresas que no lo hacen en cuanto a ventas y valor añadido bruto. Sin embargo, al analizar el valor añadido sobre producción nos encontramos con la paradoja de la servitización. Como se observa en el **gráfico 6** los grupos de empresas no servitizadas son las que presentan unos resultados claramente superiores a las empresas servitizadas en todos los periodos. Considerando el informe de Torrent-Sellens y Díaz-Chao (2015) este hecho puede ser consecuencia de una mejor capacidad de adaptación de las pymes en lo que se refiere a su estructura de costes, especialmente en la etapa expansiva (2002-2007) cuando el valor añadido bruto de éstas creció un 8,9% por un 0,6% de las grandes empresas industriales. En el periodo recesivo, 2008-2010, el comportamiento fue de una caída similar en el valor añadido bruto. Analizando el conjunto del periodo se observa cómo el único grupo que presenta una tendencia positiva es el de empresas cuyo nivel de servitización es superior al 30%. Si el análisis se realizara a partir del año 2006 se incluirían además el resto de grupos de empresas que sí servitizan.

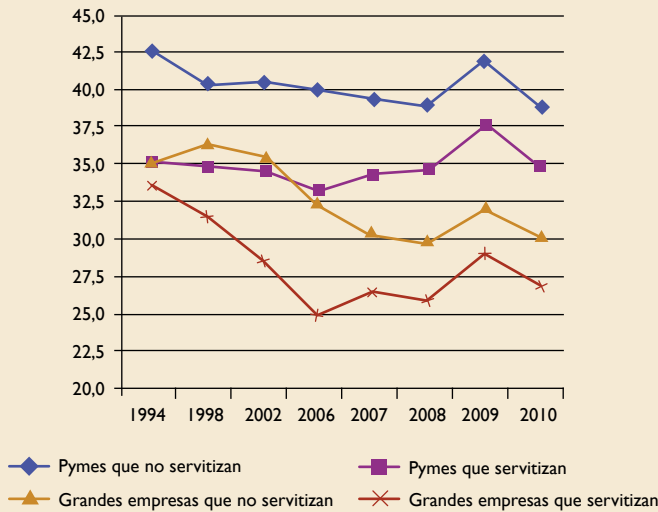
El análisis en detalle considerando el tamaño de las empresas, permite comprobar que independientemente del mismo, las

Gráfico 6. Evolución del valor añadido sobre producción en función de la intensidad de servitización



empresas que mejoran en lo que respecta al indicador del valor añadido sobre producción son las empresas que servitizan, destacando eso sí los mejores resultados de las pymes frente a los de las grandes empresas (**Gráfico 7**). En cualquier caso, otros estudios también han detectado una mayor dificultad por parte de las grandes empresas para rentabilizar la servitización frente a las pequeñas (Neely, 2008).

Gráfico 7. Evolución del valor añadido sobre producción en función del tamaño y de si servitizan o no en el periodo 1994-2005



6. CONCLUSIONES

Tras el análisis realizado en una muestra de 670 empresas manufactureras españolas en el periodo 1994-2010 se confirma el interés de las empresas por intentar el proceso de servitización ya que la mayoría de ellas (74,5%) servitizan en algún momento de este periodo. Igualmente se coincide con estudios anteriores en la dificultad de la implementación de esta estrategia ya que se recoge un abandono del proceso de servitización que hace que el número de empresas que no servitizan, el 53,3% en el último periodo, supere a las que sí lo hacen. Sin embargo, esto no impide el incremento del nivel de servitización general gracias a la mayor contribución de las empresas que sí consiguen persistir en el proceso de servitización. Este hecho se debe, por un lado,

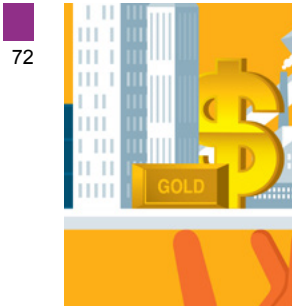
a que las empresas de mayor tamaño son las que presentan unos niveles de servitización más altos y por otro a que las empresas servitizadas consiguen mayores ventas que las no servitizadas de similar tamaño. Asimismo se relaciona el nivel de servitización con la capacidad para operar en mercados de ámbito geográfico más amplio.

Este efecto es claro también en cuanto al valor añadido, siendo significativa su relación con el nivel de servitización e independientemente del tamaño de la empresa. Sin embargo esta relación se revierte al considerar el valor añadido sobre producción donde los mejores resultados lo obtienen las empresas más pequeñas y menos servitizadas.

Además de los factores como la dificultad de adaptación del modelo de negocio y la determinación para el cambio ya mencionados, esto podría deberse, siguiendo a Gebauer et al (2005) en Neely (2008) en su estudio sobre el sector de la máquina herramienta alemana, a un mayor peso de las estrategias defensivas que de las ofensivas. Dicho de otra manera, dada la lenta evolución del nivel de servitización, los servicios se están utilizando más para mantener la competitividad en los mercados actuales que para abrir nuevos negocios. En estas condiciones el interés de la estrategia no se recoge en el crecimiento de los beneficios empresariales como cuando se inician nuevos negocios, sino en la capacidad de mantenerse en los actuales.

Los casos de éxito indican el interés de una mayor investigación sobre las condiciones específicas de realización de la servitización pues lo que sí queda muy claro es su dificultad para trasladarlo a los resultados empresariales.

En este sentido sería interesante plantear como línea futura de investigación el análisis del tipo concreto de servicios ofertados distinguiendo su naturaleza y su engarce en la estrategia general de la empresa, si son principalmente instrumentales para apoyar el negocio tradicional o si por el contrario, abren nuevas oportunidades de negocio. Este tipo de análisis no es posible con la actual configuración de esta base de datos.



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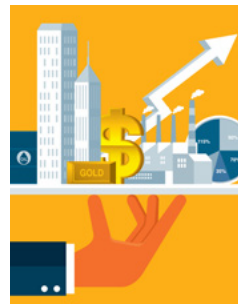
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NOTAS

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2. En este caso el periodo de análisis para esta variable va hasta 2013 ya que es el último periodo disponible en esta base de datos.
3. CAGR: Compounded Annual Growth Rate (Tasa de Crecimiento Compuesto Anual)
4. La cuestión relativa a la percepción del mercado se responde en los años 2002 y 2006.





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Is servitization really profitable? Two decades of evidence from Spanish manufacturing companies

¿Es la servitización tan rentable como
puede parecer? Evidencias de empresas
manufactureras españolas durante dos décadas



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I. INTRODUCTION

There has been an increase in the relevance of services in business activity for decades. Although there are still problems with the configuration of official statistics and debate about the specific sectors to be included in industry and services indicators, respectively, the tendency is undeniable. The relative weight of industry in Gross Domestic Product (GDP) has been diminishing in Spain as well as long as in other European countries. Specifically in Spain, the percentage has dropped sharply since the 70s. And it is still decreasing. According to the Instituto Nacional de Estadística, INE, Industrial GDP fell from 18.7% in 2000 to 15.8% in 2012.



EXECUTIVE SUMMARY

There has been a surge of interest in servitization by manufacturing companies in recent decades. Incorporating additional services into a firm's offerings allow them to protect traditional product markets and enter new business areas. This research focuses on a database of Spanish manufacturing companies over the period 1994-2010. Data analysis highlights the difficulty in profiting from this strategy. Even companies operating with a level of servitization in excess of 30% for over a decade struggle to achieve success through servitization.

RESUMEN DEL ARTÍCULO

En las últimas décadas ha crecido el interés de las empresas manufactureras en la servitización tanto como vía para proteger sus mercados de productos tradicionales como para abrirse a nuevas oportunidades de negocio. Sin embargo, los resultados de esta estrategia se muestran esquivos. El estudio realizado en una base de datos de empresas manufactureras españolas en el periodo 1994-2010 confirma la dificultad de rentabilizar la estrategia incluso en empresas con un nivel de servitización del 30% y experiencia de más de una década en el proceso.

However, as the European Commission (2014) has highlighted, the economic importance of industrial activity goes beyond its contribution to GDP, with its weight in exports and private Research & Development, as well as its ability to create employment being particularly outstanding.

In addition, industry's interaction with the rest of the economic fabric relates upstream to raw materials and downstream to firm services (such as logistics and finance), consumer services (such as aftersales services for durable goods) or those related to tourism, multiplying their effect on the economy. Industrial activities are integrated in complex and increasingly sophisticated value chains

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where many companies of different sizes and from different countries and industries are interacting. As a result, the Commission has stressed the need for a strong industrial base for economic recovery and competitiveness in Europe. Consequently, the increasing importance of services in general economic activity has led to growth in production linked services. Regarding servitization, some authors (Orkestra, 2013) have highlighted the increased weight of services making them greater drivers of the economy than industry, as well as the rising contribution of services to the manufacturing industry itself. This study focuses on the latter issue, and on the Spanish manufacturing sector in particular.

2. MANUFACTURING INDUSTRY SERVITIZATION AS A MUST AND AN OPPORTUNITY

The distinction between services and industrial activity is not as clear as it may seem. In some industrial sectors in developed economies, the pressure from low cost competitors from other geographies has provoked a clear reduction in the size of the sector (even practical disappearance of that manufacturing activity in some countries). Consequently, both public authorities and firms have striven to find appropriate strategies to ensure future business viability and create and seize new opportunities for the future.

In this context, technological development and the growing sophistication of products and processes provide an opportunity for differentiation that should be considered not only as a way to protect company competitiveness in current businesses, but also to enter new product and service markets.

Since the 80s, new opportunities for manufacturing industry have been identified by means of servitization, which consists of adding benefits to the value proposition by offering more complete packages that also include products, services, support or knowledge. The matter has been researched by many academics (Vandermerwe & Rada, 1988; Neely et al., 2011; Manzini et al., 2001; Baines et al., 2007). However, servitization is not only about adding services to products, it also paves the way to new activities on the basis of traditional products. The incorporation of services by manufacturing companies may open a wide range of 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 the management of maintenance and operations (see **table 1**, from the top left cell to the bottom right). Figures of the installed-base-to-new-unit ratios of 13 to 1 for cars, 15 to 1 to civil aircraft and 22 to 1 for locomotives suggested by Wise & Baumgartner (1999) , make the potential very clear.

Thus, servitization constitutes an opportunity to enhance competitiveness in today's business and markets and to open new

KEY WORDS

Servitization, Spain, manufacturing industry, Business strategy, Business performance.

PALABRAS CLAVE

Servitización, España, Industria manufacturera, Estrategia de negocio, Resultados empresariales

Table 1. The Installed Base service space. Source: Oliva & Kallenberg, 2003

	PRODUCT ORIENTED SERVICES	END USER'S PROCESS ORIENTED SERVICES
Transaction based services	Basic installed services • Documentation • Transport to client • Installation • Product oriented training • Help desk • Inspection/ Diagnosis • Repairs/ spare parts • Product updates/ upgrades • Refurbishing • Recycling	Professional services • Process oriented engineering (test, optimization, simulation) • Process oriented R&D • Spare part management • Process oriented training • Business oriented training • Process oriented consulting • Business oriented consulting
Relationship based services	Maintenance services • Preventive maintenance • Condition monitoring • Spare parts management • Full maintenance contracts	Operational services • Managing maintenance function • Managing operations

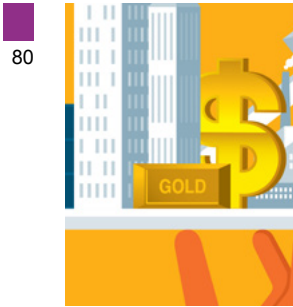
business areas. However, it implies significant transformations to the companies involved, as they will have to add services and new intangible elements to their offer.

The objective of this study is to analyse the process of incorporating services in the offer of Spanish manufacturing companies from 1994 to 2010 and its impact on their results and growth. The level of servitization is measured by the percentage of turnover based on services or other activities than manufacturing in the studied companies. The focus is mainly descriptive. The aim is to show, through the effect on turnover, the real advance of servitization in Spanish manufacturing companies.

Despite the already extensive literature in this area, quantitative studies have been infrequent and their results are not very clear. The servitization paradox (Neely et al., 2011) reflects the debate on the financial effects. While some authors show evidence of the benefits of servitization, usually based on specific case studies, more recent studies claim that the complex challenges that this strategy implies may even cause poorer results in practice. Studies that assess servitization from a more quantitative perspective confirm that services are not in themselves a guarantee of quick results and thorough implementation is unavoidable. Finally, some authors have identified the need to achieve a critical mass in order for the strategy to have a positive economic impact (Visnjic et al., 2013).

3. SERVITIZATION: LIGHT AND SHADOWS

Despite the general agreement about the trend to servitization in manufacturing industry, various authors (Manzini et al., 2001; Neely et al., 2011) have warned about the required changes and the major challenge that it involves. In the transition from product to services companies leverage on their present capabilities but also have to incorporate new capabilities and competences. New processes, structures and skills are required to shift from business models based on transaction to others based on relationships, as well as a change in business mind-set and clear determination by management. This effort therefore implies paying less attention and devoting fewer resources to product development, the firm's traditional source of income. The literature observes a growing interest in the nature of the link between services and production (Benedettini et al, 2015).



However, such complex transformations indicate greater possibilities for the sustainability of the competitive advantages obtained. It is clearly easier to imitate a specific activity or feature than to transform the business model, especially when this involves changes to the whole system of activities and when it implies trade-offs of products or markets in which the competitor is operating (Porter, 1996; Casadesus-Masanell, 2004; Ricart, 2009). Even without considering the required changes, some features of services indicate greater sustainability, such as their intangibility (Heskett, 1987) because they increase causal ambiguity as an inimitability factor (Barney, 1991). Intangible capabilities are difficult for competitors to appreciate and it is therefore also harder to identify the roots of competitive advantages, which is the first stage of being able to copy one.

Furthermore, there are other reasons why a manufacturing company may be interested in exploring a servitization strategy: services usually enjoy better margins than products (Anderson et al., 1997), they provide a more stable revenue stream (Quinn et al., 1990) (especially in comparison with investment and durable consumer goods), they require fewer resources (Wise & Baumgartner, 1999) and can be developed on an installed base of products with a long history and expected life cycle (Potts, 1988; Oliva & Kallenberg, 2003).

Moreover, it is important to highlight how services usually have greater market proximity requirements than many manufacturing activities in which competitors can address markets that are located at considerable distances from their manufacturing facilities. This condition, along with the greater importance of the relational base, their greater potential for customization and their longer duration, which requires an ongoing effort, raises the entry barriers to new competitors from distant countries and especially involves major difficulties for competitors that are specialized in the manufacture of low cost products.

Based on the above, we can conclude that in today's increasingly more dynamic and competitive markets, servitization opens opportunities for manufacturing companies to create new and more sustainable sources of differentiation and risk diversification. Therefore, there is greater interest in maturing markets with slow growth and high rivalry where there is a greater requirement to search for new ways to gain markets and build loyalty. In fact,

some authors have identified subsegments whose high margins discourage companies from servitizing (Shapiro & Varian, 1998 en Suarez *et al.*, 2013).

Although the addition of services is usually linked to maturing markets, Suárez *et al.* (2013) argue that in the early stages of the lifecycle it can also be an interesting strategy that helps to reduce uncertainty about technology and customer needs.

However, the servitization process is not exempt from risks and difficulties. It involves a diversification strategy and hence long-term and in-depth transformations within the company. According to some research, although most firms have tried some kind of expansion to services (80%) only one in five has succeeded (Moscoso & Lago, 2008). What is more, servitization has been related to higher bankruptcy risks (Neely, 2008) and some authors have noted that servitization processes can be slow (Oliva & Kallenberg, 2003).

Furthermore, although it enables higher sustainability, barriers are never impassable and low cost economies are also progressing in this field. While less than 1% of Chinese manufacturing companies had servitized in 2007, the figure surpassed 19% in the following four years, partly due to it being encouraged by the Chinese government (Neely *et al.*, 2011). This re-confirms the need to consider the dynamism of worldwide competitors.

4. THE SERVITIZATION OF SPANISH MANUFACTURING COMPANIES: EMPIRICAL EVIDENCE

In this context, the aim of this study is to analyse the evolution of the servitization of Spanish manufacturing companies, whether or not this is dependent on other indicators such as size or market stability perception, as well as their relationship with business performance parameters. To do this, a descriptive and explorative database analysis is conducted of 670 Spanish manufacturing companies over a 17 year period, from 1994 to 2010.

The source of the information is the “Encuesta sobre Estrategias Empresariales (ESEE)”. This database is managed and updated by the Fundación SEPI, which is dependent on the Spanish Government’s Ministry of Finance and Public Administration. The idea was to make the ESEE database a representative sample of Spanish manufacturing companies by considering changes in the corporate structure of firms (mergers, acquisitions, spinoffs, etc.), while reducing the deterioration of the initial sample and preventing



it from diminishing in size by making new incorporations. Companies are selected using stratified sampling by industry and size.

4.1. Dataset and descriptive analysis

The reference variable in the ESEE database regarding servitization is the one that describes the proportion of companies' sales coming from services or other activities than production. This variable is measured on the basis of four-year frequency from 1994 to 2013, so we should have information about the level of servitization for each company in the following periods: 1994/97, 1998/01, 2002/05, 2006/09 and 2010/13. The sample used in this research is formed by those companies that have information on this variable for all the years. Thus, the resulting sample comprised a total of 670 companies out of approximately 1,650 enterprises in the complete survey each year.

The descriptive analysis of the data yields some interesting results. The representation of SMEs grew from 1994 to 2010, from 64.4% to 71.5%. In addition, all sectors covered in the database are represented in the sample. Metal products represent 12.7% of all companies, food products and snuff represent 11%, and the figure is around 7% for each of the following three sectors: chemicals and pharmaceuticals, rubber and plastic and non-metallic mineral products.

Using data from 2010, the most common legal form is a public limited liability company (60%), followed by private limited companies (37%), with cooperatives far behind (1.8%). The remaining companies are framed in other legal forms (1.2%). Family businesses represent 42.4% of the sample, defined as a family group that actively participates in the control and/or management of the company.

Most of the companies in the sample operate in one or two markets (64%) while 20% do so in three markets. The remaining percentage of companies is evenly distributed in four or five markets (around 8% in each segment). In the analysed period, there have been no statistically significant changes in the number of companies that increase or decrease the number of markets in which they operate. Regarding the market's scope, it is clear that most of the companies work on a national level (40%). However this percentage decreased by 7.6% from 1994 to 2010. On the other hand, the number of companies that operate both in national and international markets

increased significantly from 20.6% in 1994 to 30.6% in 2010. The percentage of companies that only operate in foreign markets also increased from 6.1% in 1994 to 8.7% in 2010.

It is also interesting to highlight the evolution of companies with respect to their market share. This variable is measured on the basis of the main market in which the company operates. In 1994, 43.5% of the companies presented an insignificant market share (almost zero). This percentage had grown to 62.7% in 2010, declining in all other cases, i.e. the percentage of companies that held a market share greater than zero but less than 10% decreased from 13% in 1994 to almost 8% in 2010.

4.2. Changes in the level of servitization

As mentioned in the previous section, servitization level is measured in terms of the percentage that services or other activities apart from manufacturing contribute to the total sales of a company. 74.5% of the companies servitized in at least one of the five time intervals in which this variable was measured. This value is similar to empirical data from other studies (Moscoso & Lago, 2008). There are 175 companies that servitized in all of the periods, 26% of the sample. There is an upward trend in the average level of servitization for each period, albeit very modest and highly variable (Table 2), but companies clearly servitize more as time goes by. It is also interesting to note that there are more companies that do not servitize at all. While in 1994, 47.6% of companies declared a servitization level of zero, by 2013 the number had risen to 53.3%, which means that an increasing number of companies are giving up on servitization. Therefore, the companies that continue to servitize

Table 2. Descriptive values for servitization variable

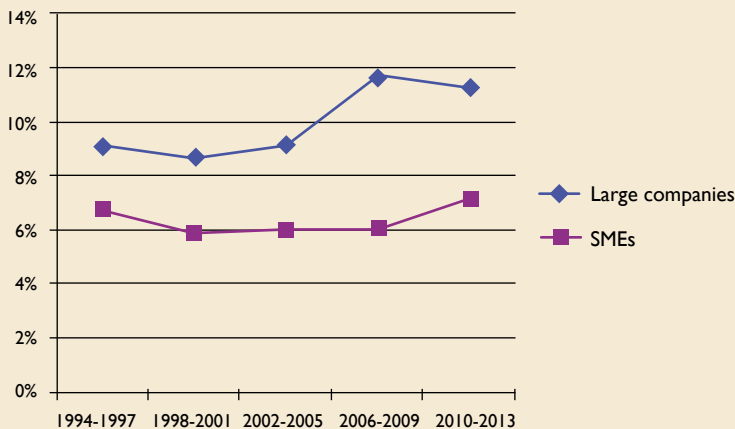
PERIODS	MEAN	STANDARD DEVIATION	MINIMUM VALUE	MAXIMUM VALUE
1994-1997	7,46	13,62	0,0	95,0
1998-2001	6,72	11,22	0,0	60,0
2002-2005	6,96	11,72	0,0	80,0
2006-2009	7,67	12,86	0,0	85,0
2010-2013	8,35	14,61	0,0	81,0

have greater relative income from services or other activities different from manufacturing.

The servitization level of the companies that do servitize is also diverse. The percentage of companies with a level of service revenues of between 1 and 25% of total sales fell by about 9% in the period from 1994 to 2013, from 43% to 34% of all companies in the sample. There was a small increase of 3% in companies with service revenues of between 25 and 50% of their turnover throughout the same period, from 6.9 to 10%, while the figure for companies with service revenues of more than 50% of their total sales decreased significantly from 1998-2001 but returned to the starting values in the 2010-2013 period.

As in previous studies (Neely, 2008), company size is a variable that seems to condition servitization (**Figure 1**). The servitization growth rate for both large and small and medium enterprises is notably low, reflecting how the transition to a greater supply of services is slow and gradual (Oliva & Kallenberg, 2003).

Figure 1. Evolution of the average servitization level by company size



Comparison of means using non-parametric tests shows statistically significant differences between large companies and SMEs for all the analysed periods. Moreover, the market scope of the companies that servitize is broader than that of non-servitized companies, as also noted by Lodefalk (2012). This could be because large companies servitized more than SMEs, so they have fewer restrictions on working both in foreign markets and in several

markets at the same time. However, a specific analysis of the data suggests that this is also true in SMEs: servitized SMEs operate in broader geographical areas than non-servitized SMEs.

The evolution of servitization by sector is revealed to be somewhat unequal. 12 out of the 20 sectors in the ESEE database have a positive compound annual growth rate (CAGR) (**Table 3**). The main growth rates are in the wood industry (CAGR = 7.6%), textiles and clothing (CAGR = 3.1%) and paper industry (CAGR = 2.9%). These sectors can be identified as mature and highly competitive, which, as already mentioned, increases the need to find new ways to attract and retain customers. But also note that these sectors started with the lowest average levels of servitization in 1994, which reduces the importance of the CAGR values for these three sectors.

We also analyses whether the companies' perception about the dynamism of their main market influences the level of servitization. We compared the answers of the managers of servitized companies

Table 3. Servitization level CAGR by sector

	SERVITIZATION LEVEL IN 1994	CAGR 94_13	CAGR 94_05	CAGR 06_13
1. Meat products	9,8	-0,5%	-3,9%	4,8%
2. Food products (excluding meat) and tobacco	8,5	0,0%	-1,7%	-0,6%
3. Beverages	9,3	1,1%	-0,4%	-1,4%
4. Textiles and clothing	5,1	3,1%	1,1%	3,6%
5. Leather and related products	0,7	2,4%	-2,9%	4,8%
6. Wood and cork products (excluding furniture)	2,2	7,6%	4,1%	5,5%
7. Paper products	4,7	2,9%	1,7%	-1,0%
8. Printing and reproduction of recorded media	2,0	0,3%	-15,9%	10,5%
9. Chemicals and pharmaceutical products	10,6	2,1%	2,5%	2,0%
10. Rubber and plastic products	7,1	-0,2%	1,7%	-2,9%
11. Non-metallic mineral products	7,4	-0,3%	-0,7%	1,9%
12. Basic iron and non-ferrous metals	3,1	-0,5%	1,5%	-3,4%
13. Fabricated metal products	6,0	-0,5%	-0,7%	3,2%
14. Agricultural and industrial machinery and equipment	9,1	0,5%	1,8%	-2,6%
15. Computer, electronic and optical products	11,3	-0,4%	-4,0%	5,4%
16. Electrical equipment and materials	9,0	0,6%	1,1%	0,0%
17. Motor vehicles	8,2	-1,3%	-2,7%	0,5%
18. Other transport equipment	28,0	-3,6%	-10,6%	-1,3%
19. Furniture	5,8	2,5%	0,0%	3,6%
20. Other manufacturing industries	3,9	6,8%	6,2%	6,2%

to the question about the dynamism of the main market in which they operate. As the questions were asked in 2002 and 2006, we analysed servitization in the 2002-2005 and 2006-2009 periods, but found no statistically significant differences.

5. THE IMPACT OF SERVITIZATION ON BUSINESS PERFORMANCE

Like most diversification strategies, servitization is complex, time consuming and needs a critical mass to be achieved in order to become profitable. Some authors estimate 30% as the minimum servitization level to reverse the downward trend in results (Visnjic et al., 2013), but Suarez et al. (2013) calculated a higher figure of more than 56% of companies' operating margin levels being required in order to change that trend. They calculated this figure using data on 500 listed companies in the software sector and also recognized differences between sub-segments of the same industry.

In order to identify the critical mass effect on business performance, we divided the companies into 4 groups: (1) non servitized companies; (2) companies whose servitization level is less than 20% of turnover; (3) companies whose servitization level is between 20 and 30% of turnover; and (4) companies with a servitization level higher than 30% of turnover. We used the mean servitization level for the 1994-2005 period to classify each company, assuming the need for experience and background in servitization, while also being able to observe the evolution of the different groups until 2010.

Note that when taking this approach, companies with a certain intensity of servitization in the 1994-2005 period do not necessarily maintain the same level of servitization for the subsequent periods (**Figure 2**). In fact, as expected, the number of non-servitized companies increased mainly at the expense of companies in the second group (servitization lower than 20%): 79 companies passed from this group to the non-servitized group. The number of companies that servitize more than 30% also increased. In this case, the main contributors are those with servitization of between 20 and 30% (15 companies) and those with levels lower than 20% (17 companies). The most important change flows are between neighbouring groups.

Following the aforementioned classification of companies by servitization level, we then analysed the impact on business

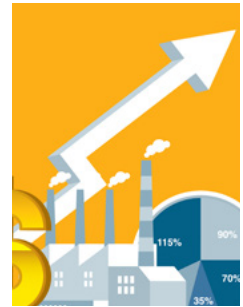
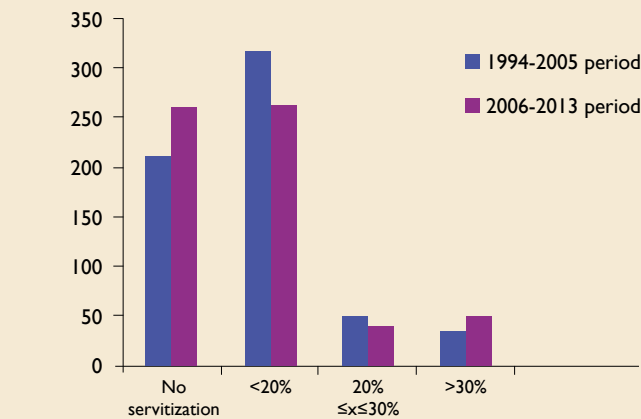


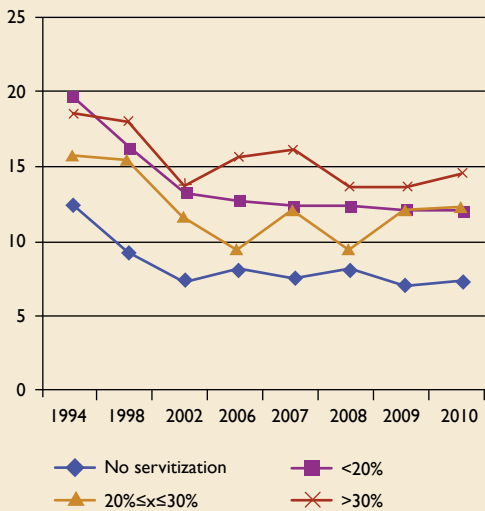
Figure 2. Evolution in the number of companies grouped by servitization intensity between periods (from 1994 to 2005 and from 2006 to 2013)



performance through the market share (AmoaKo-Gyampaah & Acquaah, 2008).

The general trend, regardless of servitization intensity, is negative, i.e. all companies lost market share (Figure 3). However, there was a slight decrease in companies with more intense servitization.

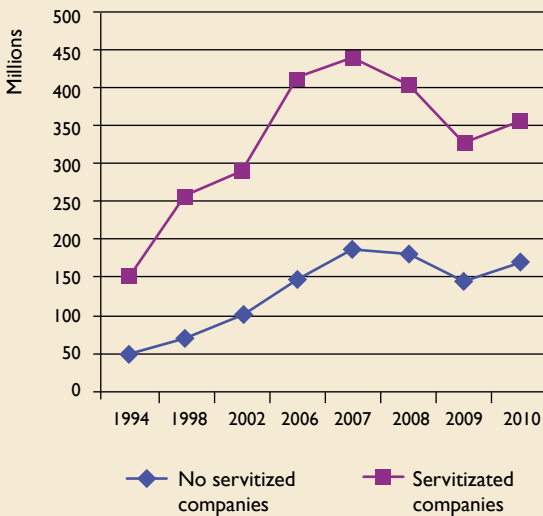
Figure 3. Evolution of market share variable by servitization intensity group



Whereas the CAGR for the whole period (1994-2010) was -1.5% for the two most servitized groups, it was twice that amount, -3%, for the non-servitized group and the group of companies with less servitization than 20%.

We next analysed the evolution in sales in each of the four groups and found statistically significant differences between the servitized companies and those in the non-servitized group. This would seem logical, considering the previously established relationship between size and servitization level. However, as shown in **Figure 4**, the differences are also statistically significant when only analysing large companies.

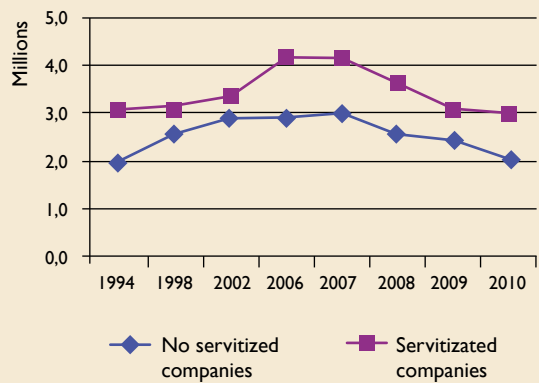
Figure 4. Sales for large enterprises distinguishing between servitized and non-servitized companies



The effect of servitization on value added is even clearer than for sales. The three groups of servitized companies had the highest values in all periods. We obtained the same results when grouping the sample by size. Specifically for SMEs, there are statistically significant differences for 2006 between servitized and non-servitized companies (**Figure 5**).

So far, the analysis has shown how companies with some level of servitization perform better than non-servitized companies. However, an analysis of value added production sheds light on

Figure 5. Evolution of value added for SMEs distinguishing between servitized and non-servitized companies



what the literature deems “the servitization paradox”. As shown in **figure 6**, the non-servitized companies present the best results for all periods. Considering the report by Torrent-Sellens & Díaz-Chao (2015), this may be due to the capacity of SMEs to adapt their cost structure to different periods of prosperity and crisis. This is especially clear in the prosperous period from 2002 to 2007, when there was an increase in gross value added of 8.9% for SMEs and only of 0.6% for large companies. In the crisis period from 2008 to 2010, there was a similar decline both for SMEs and large companies.

An analysis of the evolution of this business performance indicator shows that there is only one group with a positive trend for the whole period (1994-2010): companies with the most intense servitization. Considering the evolution from 2006 of all groups, the positive trend can be associated with all of those that servitized.

Finally we include the size variable in our analysis of value added from production. The results show that the positive trend is associated to the servitized firms. Likewise, the best results are for servitized SMEs and not for servitized large companies (**Figure 7**). In any case, other studies also detected the difficulty for large companies to make this strategy profitable compared with SMEs (Neely, 2008).

Figure 6. **Evolution of value added from production based on the intensity of servitization**

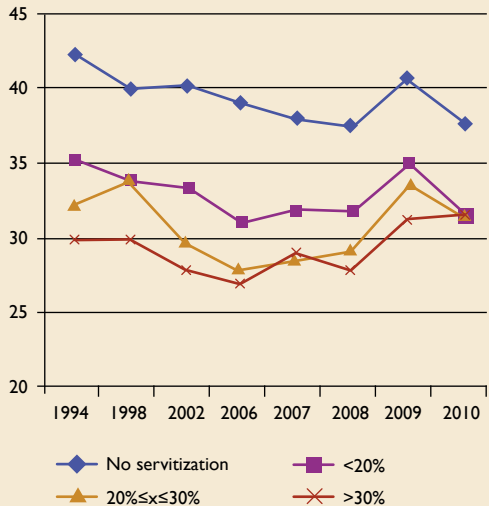
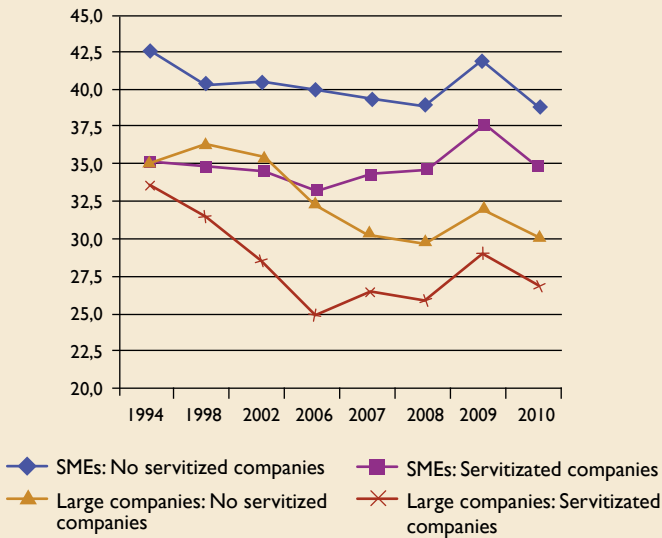


Figure 7. **Evolution of added value from production based on size and distinguishing between servitized and non-servitized companies**



6. CONCLUSIONS

After our analysis of a sample of 670 Spanish manufacturing firms in the 1994- 2010 period, we can confirm the interest of companies in trying to servitize, as most of them (74.5%) did so at some point in the period. Likewise, we coincide with previous research about the difficulties for implementing such a strategy as several companies abandon the practice, to the extent that the number of non servitized companies (53.3%) surpassed the number of the servitized ones in the final period. However, that has not prevented growth in the general level of servitization due to the higher contribution by companies that have been able to continue their servitization process. There are two reasons for the positive evolution. On the one hand, larger companies present higher levels of servitization. On the other, when comparing similar size firms, servitized ones have higher sales than non servitized ones. In addition, servitization is related to the ability to work in markets with a geographically larger scope.

Furthermore, there is also a significant relationship between servitization and value added, regardless of company size. However, this relationship is negative for value added production, where the best results are achieved by smaller and non servitized firms.

The reasons for the aforementioned difficulty with adapting business models and determining management for change can be found, following Gebauer et al (2005) in Neely (2008) in their study of German machinery, in the greater weight of defensive strategies than of offensive ones. In other words, the slow evolution in the level of servitization indicates that services are being used more to protect competitiveness in current markets than to open new businesses. In these conditions, the strategy is not usually aimed at raising profits, as when a new business opens, but rather on maintaining the current ones.

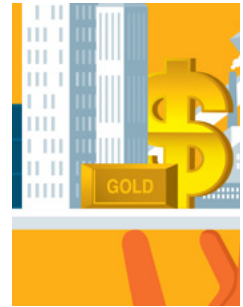
Successful business cases indicate the need for a more in-depth research of the specific conditions for servitization, as it is clearly difficult for it to be translated into economic and financial results.

In that regard, future research could consider the specific services offered by manufacturing companies and distinguish between their nature and their links with the firm's general strategy, and whether they are mainly instrumental for supporting the present business or whether, on the contrary, they open new business opportunities.

Such an analysis is not possible with this database in its current configuration.

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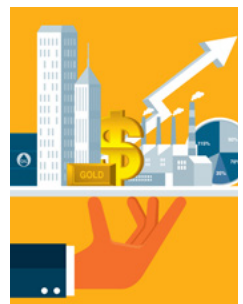
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NOTES

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Servitization and co-opetition in the pharmaceutical distribution: Back to Basics?¹

Servitización y co-opetición en la distribución farmacéutica: ¿vuelta a los orígenes?



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I. INTRODUCTION

This paper explains the concepts of servitization and co-opetition, describing the results of a research project investigating the Portuguese and Spanish pharmaceutical industry.

The European Union (EU) pharmaceutical industry had an annual output of € 220 billion in 2012 and is expected to continuously grow until 2017, representing a strategic sector of the European economy (European Commission, 2014). This sector has a crucial economic and social impact, playing an essential role in the provision of medical and health care, particularly due to the R&D investments required for the development of new medication (Frías, 2001). This sector has been involved in a long process of implementation of a differentiation strategy based mainly on the development of new services. In addition to this, emphasis has also been placed in “service-driven global supply chains” and the role of customer relationship management and service relationships as well as the role of intra-firm relationships such as Internal Market Orientation (Lings, 2004; Gounaris 2008; Ruizalba et al. 2014) and inter-firm relationships management (Soares, Soltani and Liao, 2012).

As such, and because the European regulations are still behind in terms of industry standardisation, it is imperative that scholars and managers understand how servitization has contributed towards the



EXECUTIVE SUMMARY

This paper discusses how the pharmaceutical distribution sector has evolved in the past decades and the role of servitization in an ever changing market led by big players. An empirical analysis was conducted on Portuguese and Spanish distributors which enabled the identification of a detailed portfolio of services currently offered by the industry. These companies were compared in terms of current service provision, levels of implementation of added-value services, main reasons for implementation and levels of co-opetition within the sector. Some differences between both countries have been found in terms of their level and reasons for the implementation of value adding services. Major findings refer to the tendency of distributors to further develop their base services provision in the future aiming at achieving increased competitive advantage and loyalty. This raises concerns given that it can be interpreted as a “back to basics” strategy of low differentiation which may not be consistent with long term competitiveness.

RESUMEN DEL ARTÍCULO

Esta investigación analiza la evolución de la distribución farmacéutica en las últimas décadas así como el papel de la servitización en un mercado en continuo cambio y liderado por grandes actores. Se ha realizado un análisis empírico en distribuidores de España y Portugal que ha permitido la identificación de un catálogo de servicios que actualmente se ofrecen en el sector. Se ha realizado un análisis comparativo de las empresas en virtud de la actual prestación de servicios, de los niveles de implementación de servicios de valor añadido, de las principales razones de lanzamiento de los servicios así como los niveles de co-opetición. Se han encontrado algunas diferencias entre ambos países en relación a los niveles de servicio así como a los motivos de implementación de servicios de valor añadido. Entre los mayores hallazgos cabe destacar la tendencia de los distribuidores de desarrollar en el futuro servicios básicos con la intención de desarrollar ventaja competitiva y fidelidad en sus clientes. Esto despierta cierta inquietud en la medida en que pueda ser interpretado como estrategia de baja diferenciación de “vuelta a los orígenes” que pueda no ser consistente con una competitividad a largo plazo.

development and shaping of the pharmaceutical industry. This paper focuses on servitization as a means to create added value to traditional offerings by developing new capabilities and improving customer processes. Servitization is interpreted as an instrument to simultaneously create long term relationships with customers, build entry barriers to competitors and generate new sources of financial benefits. Companies go beyond the core services strictly expected and establish stronger bonds with their customers. In doing so, this research also focuses on the level of establishment of co-opetitive relationships (Wu, Choi and Rungtusanatham, 2010), that is, relationships in which suppliers simultaneously compete and cooperate to achieve common goals. To investigate this, an empirical analysis has been conducted comparing the Portuguese and Spanish pharmaceutical distribution.

In an increasingly competitive market, customers expect more and whatever was before an order-winner quickly becomes a qualifier affecting the whole industry

2. WHAT IS SERVITIZATION?

Services have been defined as activities or performance provided to satisfy customer needs (Grönroos, 1990). In an increasingly competitive market, customers expect more and whatever was before an order-winner quickly becomes a qualifier affecting the whole industry. Companies need not only to attract customers but more importantly they need to retain them. This can be achieved though the development of long-term relationships adding mutual value through servitization.

Companies have adapted to these demands for added value and increased their product-service offerings, combining products and services to such a degree that sometimes it is impossible to separate them (Baines et al., 2009). Complete bundles and packages of solutions are provided to customers, referred to as product-service systems (PSS). This process is known as servitization.

Servitization and PSS came to research interests propelled by authors such as Neely (2008) and Baines et al. (2009, 2013ab). First suggested by Vandermerwe and Rada (1988), the term servitization is used to refer to the competitive advantage produced through the “process of creating value by adding services to products” (Baines, et al., 2009:547). Vendrell-Herrero, Bustinzá and Arias (2014) affirm that servitization has been described as the provision of service as a complement to manufacturing and also commercialization of products generating higher economic margins. In turn, Baines et al.

(2013:638) state that “servitization is the process of transforming manufacturers to compete through product-service systems (PSSs) rather than products alone”.

Baines et al., (2013) suggest a categorisation of services that includes base, intermediate and advanced levels. Base services refer to those added that are directly associated to the product offerings. In intermediate services, the supplier can offer more or less complex services, but only when are formally requested by the customer and with the supplier not knowing in detail what is the true nature of the customer business. Whereas, in advanced services, the supplier perfectly understands the nature of the customer’s business and the processes that are embedded in the service offering. The main difference between intermediate and advanced service levels is that in the first the supplier does not get fully involved in the customer business whilst in the second he does (Baines et al., 2009).

Baines et al. (2009:558) refer that the majority of findings come from case studies and summarize the main reasons that lead organisations towards the implementation of servitization. These include financial (e.g. revenue stream and profit margin), strategic (e.g. competitive opportunities and advantage) and marketing drivers (e.g. customer relationships and product differentiation). They identify that the motivations and resulting benefits go beyond profitability. By adding services to their product offerings, companies set themselves apart from their competitors, developing advantages (Gebauer et al., 2006).

It is not possible to discuss servitization without considering the relationships established within and between companies. This is particularly the case in the pharmaceutical distribution, in which wholesalers are organised under the form of cooperatives and private companies. These companies compete and collaborate simultaneously in order to satisfy their customers’ needs and increase their market strength. This is commonly referred to as ‘co-opetition’. First defined by Ray Noorda, CEO of Novell (1993; cited by Nalebuff and Brandenburger, 2002:4), co-opetition refers to situations in which two competing suppliers (of a given buyer) cooperate towards the achievement of common buyer goals (Wu, Choi and Rungtusanatham, 2010).

KEY WORDS

Servitization, Co-opetitive relationships, Pharmaceutical distribution

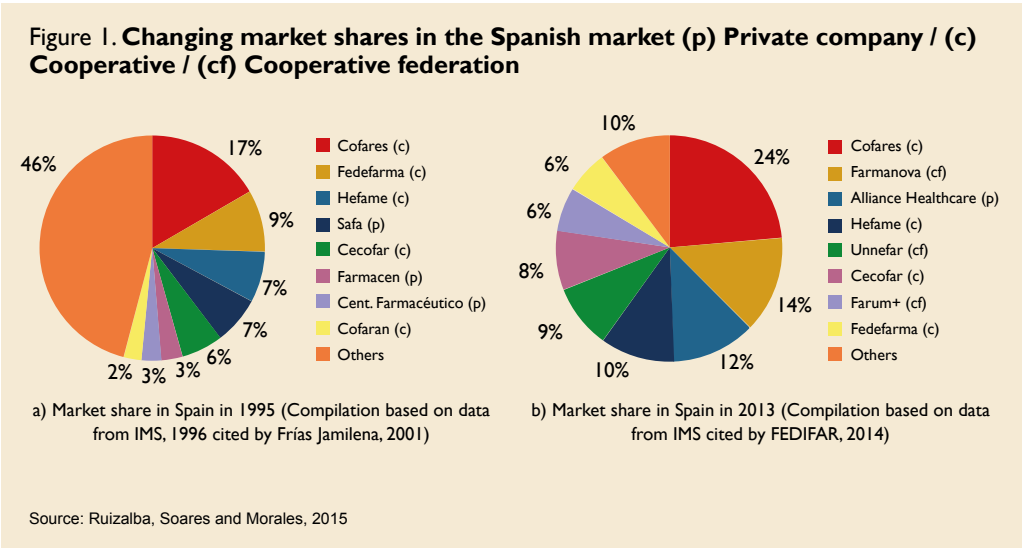
PALABRAS CLAVE

Servitización, Relaciones co-opetitivas, Distribución farmacéutica

3. THE PHARMACEUTICAL DISTRIBUTION

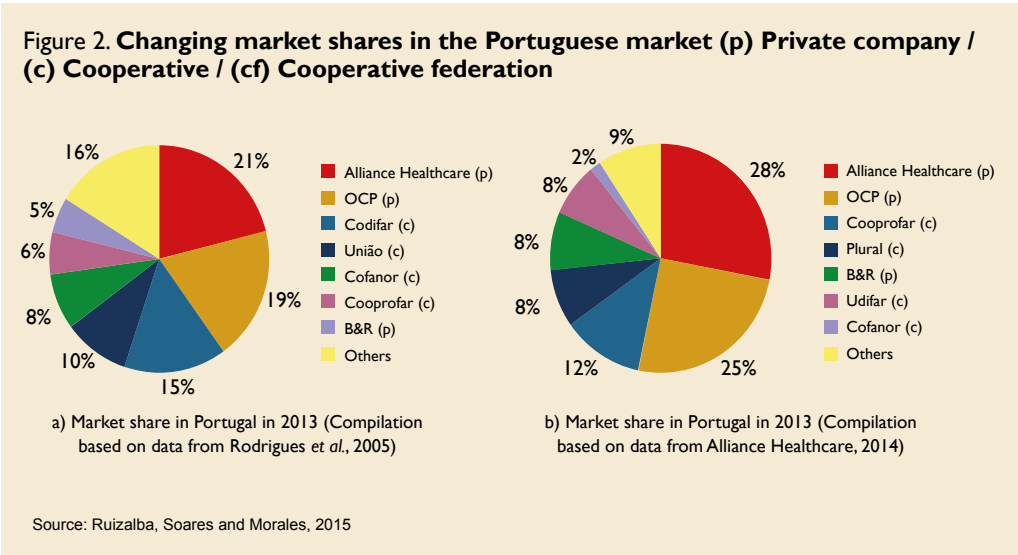
The pharmaceutical distribution sector in Spain commenced its development between the 1930 and the 1960s, when 24 new distributors were founded. The majority of them were incorporated under the cooperative form integrated by pharmacy owners in specific regions. By the end of the last century, 32 out of the 41 players were still cooperatives while the rest were private companies. Although with some marginal corporate operations in the 80s and 90s, it has been during the new century that numerous corporate movements have occurred, including not only mergers and acquisitions but also different cooperative integrations and federations. The general situation of the Spanish economy facilitated this process because since 1994, the increasing growth rate has been uninterrupted and equal to, or greater than, the average rate of other European countries (Martín-Peña and Díaz Garrido, 2008). All these corporate changes had a significant impact on the market split. In 1995 the top 8 companies had just over 50% of the market share what implies a fairly fragmented market, whereas in 2013 they increased to almost 90%. Figures 1 a) and b) below illustrate these market share changes.

100



Conversely, the pharmaceutical distribution sector in Portugal did not start to flourish until the 1960s-1990s when more than 20 distribution companies were founded. From those 20 newcomers, 5 were cooperatives and the rest were private companies. As opposed

to what occurred in Spain, the consolidation process commenced in 1985 and intensified in the nineties with various takeovers by both private companies and cooperatives. Due to that early process of consolidation, the market was relatively concentrated by 2003 already when the top 7 wholesalers had close to 85% of the market share. That decrease in the market fragmentation has continued and in 2013 the seven biggest companies accounted for more than 90% of the market, as shown in **figures 2 a) and b).**



There are three differences that deserve to be highlighted: (1) The slower development towards a modern configuration of the Portuguese industry; (2) The balanced presence of both private companies and cooperatives in Portugal, where the importance of cooperatives is notably higher; (3) The even higher level of concentration experienced in the Portuguese market due to an earlier period of consolidation.

It is reasonable to believe that in both markets, there are two key reasons behind the consolidation process. Firstly, the direct impact of new legislations introduced as a result of the reductions of public budget dedicated to medication. This in turn affected sales prices and reduced the contribution margins.

Secondly, the reduction of public health spending resulted in additional strains for pharmacies in terms of delays in reimbursements from the government, which impacted to wholesalers as billing periods

and stocks increased. Thus, consolidation of the industries was the natural response to the new circumstances. This evolution aimed not only to look for economies of scales and cost reductions but also to enhance the portfolio of services that were offered to pharmacies, which led to the servitization process of this sector. Another important factor that has contributed to the servitization process is that, in both countries, the commercial margin of pharmaceutical distributors is regulated and fixed by the administration (Frías 2001). Since they cannot increase their contribution margins they have to expand and compete through other strategies and the most used has been the development of servitization.

4. EMPIRICAL STUDY

Building upon Baines et al. (2013) categorization of services (into base, intermediate and advanced services) and Baines et al. (2009:558) identification of main motives for servitization implementation, this research aims at comparing the levels and types of services implemented in the Portuguese and Spanish pharmaceutical distributors. The suggested empirical research attempted to address the following questions:

- What is the current provision of services in the Portuguese and Spanish pharmaceutical distribution?
- How can these services be classified according to Baines et al. (2013) levels of service (base, intermediate and advanced)
- What is the relationship between the level of implementation in both countries and the:
 - a) Percentage of service availability
 - b) 2008 financial crisis
 - c) Implementation reasons (loyalty, competitive advantage and profit)
 - d) Intention to further develop these services
 - e) Levels of co-opetition

In order to investigate this, the data was collected through: (1) interviews, (2) the analysis of company websites and (3) the development of a questionnaire.

Step 1:

Interviews were conducted with six managers of main companies as well as with six academics regarding the categorization of services. The first outcome was a provisional list of services.



Step 2:

In order to further develop this list, all the websites from main distributors in both countries were analysed (more than 50). A selection of the most representative was undertaken, focusing on fifteen companies which enabled the identification of five main service types (added services, IT consulting, other professional services, training and divulgation services and third party services) which were further classified into the three levels of Baines et al. (2013).

Step 3:

A questionnaire was elaborated to understand the degree, reasons and intention for the development and implementation of services. A pre-test was conducted with four managers and two academics and their suggestions were included. The questionnaire included items regarding company type (private or cooperative), number of employees, number of customers, revenues in 2014 and geographical area. Likert scale questions were also included relative to currently offered services (launched before or after 2008, not offered) as well as the impact on: customer's loyalty, competitive advantage, revenues/profits, intention to further develop those services and the type of relationships developed with other companies (to examine co-opetition - based on Wu, Choi and Rungtusanatham, 2010; Soares, Soltani and Liao, 2012). These questions were repeated for all five categories of services: (1) added services, (2) IT consulting, (3) other professional services, (4) training and divulgation services and (5) third party services.

This questionnaire was distributed online followed in many cases by phone calls, emails and direct requests. A total of 30 distributors in both countries were approached and selected based on their market share and typology (private and cooperatives). The response rate was of 26.6% (8 companies, 4 from Portugal and 4 from Spain). This sample represents 45% of the market share in the pharmaceutical distribution of the Iberian Peninsula, given that the Portuguese market was €2,106m in 2013 (Alliance Healthcare, 2013) and the Spanish market size was €10,034m (Fedifar, 2014).

5. MAIN FINDINGS

5.1. Services currently offered

An analysis of the services portfolio has resulted in 25 different services grouped into 5 categories: (1) Additional services, (2) IT services, (3) Other professional services, (4) Training and divulgation and (5) Third party services. The level of implementation for each of these services is remarkably different. As shown in **Table 1**, the majority of distributors have introduced a broader offer only for the first category of additional services.

In Portugal only 7 out of the 26 identified services are offered on average compared to 14 services in Spanish companies. For example, Portuguese companies have shown a limited introduction of IT services whereas Spanish companies seem to be one step ahead in this area. All Spanish companies developed ERP software, whereas there is only one that offers it in Portugal. This software permits the pharmacist not only to manage their pharmacy stores but also to send product orders and manage communications with the wholesalers, allowing for the development of higher levels of interaction. This also creates an important entry barrier, as the pharmacist gets used to work with it and switching costs are high.

In the last category, third party services, Spanish distributors have introduced a higher variety of services.

5.2. Classification of service levels

Adopting Baines et al. (2013) service levels, the 5 types of services were further classified into three levels (as detailed in **Table 2**):

- a) **Base Services:** refer to the distribution itself. The customer only values the supply of products that basically comprises the logistics of storage and delivery. There is not much value-added and therefore few differentiation between companies.
- b) **Intermediate Services:** added services that tend to add-up to the delivery of base services. These improvements are in a related field to the base service already provided such as the supply of complement products/services. That means that all the services provided to improve the supply chain in terms of time, accuracy or cost should be considered as Intermediate Services. That includes, for example, IT services aimed to manage stocks, orders and more frequent delivery.



Table 1. **Services offering from each distributor in Spain and Portugal (based on website analysis) (Source: own elaboration).**

		SPANISH								PORTUGUESE						
		Cofares	Alliance H.	Hefame	Farmanova	Unnefar	Cecofar	Fedefarma	Farum +	Alliance H.	OCP	Cooprofar	Plural	B & R	Udifar	Cofanor
	Other health products distribution	X	X	X	X	X	X	X	X	X	X	X	X		X	X
	Other not health products distribution	X	X	X	X	X	X	X	X		X	X	X		X	X
	Special and urgent deliveries	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Vaccines services	X														
	Dispose of medicines	X				X					X	X				
	Laboratories returns	X			X	X					X		X			X
	ERP software	X	X	X	X	X	X	X				X				X
	Software maintenance	X	X		X	X	X									
	Hardware maintenance	X			X	X	X									
	IT Training	X		X	X	X	X									
	Administrative and accountancy	X		X	X	X						X				
	Management consulting	X	X	X		X		X				X				
	HR and recruiting			X		X	X					X				
	Marketing and communication	X	X	X	X	X										
	Loyalty programs	X			X	X										
	Management training	X		X	X	X	X	X			X				X	
	Technical training	X		X	X	X	X		X		X	X			X	
	Social networks and internet				X											
	Magazines	X		X	X		X		X		X					
	Other publications	X				X			X							
	Financial services	X	X		X	X	X					X				
	Renovation and decoration	X		X	X	X		X				X				
	Occupational risk prevention					X									X	
	Data protection	X		X		X									X	
	Brand Management	X	X	X					X			X				

c Advanced Services: the outcome of these services goes beyond and is not limited to something related to the Base Service. The service offered creates enhanced value, that is, it engages “the customer in a relationship that has closer association with strategic repositioning and business process outsourcing than to sales of products and services” (Baines and Lightfoot, 2013:65).

Table 2. Levels of services types

SERVICES GROUP	DESCRIPTION	SERVICE LEVEL	SERVICES INCLUDED
1. Additional services	Services related to the core activity of sale and distribution (storage and delivery)	Base	Services related to the core activity of sale and distribution: Other health products distribution; Other not health products distribution; Special and urgent deliveries; Vaccines services; Dispose of medicines; Laboratories returns.
2. IT services	Sales, installation, maintenance and training of IT systems	Intermediate	Services aimed to introduce the utilization of IT systems: ERP software; Software maintenance; Hardware maintenance; training related to IT.
3. Other professional services	Accountancy, business advisory, HR, etc.	Advanced	Other professional services: Administrative and accountancy; Management advice; HR and recruiting; Marketing and communication; Loyalty programs.
4. Training and divulgation	Training about different contents and publications (magazines, technical notes).	Intermediate	Training and divulgation services: Management training; Technical training; Social networks and internet; Magazines; Other publications.
5. Third party services	Agreements with third party to incorporate their services in the wholesaler offering.	Advanced	Services provided by third party: Financial services; Renovation and decoration; Occupational risk prevention; Data protection; Brand management.

Source: Ruizalba, Soares and Morales, 2015; based on Baines et al., 2013

5.3. Service implementation

a) Percentage of service availability

Table 3 below shows that the only service that is offered by all companies is collaboration with the return of medicines to laboratories. The service most offered by all (87.5%) is magazines design and publishing, supply of not-health products and urgent services or special delivery.

b) The 2008 financial crisis

The data collected also allowed the understanding of levels of implementation of added services before and during the financial

Table 3. Levels of implementation of services by percentage of implementation (in both countries per type of service)

SERVICES OFFERED	PERCENTAGE OF DISTRIBUTORS THAT OFFER THE SERVICE
Collaboration with the return of medicines to laboratories	Services offered by 100%
Magazines design and publishing Supply of not health products Urgent services or special delivery	Services offered by 87.5%
Supply of medical devices and health products Vaccines Destruction/recycling of medicines Marketing and communication Training courses and programmes Technical courses Other publications, reports, and technical notes	Services offered by 75%
Accountancy and management Loyalty programs	Services offered by 62.5%
Job vacancies Social media and internet courses Selling and instalation of management software Software maintenance Hardware maintenance	Services offered by 50%
Financial services Decoration/restyling Data protection Training and courses about IT	Services offered by 37.5%
Brand management	Services offered by 25%
Prevention of risks at work	Services offered by 12.5%

crisis as well as services not currently offered (see **Table 4**). Services launched during the 2008 economic crisis were collaboration with the return of medicines to laboratories (50%) and destruction/recycling of medicines (50%). With 37.5% of results, the following services appear in second place: supply of not health products, urgent services or special delivery, vaccines, accountancy and management, social media and internet courses, magazines design and publishing, other publications, reports, and technical notes and data protection. This seems consistent with base level provision and ensuring companies remain competitive.

SERVITIZATION AND CO-OPETITION IN THE PHARMACEUTICAL DISTRIBUTION: BACK TO BASICS?
SERVITIZACIÓN Y CO-OPETICIÓN EN LA DISTRIBUCIÓN FARMACÉUTICA: ¿VUELTA A LOS ORÍGENES?

Table 4. Levels of implementation of the service provision identified for both countries (before and during the 2008 financial crisis)

SERVICE TYPES AND CORRESPONDING SERVICE LEVELS (BASED ON BAINES ET AL., 2013)		IMPLEMENTATION LEVEL (RESULTS IN PERCENTAGE)		
		Before 2008	During crisis	Not on offer
Additional services (Level: BASE)	Supply of medical devices and health products	50%	25%	25%
	Supply of not health products	50%	37.5%	12.5%
	Urgent services or special delivery	50%	37.5%	12.5%
	Vaccines	37.5%	37.5%	25%
	Destruction/recycling of medicines	25%	50%	25%
	Collaboration with the return of medicines to laboratories	50%	50%	0%
IT Services (Level: INTERMEDIATE)	Selling and installation of management software	37.5%	12.5%	50% (from which 75% are from Portugal)
	Software maintenance	37.5%	12.5%	50% (from which 75% are from Portugal)
	Hardware maintenance	37.5%	12.5%	50% (from which 75% are from Portugal)
	Training and courses about IT	25%	12.5%	62.5% (from which 60% are from Portugal)
Other Professional Services (Level: ADVANCED)	Management consulting	25%	12.5%	62.5%
	Accountancy and management	25%	37.5%	37,5%
	Job vacancies	25%	25%	50%
	Marketing and communication	37.5%	37.5%	25%
	Loyalty programs	25%	37.5%	37,5%
Training/ divulgation (Level: INTERMEDIATE)	Training courses and programmes	50%	25%	25%
	Technical courses	50%	25%	25%
	Social media and internet courses	12.5%	37.5%	50%
	Magazines design and publishing	50%	37.5%	12.5%
	Other publications, reports, and technical notes	37.5%	37.5%	25%
Third party services (Level: ADVANCED)	Financial services	37.5%	0%	62.5%
	Decoration/restyling	12.5%	25%	62.5% (80% of these 62.5% are from Portugal)
	Prevention of risks at work	12.5%	0%	87,5%
	Data protection	12.5%	37.5%	62.5% (75% of these are from Portugal)
	Brand Management	0%	25%	75%

c) Implementation reasons (loyalty, competitive advantage and profit)

Following Baines et al. (2009:558) motives for servitization implementation, Table 5 summarizes the three main reasons for implementation focusing on generating customer loyalty, profits and competitive advantage. The **Table 5** shows results and also a breakdown per country.

Table 5. Main Reasons for the implementation of value adding services

TYPES OF SERVICES	LOYALTY	PROFIT	COMPETITIVE ADVANTAGE
Additional services (Base)	5.12 (S: 4.75) (P: 5.5)	4.12 (S: 4.5) (P: 3.75)	5.12 (S: 5) (P: 5.25)
IT Services (Intermediate)	4 (S: 5) (P: 3)	3.5 (S: 4.5) (P: 3)	3.87 (S: 4.75) (P: 3)
Other Professional Services (Advanced)	3.87 (S: 4.75) (P: 3)	3.12 (S: 4) (P: 2.25)	4 (S: 5) (P: 3)
Training and divulgation (Intermediate)	3.87 (S: 4) (P: 3.75)	3 (S: 3.75) (P: 2.25)	4.12 (S: 4.5) (P: 3.75)
Third party services (Advanced)	3.5 (S: 4) (P: 3)	3.37 (S: 3.75) (P: 3)	3.62 (S: 4.25) (P: 3)

(results in terms of statistical mean – measured through a 1-7 Likert scale)
where S= Spain and P= Portugal

Unlike what would be anticipated, main reasons to implement these services did not always come from a solid focus on profit as it could be initially expected, with competitive advantage leading the way for all five categories.

In relation to the three main motives of implementation the highest value was for the additional services (Base) (Loyalty: 5.12 and competitive advantage 5.12), followed by training and divulgation (Intermediate) (competitive advantage: 4.12).

d) Intention to further develop these services

Regarding the intention of development of these services in the future, those with higher results are: additional services (5.5), training and divulgation (4.5), consultancy and management (4.25) and IT consultancy (3.62) (see **Table 6**). According to the three levels of service (Baines et al., 2013), the main intention is to first maintain and develop base level services, secondly Intermediate level and thirdly advanced services.

Table 6. Intention to further develop the service provision

TYPES OF SERVICES	DEVELOPMENT INTENTION
Additional services (Base)	5.5 (S: 5.5) (P: 5.5)
IT Services (Intermediate)	3.62 (S: 4.25) (P: 3)
Other Professional Services (Advanced)	4.25 (S: 5.25) (P: 3.25)
Training and divulgation (Intermediate)	4.5 (S: 5) (P: 4)
Third-party services	4.25 (S: 4.5) (P: 4)

(results in terms of statistical mean – measured through a 1-7 Likert scale)
where S= Spain and P= Portugal

f) Levels of co-opetition

Results show a higher level of co-opetiton in Portugal (5.75) than in Spain (4.75). This seems coherent with the remaining findings, since Spain showed to outdo Portugal in the levels of implementation of the majority of services offered, revealing to be a more mature and developed industry. The Spanish market seems to be more divided and competitive where the sector is still lagging behind showing opportunities for further development. Moreover, because the Portuguese market seems to offer a lesser variety of services, Portuguese companies face higher pressures and need to compete but also collaborate to be able to

provide additional service offerings that they cannot themselves provide.

6. CONCLUSIONS

This paper suggests that co-opetition, strategic factors (customer loyalty, profitability and competitive advantage) and willingness towards development of future services are key variables for the pharmaceutical industry. Key categories of services were also identified.

The concept of servitization has been investigated under different denominations which has enriched the field generating various definitions from several disciplines. Overlapping and even potentially conflicting dimensions and concepts have been considered in these definitions. Although it is clear for the research community what servitization is, for others the literature still lacks a comprehensive and consensual definition that clearly identifies the boundaries of this concept.

Following this, we suggest that a comprehensive definition of servitization should consider most of these elements:

- improvement of processes and capabilities
- competition through the development of product-service system instead of products only
- adoption of a new business model
- creation of mutual value (bi-directionality)
- development of consistent intra and inter-firm channels of communication,
- co-creation of solutions (between servitized and serving firms)
- mutual learning and collaboration in the design and delivery of services
- generation of new sources of revenue, higher performance, long term relationships and sustainable competitive advantage.

This research could be of interest for managers in different sectors as it explores servitization, broadening the application of such strategy and giving some clues about how its implementation should be done and analysing the motivation behind offered services.

Main contributions can be summarized as follows:

Contribution 1: analysis, discussion and identification of the types of services provided by pharmaceutical distributors (summarized in **Table 1**). This was the first time that such an analysis was conducted for the Portuguese and Spanish markets.



Contribution 2: application of Baines et al. (2013) three levels of service to the pharmaceutical sector for the first time.

Contribution 3: development of a questionnaire used to conduct an empirical analysis to investigate the offer/availability of services identifying the:

- a) percentage of distributors that provide the services
- b) services launched before and during the 2008 financial crisis
- c) main reasons for the implementation of these services (loyalty, competitive advantage and profit)
- d) intention to further develop these services and
- e) levels of co-opetition in both markets

A limitation is that, due to the sector concentration and small number of players, it revealed difficult to increase sample size. However, those respondents represent 45% of the distribution market share.

In regards to suggestions for further research, this analysis could also be extended to other EU countries since this is a strategic sector. It is also suggested that future studies consider multi-level analysis including other players such as pharmacy stores (customers) and laboratories (suppliers). This is suggested in order to investigate how they actually implement these services for their servitization strategies and the gaps between levels. Regarding co-opetition, it would also be interesting to investigate which service types have common providers, in which do companies' co-opete and the reasons behind the higher co-opetition levels.

Practitioners may find interesting the fact that the majority of players value the most the provision of additional services and training and divulgation. More than focused on profits, distributors have stated that these deliver to them both loyalty and competitive advantage. However, this is not consistent with what the servitization theory has shown.

Although this seems to be the overall perception in the industry, it is here argued that the provision of base services alone will not provide companies with a sustainable competitive advantage in the long term since most of these services can easily be copied by competitors. The true competitive advantage will come from the development of advanced services that can further improve processes and capabilities which seem to be currently less valued by distributors in their market development intentions. We call the attention to the industry providers to the gaps generated by the lack of advanced

service offerings, as it is in fact a source of interesting business opportunities.

To conclude, due to the fact that the main decision is to develop base services in the future (Table 6) an important and thought-provoking question is raised on whether this means that distributors deliberately go “back to basics”? or are not they aware of the implications of this decision?

If they are deliberately focusing base services then they could be investing in low value adding services easily copied, not only by direct competitors but also by players from other industries (e.g., supermarkets, personal care stores, etc), and that could behave in reality as commodities.

Or is it just that they are doing “business as usual” with short term vision in which case they are not fully aware of the risks that this strategy comprises?

Whichever are the answers to these questions, this analysis clearly shows that the majority of distributors not only privilege base services but also indicate higher levels of intention for the development of this basic offering in the future. This demonstrates a cross-market opportunity for the attainment of sustained competitive advantage through the development of advanced services.

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SERVITIZATION AND CO-OPETITION IN THE PHARMACEUTICAL DISTRIBUTION: BACK TO BASICS?
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NOTES

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A preliminary investigation of the reserve service continuum¹

Una investigación preliminar del continuo servicios

1. INTRODUCTION

With concepts such as service-dominant logic, servitisation, productisation and product-service systems, it is now recognised that it is no longer relevant for organisations to be classified as being primarily product or service-based. Rather, they need to be examined from the point of view of their complete offering to the customer, which each of these definitions goes some way to providing.

One repeating narrative in the research is the journey that an organisation takes to develop its offering to the customer. A known approach is that of a product-based organisation developing services to augment this, known as servitisation. With the advent of global competition from developing economies with a much cheaper cost-base, it has been largely acknowledged that a servitised business model can add value for the customer and provide a method of differentiation.

There has been some acknowledgement of the productisation of services – that is, when a primarily service-based organisation moves into manufacturing. Typically this would be as part of an advanced services offering, where the main focus of the advanced services is on maintenance and overhaul, and the manufacturing limited to small scale spares. However, this has not been widely documented. This research presents a case study of a service-based SME which, in the past two years, has begun to augment its main trading and



EXECUTIVE SUMMARY

The paradigm of the organisation as service provider dominates current research. Most work focuses on the adoption of services by product-centred organisations, promoting the concept of a service continuum. This paper explores whether alternatives are possible, documenting a case study which apparently 'reverses' this continuum – a service-based SME which has developed in-house manufacturing capability to improve the customer solution. The findings suggest that this could develop the current understanding of servitisation, however further work is outlined to test this.

RESUMEN DEL ARTÍCULO

El paradigma de la organización como proveedora de servicios domina la investigación actual. La mayoría de los trabajos se centran en la adopción de servicios por organizaciones centradas en productos, promoviendo el concepto de continuo en servicios. Este artículo analiza otras alternativas, documentando un caso de estudio en el que aparentemente se invierte el continuo – una pyme de servicios que ha desarrollado capacidad de manufactura para mejorar la oferta al cliente. Los hallazgos sugieren que esto puede mejorar el conocimiento en servitización, aunque se necesite profundizar en este planteamiento.

customer service activities by moving into product development and building a manufacturing capability in-house. Given that few examples of this situation have been documented, the motivations and mechanisms for this transition have been examined. The findings are then interpreted according to the acknowledged definitions of productisation and servitisation. This first stage in an exploratory study has highlighted that the servitisation process could be further extended, and additional work is planned to investigate and confirm this.

2. BACKGROUND

Vandermerwe and Rada (1988) describe how the emphasis for industry has evolved to not differentiate their offerings as goods or services, but a combination of both, describing this as the ‘servitisation of business’. The emerging service dominant logic, discussed by Vargo and Lusch, highlights how the emphasis on value creation is shifting from tangibles to intangibles, as operant resources such as knowledge and skills become the basis for new value creation (2004). In this environment, the view of services is widened and defined as ‘the application of specialised competencies (knowledge and skills) through deeds, processes and performances for the benefit of another entity itself.’ Physical goods have a role in this view, however rather than being a traded commodity, their value is embodied in the service that they provide to the customer.

Such a view supports the emergence of the servitised view for product-based organisations. Schmenner has presented a historical perspective to this, arguing that this has been a natural evolution for manufacturing-based services in order to form increasing links with their customers to gain advantage over competitors (2009).

Vandermerwe and Rada describe the process of servitisation as being on a continuum, moving from products, to supporting services, to self service and knowledge (for the customer). Other definitions of servitisation have also presented it as a continuum, with a pure product focus at one end of the continuum, and a pure service offering at the other. Tukker (2004) refers to these stages as being product oriented, use oriented and results oriented, with the offering moving from being owned by the customer, to the customer paying for use or access. This is referred to as a product-service-system, with particular benefits being in sustainability, as

This first stage in an exploratory study has highlighted that the servitisation process could be further extended, and additional work is planned to investigate and confirm this

the supplier takes responsibility for reducing the through-life cycle cost and overall consumption. Baines and Lightfoot also refer to a continuum of base, intermediate and advanced services (2013). The product is central to all, but the service range, risk and revenue payment methods evolve throughout the continuum as the focus of provision moves from product only (base services) to '*outcome assurance*' (advanced services). Further benefits are therefore seen as being better value for the customer and risk reduction (Baines et al 2010). Servitisation has therefore been presented as a potential method of differentiation for manufacturing-based organisations in order to compete with lower-cost global competition (OECD 2007). Nonetheless, it has been recognised that such a business transformation can present a number of challenges to a 'traditional' product-based organisation.

In a recent example of research into manufacturing organisations adopting a servitised approach, Peillon et al discussed some of these challenges (2015). They investigated the servitisation path for a manufacturing organisation, creating a concept framework to align both the product and service-oriented production structures and testing it using a case study of a machine tools organisation. With reference to service dominant logic, they concluded that products and services become inseparable, leading them to question the results-based pure service extreme of the servitisation continuum. Consequently, they conclude that the results-based model (advanced services) may not be suitable, or desired by all organisations involved. It is important that the organisation does not lose its product-development related expertise, which could occur should it decide to move to a wholly service-oriented business model. The need for developing a more service-focussed culture, and the development of skills to support this, was also highlighted, although they also acknowledged a split between the service-based and product-based employees, due to the nature of the work undertaken.

In their original definition, Vandermerwe and Rada acknowledged that a servitised solution can be approached in either direction, from a manufacturer moving to incorporating services, or conversely from a service-based organisation moving towards manufacturing. With the former having been primarily adopted in the research literature as servitisation, the latter is now primarily referred to as productisation.

KEY WORDS

Productisation,
Servitisation, Service
organisation,
Manufacturing

PALABRAS CLAVE

Productización,
Servitización,
Organización de
servicios, Manufactura

In their extensive review, Harkonen et al define productisation as *'the process of analysing a need, defining and combining suitable elements, tangible and intangible, into a product-like object, which is standardised, repeatable and comprehensible'* (2015). They documented evidence of four types of productisation: the productisation of products, services, software and technology. In their findings, they found that 'productisation of products' can be differentiated from the usual new product development initiatives by the emphasis on commercialisation and meeting the need of the customer. However, they acknowledge that more cases of this type of productisation are needed in research.

It has also been adopted in the term *'productisation of services'*, applied to a case describe in Baines and Lightfoot (2013) and Baines et al (2011). Here, a repair and overhaul organisation engaged in the provision of advanced services developed a small-scale re-manufacturing capability to improve customer response. However, such ventures are seen as being few, and risky, with few organisations expressing an interest in developing them. Consequently, they have remained outside the main scope of research. That said, here productisation is seen as being a potential contributory element in a servitised approach.

The investigation and identification of organisations engaged in, or moving towards, *'productisation of services'* in terms of product development and manufacturing therefore presents an interesting research challenge. Who are these companies? What has motivated them to transform their businesses in this way and what are the mechanisms which have enabled them to achieve it? Furthermore, given their service-based history, what can organisations at the other side of the continuum – the product-based organisations aiming to servitise – learn from their experiences?

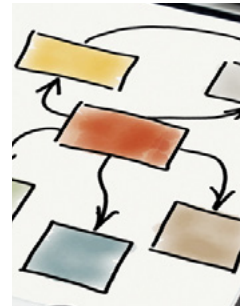
This paper documents a preliminary investigation in this area. It reports on an initial exploratory case study of such an organisation. The aims of the research are to report on the story of this organisation's transition and discuss how it fits in with existing research on productisation and servitisation.

3. THE CASE STUDY

BS Stainless was established in the UK in 1998. It is classified as a small company with 23 personnel and an estimated annual turnover of £13.1m. Until two years ago, its main activity was trading in stainless steel products, with some basic additional services, such as post-sales customer care and problem rectification. Some basic manufacturing operations – cutting, slitting and deburring - were added to cut and finish the stock to meet customer requirements, but trading was acknowledged to be the principle activity. The scope of this paper covers the more recent history of the organisation over the past two years. Recognising that the opportunities for increasing profit were limited as a trading organisation, other possibilities with customers were explored. The decision was made to move into product development, recognising an opportunity to develop a range of integrated jacketing solutions for the oil and gas industry. This would be achieved by acquiring the capability to manufacture the products in-house.

This has been achieved through a two-year Knowledge Transfer Partnership (KTP) with Sheffield Hallam University. This is a UK technology transfer initiative funded by the government through Innovate UK. An organisation and a university work in partnership on a project to develop an aspect of the business using a skills transfer that cannot be managed using its existing skills base (Innovate UK, 2015). Key personnel involved in the programme are the KTP Associate, a university-employed postgraduate who undertakes the project work in the organisation; an Academic Supervisor from the university and an Industrial Supervisor from the organisation.

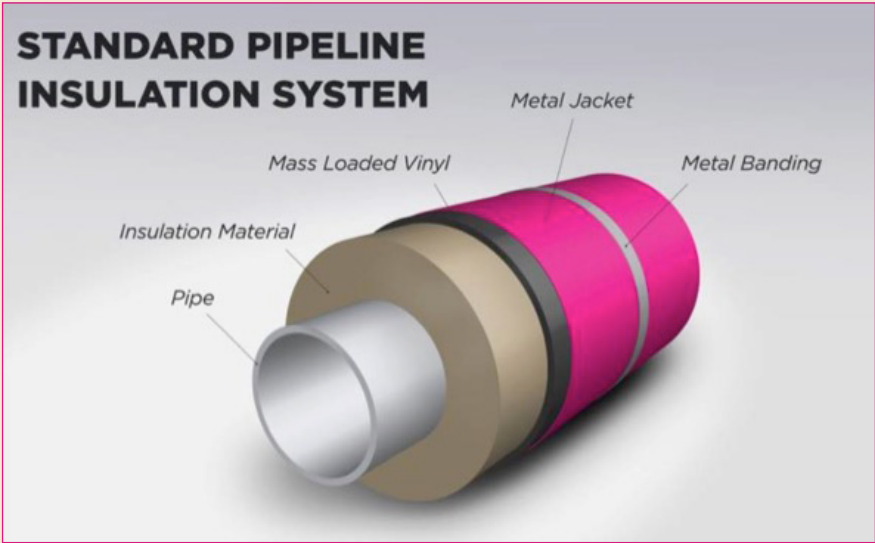
A jacketing system is an important part of the piping assembly installed at oil and gas installations. The piping is stainless steel, with an additional layer of vinyl-type or other proprietary material to reduce noise or maintain temperature. In a conventional installation, these are two separate layers, usually from different suppliers, which are supplied as a flat sheet or coil, assembled and held together with a band and clip. Through the product development work, the stainless steel sheet and additional layer have been integrated, removing the need for an assembly operation by the customer, reducing their labour costs, and also improved the quality of the product by preventing gaps in the assembly. An example jacketing system is shown in **figure 1**. As outcomes for the KTP, four new products have been developed – SoundMet®, an acoustic material



to reduce sound, CoolMet®, to protect against high temperatures, DryMet® to prevent moisture ingress and TedMet®. Patents applications are in progress for two of these.

As a method of exploring more about how this situation arose, five semi-structured interviews were held with key members of the project, both from the organisation and from the university which partnered it. These interviews lasted up to an hour, were transcribed and yielded a rich source of data about the organisation and its recent journey.

Figure 1. **A jacketing system**

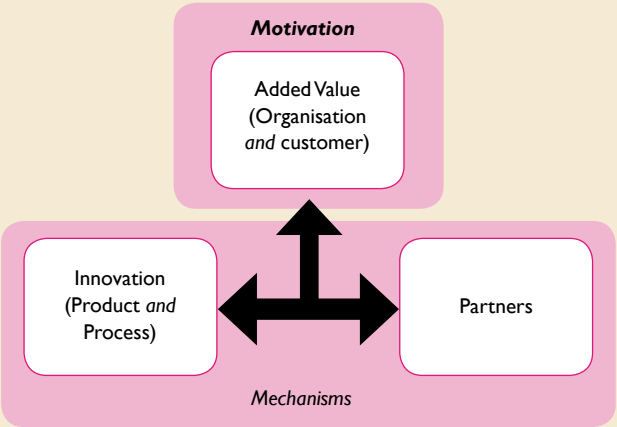


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The main themes common in all the interviews were then analysed. The results are shown in **figure 2**.

As can be seen in **figure 2**, three themes emerged from the data – value, innovation and partners. They are also related: value is seen as the main motivation for the move into product development, with innovation and partners being the main mechanisms by which this is achieved. Each theme is discussed in the following sub-sections.

Figure 2. The main identified themes and their relationships



3.1. Theme 1: Value

Value describes ‘added value’ and it comes from three perspectives: added value according to the customer, the organisation, and for partners.

The organisation defines added value as an increased growth in sales, consequently they are seeking opportunities which will maximise this. However, this also has to be seen as added value for the customer – it’s a mutual benefit. Historically, the high level of service-based activities have been one of the main reasons why customers are attracted to the organisation. Although previously much of this increase in sales had been fuelled by trading opportunities, the organisation examined the meaning of added value for the customer beyond the remit of their usual activities.

Added value for the customer therefore came from the recognition that system solutions would fill a niche in the market (rather than individual components), and was something that wasn’t being performed by their competitors. It would also significantly reduce their customers’ labour costs by reducing the time for installation. This was the main rationale for moving into product development. They also saw the move into product development as an opportunity to launch a better quality product. Quality is a driver in this marketplace: reputations (and sales) can be destroyed if a customer has a poor product.

There was also evidence of added value for the external KTP partner, in terms of patents filed and related publications.

3.2. Theme 2: Innovation

Innovation - in terms of both product and process development - has been one critical mechanism for achieving the new added value for the customer as perceived by the organisation. In terms of product development, the organisation identified this opportunity and developed some initial product ideas, whilst recognising that they would need technical input from elsewhere (the KTP project) to realise them. In terms of process development, the organisation had a choice. It could have identified a sub-contractor to produce the products on its behalf. However, it decided to take the alternative route of developing the manufacturing capability and knowledge to produce the systems itself. There were three reasons for this. Firstly, they were limited by what they could achieve in terms of product development without having some facilities in place. They needed the capability to develop. Secondly, in-house development and product was seen as a guarantee of quality and IP protection. Although this project could be perceived as risky, this was seen as a risk mitigation activity. Finally, acquiring the capability was seen as an opportunity. It would increase the scope of what the organisation could do so that it could be used as a springboard to develop new products.

For both product and process development, there was an incremental approach to innovation in both areas, with smaller achievements in both product and process development contributing to the main developments. This was seen as instilling confidence and mitigating risk. Examples of this were the successful introduction of CE marking, the improved design of an existing product and the sequential development of the four main products which contributed to the success of the project. For process innovation, the organisation already had some very basic processes (cutting, slitting and deburring) which it had acquired incrementally in order to provide a manufacturing-based 'added service' for customers (cutting to size, removing sharp edges). The acquisition of manufacturing capability was seen as a natural step from this, although it was recognised that it was a much larger (and riskier) investment.

In order to mitigate this risk, it is interesting to notice how the acquisition of both product development and process development knowledge has instilled new confidence in the organisation, and that they are now seeking further product development opportunities, looking at ways in which they can use their manufacturing capability to produce new products.

A scale of innovation is also evident. For product development, it is recognised that slight incremental adaptive improvements are not enough to add value. The customer offering has to be a novel step and offer a definite advantage. An example is some design improvements which were made to the clip which holds the band in place in the installation. Its weight was reduced, but by itself, this development is viewed as being insufficient for a customer solution. It needed to be combined with others into an overall 'package' of innovation. For process development, therefore, the manufacturing capability acquired must be able to deal with more than one product range, to maximise innovation potential. Manufacturing capability has therefore been acquired to enable innovation to add value for the customer. It is not a goal in itself.

The innovations have also have a very strong brand, for two purposes – to increase their profile within the industry, and to protect intellectual property. This is demonstrated by the trademark and patent applications.

3.3. Theme 3: Partners

The term 'partner' is used in this paper to denote a knowledge partnership rather than a contractual partnership (although both could be the case). The organisation has shown a particular strength in establishing long-term partnerships with external organisations. These partnerships fall into four categories:

- 1) Customers and suppliers of other products, specifiers and engineers** - to better understand the market and particular challenges, enabling them to define where they can add value. This is reciprocal, as the organisation has informed them of progress and invited feedback on developments.
- 2) Suppliers of their own products** - to understand the way they work and where they can do something different, adding value to the customer (and to themselves).
- 3) Suppliers of coatings** - forming partnerships to develop process technology and testing resources.
- 4) External resources** - the technical expertise in order to move into product development has been 'bought in' through the KTP scheme and has been embedded in the organisation. Additionally, the organisation has now started to form partnerships with external funding organisations for future resource allocation.



These partnerships have been instrumental in enabling the organisation to acquire new knowledge and expertise, branch out from its remit of historical activities and achieve the innovation acquired to add customer value.

4. DISCUSSION

4.1. The Organisation

The organisation has been very market-driven in its approach to innovation, proving itself to be adept at seeking out the customer need and establishing the type of innovation – service and more latterly product – to fulfil this. The most interesting aspect of this case is that, having established their new market direction, the organisation decided to move into a new area of expertise and acquire the capability itself. They also proved to be extremely adept in forming external partnerships to enable them to achieve this capability.

Both of these strengths may stem from the customer focus that the organisation has developed, being traditionally service-based. Perhaps the size of the organisation has also played a part in this. Arguably it has a stronger need to identify customer needs and innovate to satisfy them, as this may impact on its survival more strongly than the larger production companies with whom it competes. It is interesting to note that the opportunity to develop the jacketing systems existed in the marketplace, but this organisation took the decision to be the innovators, rather than their larger, production-oriented competitors, who arguably may have been in a less risky position.

As the organisation has adopted a more product-focussed approach, the scope of activities it undertakes in order to add value has also widened, shown in **table 1**. Many of the ways in which value has been added is through the additional of operant resources such as additional skills and knowledge.

4.2. Discussion relating to productisation of products

From one perspective, this case could be interpreted as a case of a service organisation which is re-inventing itself as a product-based manufacturing organisation. However, the move to product development could be interpreted as an example of the productisation of products. This is particularly evident given the



Table 1. **Changing scope of value-adding activities**

BEFORE PRODUCT DEVELOPMENT	AFTER PRODUCT DEVELOPMENT
Short term About winning orders through trading	More medium-long term About winning orders through product development
Establishing good relationships with suppliers	Establishing good relationships and ongoing IP based partnerships with suppliers.
Establishing good and ongoing relationships with customers: - by being competitively priced - by supplying a good delivery service - by supplying a good product, cut to size where necessary.	Establishing good and ongoing relationships with customers: - by being competitively priced - by supplying a good delivery service - by supplying a whole system solution which is an improvement on existing products, eliminates the need for operations performed by the customer and reduces their labour costs.
- by solving problems with product.	- by developing deeper knowledge of products in the industry, thus developing solutions to customer requirements. - by forming partnerships with suppliers and other partners to establish and ongoing R&D activity. - by developing known and credible product brands.

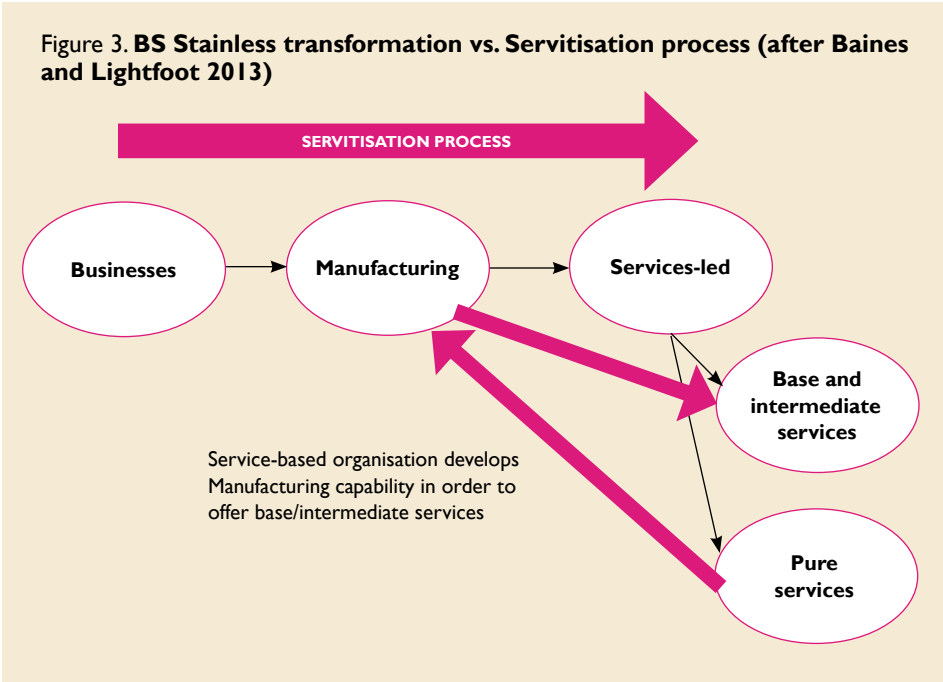
emphasis on the added value to be achieved by the innovation. The nature of the product itself is also important. The organisation developed an integrated product which presents value to the customer by eliminating the need for a manual assembly operation, thus reducing labour costs. Following the principles of service dominant logic, this product therefore also performs service for the customer. The additional acquisition of knowledge and skills resources as the organisation has transformed also supports this approach. This is the main goal of the organisation – the acquisition of manufacturing capability has been seen as the means to achieve this, not the main objective. This business transformation is equally as significant in terms of service provision as well as product provision. It must therefore be questioned if and how, this could fit within the defined servitised approach.

4.3. Discussion related to servitisation

The development of a systems solution to add mutual value for both the customer and the organisation has commonalities with characteristics of organisations which have engaged in servitisation. When compared to Baines and Lightfoot's range of service activities

(2013), it could be said that before this project, the organisation was involved in some base services activities – order processing and delivery, with some additional cutting to size and problem solving (which could move them into intermediate services). As a consequence of the project, it could be argued that they are now performing more intermediate services activities because their product has replaced some of the customer’s installation activities. The organisation could arguably develop their service offering further in addition to product development to move into intermediate or advanced services. However, they have no current plans to do so. Their focus is on ramping up to full production and launching the products in the marketplace. This would be an interesting area to explore with the organisation in the future.

Figure 3 summaries these findings. It is a diagram of the transformation for the organisation when compared against the servitisation process as described in Baines and Lightfoot (2013). From this, it is suggested that, for this case, the productisation of products has been a route to developing further services (when viewed in terms of a service dominant logic) - in this case, base and intermediate services.



These findings therefore raise the question: can servitisation for physical, manufactured products be approached from either direction - i.e. by a manufacturer adopting services, or by a service provider adopting productisation of product (i.e the reverse of the current services continuum)?

5. CONCLUSIONS AND RELEVANCE FOR THE BUSINESS COMMUNITY

Although the main servitisation literature focuses on the servitisation from the starting point of being product-based, it is also widely acknowledged that, in order to achieve servitisation or a product-service system, there must be a move towards service and product integration. This case shows that we need to consider whether productisation, if viewed as a service organisation adopting product realisation capabilities, can also contribute towards the process of servitisation. The relationship between servitisation and productisation and how productisation can contribute to the servitisation process should therefore be a subject of further research.

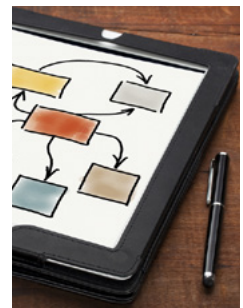
It is recognised that this work reports on one case and that the findings of this research are clearly at a very early stage and require further investigation and development. Data from other service-based manufacturing organisations is required in order to validate, augment and develop the findings.

This study raises other research questions for further investigation of the relationship between productisation and servitisation:

1. To what extent is service productisation prevalent?
2. How is it realised?
3. How does it contribute to the organisation's customer offerings?
4. How does it complement or diverge from the main themes of servitisation?
5. What can a servitising organisation learn from a productising one, and vice versa?

This paper has reported on the preliminary step in a planned research project. Two streams of future work are planned. The first stream is to establish a longitudinal relationship with this organisation to investigate whether they move to a more servitised approach in the medium-long term, or take an alternative direction.

The second stream of work is to establish contact with other SMEs who have moved from service to manufacturing to build a compa-



rative case study analysis. The aim is to build up a picture of the transformation and challenges taking place within organisations of this type in order to investigate the research questions which have emerged from this case. Work is due to commence with a second candidate shortly, and a third has been identified.

Over time, research could also be expanded to examine whether the findings are also relevant to larger and more complex organisations, or whether they are predominant in smaller organisations.

Organisations which choose to transform in this way are unusual and novel, reversing the current main narrative of the product-service continuum. Therefore, finding and investigating these organisations and examining their motivations and mechanisms for transfer are important. If they are confirmed as being part of a move to servitisation, then this illustrates another means by which it can be achieved.

This paper has documented an example of the productisation of products where the organisation has moved from service provision to product development and manufacturing. It has discussed how these products are providing a service to the customer by eliminating the need for a separate assembly activity, thus reducing cost and time in installation. It has concluded that there is a need to further explore productisation within the context of servitisation and whether both can complement each other in delivering customer value. A further research requirement in this area has been highlighted.

130

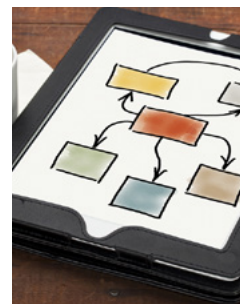


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NOTES

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When services are offered by small and medium retailers: what is the customer's perception?¹

Cuando los pequeños y medianos detallistas ofrecen servicios: ¿cuál es la percepción del cliente?

1. WHAT IS SERVITIZATION?

According to Vargo and Lusch (2004) we live in the era of services, which means that traditional product-based companies add services to their offers. If this is the case, can we still apply the concepts (such as the marketing mix) that marketers have been using for many years? Would it not imply that marketing strategies of businesses should pay much more attention to principles, theories and practices of services rather than using the previous frameworks for mainly products?

One of the new emerging concepts regarding a new theory for services is "servitization". Servitization is recognized as the process of creating value by adding services to products (Rada and Vandermerwe, 1988). So far, some companies are used to selling a product, forming a transactional relationship with their customers ("I sell you a product, you pay me, end of the relationship"). But selling services creates a relationship between the company and customer ("I provide you a service, we start a relationship, we keep in touch").



EXECUTIVE SUMMARY

The concept of servitization or adding services to the existing product offer has been mainly used in the manufacturing sector but little or no attention has been paid to the application of this concept in the retail sector. The purpose of this exploratory research is to measure the perceptions that customers have towards local small and medium retailers regarding the services they offer. We also want to compare the profile of the customers that consider products and services the most important factor when choosing a retailer compared to the rest of the sample. Our findings show that there are a few differences between customers who would prefer more services compared to customers who state that services are not their priority.

RESUMEN DEL ARTÍCULO

El concepto de servitization o añadir servicios a los productos que ya se venden, se ha utilizado principalmente en el sector manufacturero, pero muy poco o nada a la hora de aplicar este concepto en el sector minorista. El propósito de esta investigación es medir cuáles son las percepciones que tienen los clientes hacia los minoristas con respecto a este nuevo concepto. También hemos comparado el perfil de los clientes que tienen en cuenta los productos y servicios como el factor más importante para elegir un minorista con el resto de la muestra. Nuestros resultados muestran que existen algunas diferencias entre los clientes que prefieren más servicios en comparación con cliente para los que los servicios no son su prioridad.

WHEN SERVICES ARE OFFERED BY SMALL AND MEDIUM RETAILERS: WHAT IS THE CUSTOMER'S PERCEPTION?
CUANDO LOS PEQUEÑOS Y MEDIANOS DETALLISTAS OFRECEN SERVICIOS: ¿CUÁL ES LA PERCEPCIÓN DEL CLIENTE?

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 (Hewitt, 2002; Muller and Doloreaux, 2007; Baines et al., 2007). This new value derives mainly from the relationship created and takes form in terms of a different revenue model, differentiating from competitors, changing how the company is structured and even develops a new business model for the company.

Table 1. Main findings in the servitization literature review

Finding 1: Servitization is the innovation of an organisation’s capabilities and processes to better create mutual value through a shift from selling product to selling Product-Service Systems.
Finding 2: Since servitization was first coined in 1988, there has been a growing output of papers from the USA and Western Europe that appear mainly in managerial and business practitioner literature, with authors tending to be from Operations, Services and Business fields.
Finding 3: There are various forms of servitization. They can be positioned on a product-service continuum ranging from products with services as an ‘add-on’, to services with tangible goods as an ‘add-on’ and provided through a customer centric strategy to deliver desired outcomes for the customer
Finding 4: Examples of leading practice in the adoption of servitization are focused on larger companies supplying high-value capital equipment such as Alston, ABB, Tales and Rolls-Royce. These demonstrate how traditionally based manufacturing companies have moved their position in the value-chain from product manufacturers to providing customers with integrated solutions that can include multi-vendor products.
Finding 5: Servitization frequently occurs because of financial drivers (e.g.: revenue stream and profit margin), strategic drivers (e.g.: competitive opportunities and advantage) and by marketing drivers (e.g.: customer relationships and product differentiation).
Finding 6: The adoption of servitization by a conventional manufacturer principally presents challenges for service design, organisation strategy and organisation transformation.
Finding 7: There is a paucity of previous work that provides guidance, tools or techniques, that can be used by companies to servitize.
Finding 8: The principal research need is to engineer tools or techniques that practitioners can apply to help in service design, organisational design and organisational transformation.

Source: Baines and Lightfoot (2013).

1.1. Servitization in different sectors

So far, this concept of servitization has been primarily studied in the manufacturing sector and its interest has increased since the mid-1990s. When we look at servitization, it can be taken from distinct researcher communities, such as services marketing, service management, operations management, product-service systems and service science management and engineering, which are contributing to knowledge production in the servitization of manufacturing.

Baines and Lightfoot (2013) recently collated the research into servitization, the main findings of which are summarized in the following table: (see **Table 1**).

Although servitization has been mainly researched in the manufacturing sector, there are other sectors where the concept has been applied. Barnett et al., (2013) analyzed a case study of a complex engineering service and suggested that in order to provide services, a paradigm shift needs to occur.

Another sector researched is local newspaper companies. Sánchez-Montesinos and Arias (2014) analyzed the relationship that exists between the firm's and individual's adaptation to servitization, and the concept of absorptive capacity in this sector. The results of the study show, not surprisingly, that the newspaper companies should improve the relationship with its clients: the reader and the advertiser.

As an example of the need for change in the ways that companies normally operate if they want to profit from servitization, Bustinza et al., (2013) studied the music industry in the UK and discovered that not all the consumers wanted to take part in processes of co-creation to add more value for them. One of the findings showed that the most numerous group of the sample named "Cautious Consumer" that represented 43% of the sample, did not have any interest on the co-created valued, preferring not to be part of the value chain and were interested in a limited number of transactions and information exchanges with the music firms. This conclusion highlights the importance of analyzing consumers' attitudes and the mechanism to induce them to value co-creation processes of services and, afterwards, design offerings that allow these groups to participate in the buying process in order to increase the revenues of the firm.

KEY WORDS

Servitization, Service-dominant logic, Customer perception, Small and medium retailers, Survey.

PALABRAS CLAVE

Servitization, Lógica del servicio dominante, Percepción del cliente, Pequeños y medianos comercios, Encuesta

2. CAN THE SERVITIZATION CONCEPT BE APPLIED TO SMALL AND MEDIUM RETAILERS?

BS To address our research problem, we have to adapt the definition previously stated for servitization to the retailing context as follows “the innovation of a retailer in its capabilities and processes in order to sell not only products, but products and associated services”.

In a context where the competition is very intense and products are similar, adding services to the existing value proposal could make it more attractive for some clients and differentiate it compared to other competitors. Attracting a higher proportion of customers should be an area to explore in retailing.

So, we propose the following questions: Can the servitization concept be applied to the retailing sector? Can servitization be a framework to increase the competitiveness of retailers? Do all customers want more services?

As mentioned earlier, it could make sense to look for alternative theories to develop a better marketing strategy trying to offer (more) services. As such, if we take the service-dominant logic (S-D logic), Vargo and Lusch (2004) argued that customer value is co-created by the customer and the company. This means that customers appraise the value of goods they purchase in use, and that exchange value determination is always provisional upon later experience. In other words, customers determine what they value-in-use and the marketer can only offer value propositions (Ballantyne and Varey, 2008).

According to Vargo and Lusch (2012), service is the dominant logic for marketing. Service is an interactive process that is valued by the customer. From this perspective service becomes the unifying purpose of any business relationship (Ballentine and Varey, 2008). Value comes from the ability to act in a manner that is beneficial to a party. Value is subjective and ultimately determined by the beneficiary, who in turn is always a co-creator of the value. It then follows that the consumer is also seen as an operant resource. Operant resources are usually not exhaustible, but rather are scalable, reusable, renewable, and creatable. Therefore, in S-D logic, competition is a matter of knowledge creation and application. It is about the comparative advantage in service provision (Lusch et al., 2007) and retailers are primarily service integrators. In conjunction with their own and other's knowledge and skills (including those of other value-creation partners) and the knowledge



and skills of the consumer, this service-integration function allows the customization of variety (in Goods-Dominant Logic, captured as sorting and assorting functions) and application for maximum benefit (service) to the consumer's unique situation and uniquely determined value (Lusch et al., 2007).

In particular, retailers are now proposing themselves as suppliers able to simplify customers' lives, offering value proposition based on one-stop solutions. In so doing, they are acting in a Service-Logic, as the interaction within partners is concerned with solutions and phenomenological events (Lusch et al., 2007).

Other studies analyze the innovation in retailers' business models (Sorescu et al., 2011) or how a retailer creates value for its clients. Innovative business models are increasingly important in order to create a sustainable competitive advantage in the market. The authors propose that the innovations in business models in retailing are better appreciated as changes in these three areas: 1) in the way activities are organized; 2) the types of activities that are carried out; and 3) the level of participation of the actors involved in these activities.

Although there is important research interest on servitization, some authors comment on the number of clients who are asking for more services. In the case of retailing, this is very important due to a tendency of offering less services such as self-service or low cost and low service offerings (Rosenbloom & Dupuis, 1994). As discussed before, in the music industry four types of customers were identified and two of them, representing 41% of the sample, could be involved in co-creation activities (Bustinza et al. 2013).

In this context, it seemed necessary to analyze a broad sample of customers to better understand the profile of those willing to have more services.

As far as we know there are very few papers devoted to servitization in retailing and so there is a gap to fill in this area. From this perspective, the present study aims at discovering the perceptions that customers have related to small and medium retailers and analyzing the profile of a customer willing to have more services in retailing. So from a broad sample of customers we want to identify those that would like to have more services, and in this subsample explore what kind of service they would desire. Finally, we wish to explore how the active role of the customer could co-create value in the servitization process.

3. CONSUMERS' PERCEPTION ANALYSIS

For the purpose of our research, we wanted to compare the customers that give more importance to the services offered in terms of online and offline behavior, demographic profile and expectations to those who do not pay attention to such services. In order to identify these consumers, we designed a question for identifying the most valued attributes when choosing a retailer. We asked customers what they valued the most and we provided seven categories: Price (quality-price relationship), Proximity, Professional Attention, Intangible assets (being trust worthy, or innovative or been in the neighborhood), Offer products and services, Convenient Location and Good Offer (different brands, quality of products). Not surprisingly, only a small group of customers (5.9%) declared the "offering of Services besides the Products" to be the most important issue when choosing a retailer. So we decided to name them as the "pro-servitization" group from the whole sample and, subsequently we carried out our analysis of this subsample to ascertain a profile of them. We then compared this subgroup with the rest of the sample. Student's t tests and chi-square tests were conducted to discover if differences in the answers of both subsamples were significant from a statistical point of view.

Table 2. Technical data

TECHNIQUE	Telephone interview using CATI (Computer Aided Telephone Interview), through structured survey, with open and closed questions.
TARGET	Last consumers that make their usual purchase in the municipality subject of study.
DATE	From 9th to 20th of July 2015
SAMPLE DESIGN, SIMPLE SIZE	966 telephone interviews sampling error of $e=\pm 3,1\%$ confidence level of 95,5% when $p=q=0,5$

Source: own elaboration.

Regarding the mean age of customers, the "pro-servitization" group was 45.9 years old while the rest of the sample was 44.7 years old; the difference was not statistically significant. However it is worth noticing that the "pro-servitization" sample is skewed to younger and older groups compared to the rest of the sample as indicated in **Table 3.**

Table 3. Age Distribution of both subsamples

AGE RANGE	TOTAL (N = 956/956)	PRO-SERVITIZATION (N=57)	REST OF SAMPLE (N=909)
From 16 to 24 years	11%	11%	11%
From 25 to 34 years	19%	21%	18%
From 35 to 44 years	22%	19%	22%
From 45 to 54 years	22%	16%	22%
From 55 to 64 years	18%	21%	18%
From 65 to 70 years	9%	12%	9%

Then, we examined if there was any significant difference among both groups, according to the life-cycle criteria. The results are presented in **Table 4**.

Table 4. Distribution of the subsamples according to the cycle of life

LIFE CYCLE	TOTAL (N = 956/956)	PRO-SERVITIZATION (N=57)	REST OF SAMPLE (N=909)
Less than 35 years old, living alone	2%		2%
More than 35 years old, living alone	13%	17%	13%
Monoparental family	14%	10%	14%
Couple with children less than 10 years old	9%	9%	9%
Couple with children 11 to 15 years olds	5%	2%	5%
Couple with children older than 15 years	24%	24%	24%
Couple without children / with other family members	20%	14%	20%
Other types	13%	24%	13%

As shown, results do not provide any specific pattern for our “pro-servitization” group as differences are not statistically significant. Then, we analysed the “Level of education” of both samples to learn that, although there is no significant difference from the statistical point of view, our “pro-servitization” group seemed to be less educated than the rest as shown in **Table 5**.

WHEN SERVICES ARE OFFERED BY SMALL AND MEDIUM RETAILERS: WHAT IS THE CUSTOMER'S PERCEPTION?
CUANDO LOS PEQUEÑOS Y MEDIANOS DETALLISTAS OFRECEN SERVICIOS: ¿CUÁL ES LA PERCEPCIÓN DEL CLIENTE?

Table 5. Distribution of samples according to “Level of education”

LEVEL OF EDUCATION	TOTAL (N = 956/956)	PRO-SERVITIZATION (N=57)	REST OF SAMPLE (N=909)
No studies, Unfinished Primary studies	3%	8%	3%
Primary studies	13%	23%	13%
Secondary studies or similar	12%	3%	12%
Vocational Training studies	16%	17%	16%
Postsecondary studies, High Vocational training studies	18%	22%	18%
Medium University studies	11%	3%	12%
High University studies	23%	22%	23%
Postgraduate studies (PhD, Master)	2%	2%	2%
No answer	0%		0%

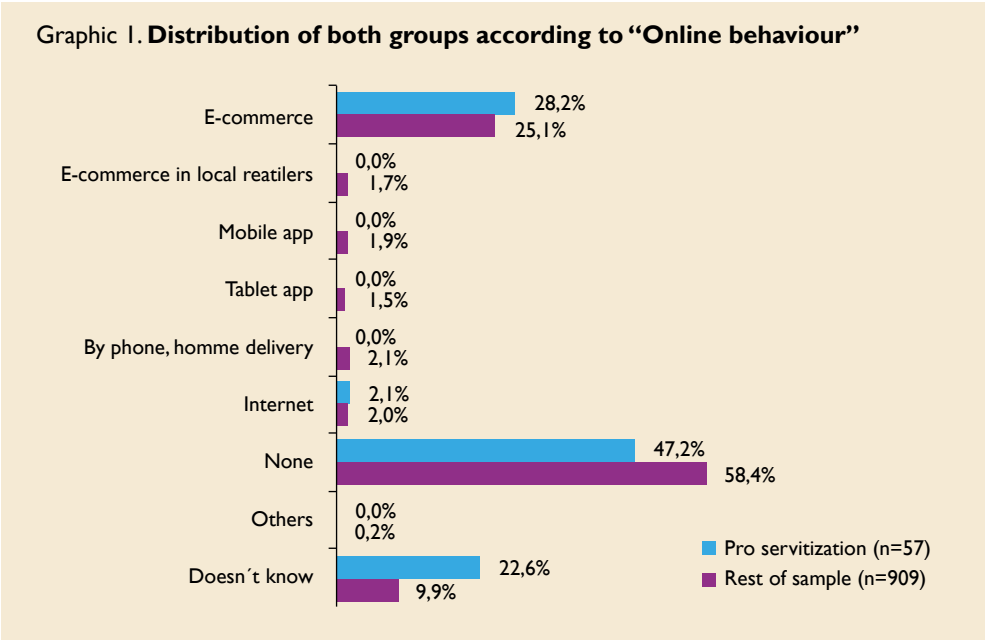
After that, we examined the differences between both samples under the “Current occupation” variable, to reveal that the “pro-servitization” group had more “retired” people than the rest of the sample, although again, differences were not significant. **Table 6** shows the distribution for this status.

Table 6. Distribution of the samples according to “Actual occupation”

CURRENT SITUATION	TOTAL (N = 956/956)	PRO-SERVITIZATION (N=57)	REST OF SAMPLE (N=909)
Employed	55%	48%	55%
Unemployed	14%	12%	14%
Retired, pensionist, disabled	13%	27%	12%
Rentist	0%		0%
Student	8%	3%	8%
At home	8%	7%	8%
No answer	2%	2%	2%

We paid special attention to digital characteristics such as e-commerce and social network. For example, the e-commerce phenomenon: although our “pro-servitization” subsample seemed to embrace this kind of buying to a greater extent compared to the other group,

again, differences were not statistically significant. Answers to this item are summarized in Graphic 1.



Then, we studied the activity of both subsamples in “Social networks”, which showed that the “pro-servitization” group seemed to be more active in social networking, although differences continued to be non significant.

Delving further into “Participation in Social Networks” we studied the ones used by both samples, to discover that there was no significant differences between both subsamples as shown in **Graphic 2**.

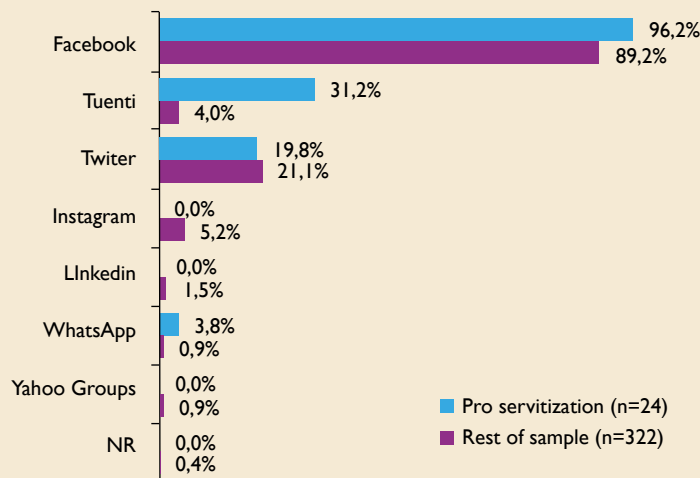
But we found differences in the pattern of purchase. Analysing the main day of purchase of both subgroups, we discover that our “pro-servitization” subsample seemed to choose all days more than the other, and differences were statistically significant only for Saturdays. Results are summarized in **Graphic 3**.

Closer examination was used to determine if our “pro-servitization” subsample was more active in a given period of time (Morning, Noon, Afternoon) during each day of the week. The results showed that, differences were statistically significant only on Mondays and Tuesdays, buying less on mornings and more on afternoons in both cases (differences in noon buying were not significant).

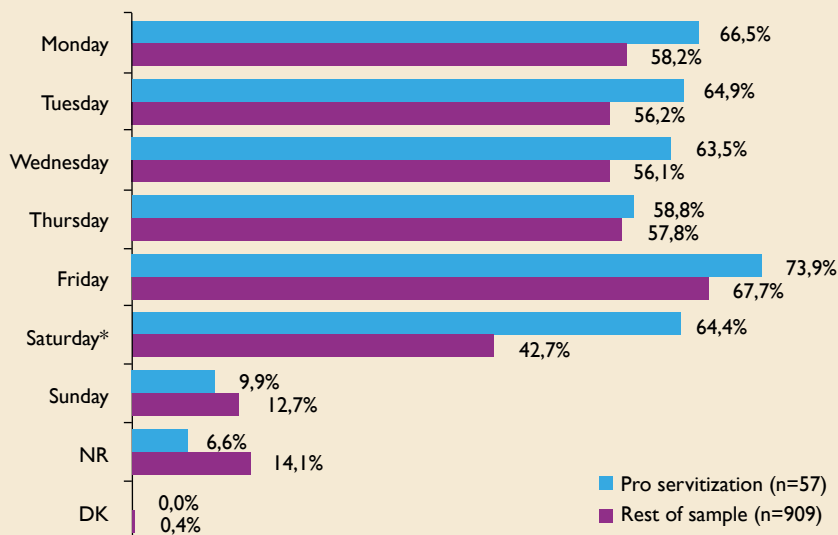
We also wanted to know if there was any significant difference in the

WHEN SERVICES ARE OFFERED BY SMALL AND MEDIUM RETAILERS: WHAT IS THE CUSTOMER'S PERCEPTION?
CUANDO LOS PEQUEÑOS Y MEDIANOS DETALLISTAS OFRECEN SERVICIOS: ¿CUÁL ES LA PERCEPCIÓN DEL CLIENTE?

Graphic 2. Use of different “Social-Networks” in both subsamples

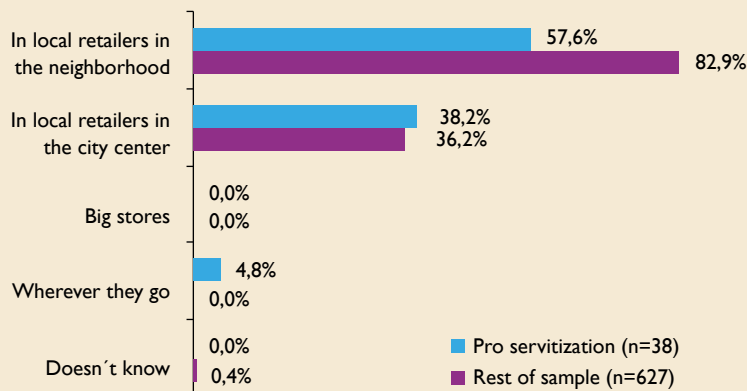


Graphic 3. Distribution of according to the main day of purchase

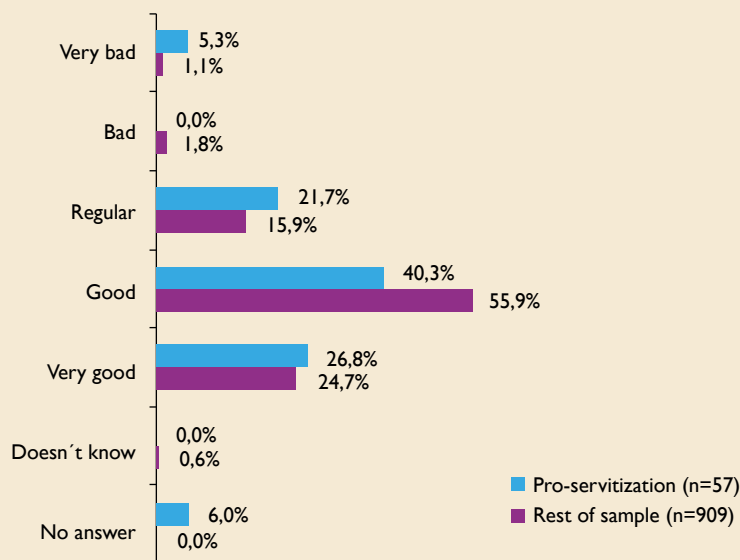


amount of money spent in their “Last Purchase” in a set of given categories, and although our “pro-servitization” subsample seemed to have spent more in Travelling and in Computers, there was no evidence that the differences were statistically significant for any item. Another aspect we looked at was the type of store in which both

Graphic 4. Distribution of both groups according different types of “Local retailers to purchase”



Graphic 5. Distributions of both groups on “Perceptions about local retailers”



subsamples tended to buy from. Differences were statistically significant, showing that our “pro-servitization” group bought in local stores less in the neighborhood and more in the city center. **Graphic 4** displays the answers to this item.

Then, we analysed the “Perception about the local retailers” that

both subsamples had. It seemed that our “pro-servitization” group showed contradictory opinions on this item: either very bad or very good, compared to the rest; but, again, differences were not statistically significant. Results are provided in **Graphic 5**.

Finally, we studied the “Satisfaction with local retailers” in both subsamples to learn that differences were not statistically significant.

4. CONCLUSIONS AND RECOMMENATIONS TO RETAILER

It seems that the customers of small and medium retailers are not yet interested in the services offered. From our point of view, this result could be a consequence of consumers taking for granted the offering of services in retail, and so, they rarely think about services in a conscious way. But, similarly, it might not be a priority for customers, or they do not know what services could be applied to retail. Therefore the concept of servitization for customers would still be somehow unknown and “regular” attributes such as price, quality and so on, would continue to be valued the most by consumers.

Nevertheless, when we compare the consumers who value the services offered when they buy a product to the rest of the group, there is no statistical evidence of differences in age, life-cycle, education, job, or use of social networks. However, there are statistical differences regarding their offline purchase behavior, that is, they differ in the day and the time when they make a purchase and the place where they buy from.

This research has yielded some important implications for retailers. Although the concept of servitization does not appear to be of primary concern for the average consumer so far, small and medium retailers should test, as entrepreneurs do, different possibilities in servitization to compete with larger stores. Therefore, the identification of the customer’s perception and the possibility to offer new services in order to increase the value provided could increase the competitiveness of the small and medium retailers. They should therefore try to identify these customers that want to receive more services and identify ways to co-create value with them. At least, in this way they could work with innovators and early adopters to be prepared when the big wave arrives.



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NOTES

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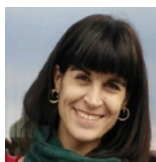
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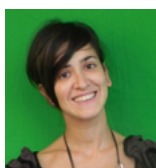
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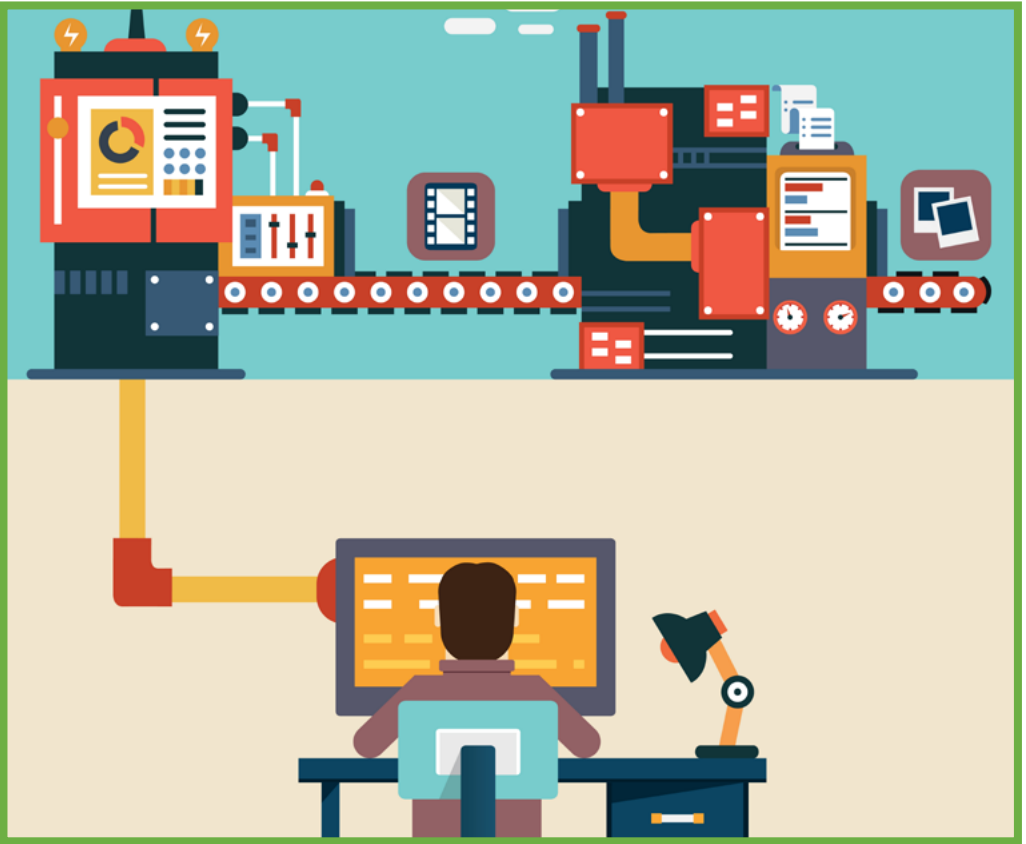
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Diseño de servicios para la servitización. Experiencias con empresas manufactureras vascas a través de la colaboración universidad-empresa¹

Service design for servitization. University-
business collaboration case studies in basque
manufacturing companies

I. INTRODUCCIÓN

La evolución de las tecnologías de la información, la globalización, la mayor eficiencia en los costes de producción y la saturación de los mercados entre otros factores obligan a las empresas industriales a reinventar continuamente sus propuestas de valor, y por consiguiente, los modelos de negocio que las sustentan. En este sentido, añadir o integrar servicios a la oferta de productos es una estrategia que las empresas manufactureras están adoptando para lograr una mejora de su posición competitiva (Baines y Lightfoot, 2013). Varios estudios señalan que la servitización es una realidad a nivel global (Neely, Benedettini y Visnjic, 2011), estatal (Santamaría, Nieto y Miles, 2012) y regional (Kamp y Alcalde, 2014). Siendo muchos los ejemplos de empresas servitizadas que ofrecen servicios avanzados en base a contratos de disponibilidad garantizada (IBM, Hilti, Machinery Link, ABB Turbo Systems, Otis, etc.), contratos basados en la actividad (Rolls-Royce, BASF Coatings, Xerox, Smartville, etc.), o en soluciones llave en mano (Heidelberg Printing Machines, Lantal Textiles, Tetra Pak, 3M, etc.).



RESUMEN DEL ARTÍCULO

Las empresas manufactureras precisan de metodologías prácticas para el diseño de ofertas integradas de producto-servicio. La disciplina del diseño de servicios ha sido sugerida como un habilitador para la servitización. Este artículo valora los resultados de la aplicación del diseño de servicios en seis empresas manufactureras inmersas en procesos de servitización. Los datos recogidos en base a la observación participativa y a entrevistas semiestructuradas infieren que el diseño de servicios permite a las empresas manufactureras superar una visión exclusivamente centrada en producto, y además abordar el diseño integral de la propuesta de valor a través de la experiencia ofertada al cliente. Además, se concluye que el diseño de servicios puede ser aplicado sin que esto suponga una transición hacia los servicios como núcleo de la oferta. No obstante, las empresas indican la necesidad de incorporar al diseño de servicios competencias de negocio para contemplar todos los elementos de cambio inherentes a servitización.

EXECUTIVE SUMMARY

In order to design integrated product-service offerings and implement servitization processes, manufacturers need practical and tangible methodologies. Service design has been suggested as a way to facilitate such processes. This paper assesses the results gathered from an experiment of the implementation of service design in six Basque manufacturers already undergoing servitization processes. Data was collected by means of participatory observation and semi-structured interviews. The findings suggest that service design allows manufacturers to go beyond product-oriented mindsets and to design integrated product-service value propositions through focusing on the experience offered to customers. Moreover, it concludes that service design can be applied without needing to fully transition towards services as a core offer. Nonetheless, manufacturers participating in this experiment highlighted the need to consider business competencies in service design in order to properly assess and manage all the change elements inherent to servitization.

Varios estudios señalan que la servitización es una realidad a nivel global, estatal y regional

La Corporación MONDRAGON – uno de los mayores grupos empresariales en España y el mayor grupo industrial vasco – no es ajena a este fenómeno. El estudio de Iriarte et al. (2015) indica cómo el 67 % de las grandes empresas del área industria de este grupo ofrecen servicios asociados a producto. La mayoría de esos servicios (el 78 %) son servicios-intermedios asociados a la instalación, mantenimiento y soporte de producto, pero algunas empresas comienzan a ofertar servicios avanzados de ingeniería, diseño y desarrollo de aplicaciones y soluciones. No obstante es indicativo sólo una minoría de las empresas (el 20 %) reconoce tener un método estructurado para el Desarrollo de Nuevos Servicios (NSD en sus siglas en inglés). Las empresas manufactureras de MONDRAGON son fiel reflejo de que tal y como indican Meier, Roy y Seliger (2010) la industria está ya ofreciendo Sistemas de Producto Servicio (PSS en sus siglas en inglés), sin poseer un soporte metodológico contrastado. Así, las cuestiones planteadas por Baines et al. (2009) siguen siendo las carencias principales para apoyar a las empresas industriales manufactureras en la servitización: ¿Cómo se pueden diseñar ofertas integradas competitivas de producto-servicio dentro del contexto de una organización industrial?, ¿Cómo ha de ser la estrategia organizativa para ofertar dichas ofertas? y ¿Cómo puede una organización industrial realizar dicha transición?

En este sentido, algunas experimentaciones incipientes en el sector manufacturero (ej. Iriarte et al., 2014; Sangiorgi et al., 2012; Thurston y Cawood, 2011; Bhamra, Moultrie y Thurston, 2014) sugieren al diseño de servicios como una metodología capaz de ofrecer marcos de trabajo y herramientas prácticas para guiar a las empresas manufactureras en la servitización. Aunque el diseño de servicios está influyendo en la manera en la que se conciben los servicios en numerosos sectores terciarios B2C (*Business to Consumer*) (Zomerdiijk y Voss, 2010), sus aplicaciones en contextos industriales son raras y poco estudiadas, en especial en el B2B (*Business to Business*). Aun así, las iniciativas orientadas al sector industrial (ej. PDR (2013) [Design Wales, PDR, Welsh Government] o la iniciativa descrita por Sangiorgi et al. 2012 [Design Council, Imagination Lancaster, The Hub, LiveWork]) son prometedoras en tanto que sugieren que el diseño de servicios permite: (i) obtener un enfoque de negocio más orientado a los clientes, (ii) reconocer y comunicar el valor a los

clientes, (iii) permitir una mejor segmentación de los clientes, y (iv) ofrecer un enfoque sistemático para la innovación en servicio (Sangiorgi et al., 2012).

No obstante, aunque estos casos planteen una serie de beneficios generales derivados de talleres puntuales realizados con Pequeñas y Medianas Empresas (PYME) manufactureras, no realizan un seguimiento continuado respecto a la aplicación y adopción de los métodos y herramientas propias del diseño de servicios en los procesos de servitización. Es necesario pues, tal y como indican Bharmra, Moultrie y Thurston (2014) la creación de modelos para que el diseño de servicios sea adoptado por el sector manufacturero, así como la ejecución de casos prácticos donde se analice en profundidad la contribución del diseño de servicios en contextos industriales manufactureros.

Con el objetivo de determinar los beneficios de la aplicación del diseño de servicios a los procesos de servitización de la industria, este artículo primero describe brevemente las motivaciones y los retos de la servitización. Segundo presenta la disciplina del diseño de servicios y perfila las potenciales contribuciones que su aplicación puede tener cara a diseñar ofertas integradas de producto-servicio dentro del contexto de una organización industrial. Tercero, muestra una colaboración universidad-empresa donde el diseño de servicios ha sido aplicado para el diseño de PSS de seis empresas manufactureras vascas ya inmersas en procesos de servitización. Finalmente, presenta los resultados de dicha colaboración, muestra las conclusiones, las limitaciones y las líneas futuras de investigación.

2. LA SERVITIZACIÓN DE LA INDUSTRIA: MOTIVACIONES Y BARRERAS

Kujala, Ahola y Huikuri (2013) agrupan las ventajas que para una empresa manufacturera tiene el añadir o integrar servicios en 5 perspectivas: (i) estratégica, (ii) financiera, (iii) marketing y ventas, (iv) innovación y (v) eficiencia en la entrega. En síntesis, y en base a dichos autores, desde el punto de vista estratégico, los servicios posibilitan la diferenciación de la firma y la generación de barreras de mercado. Desde el punto de vista financiero, los servicios llevan a un aumento de ingresos basados en productos ya instalados o la generación de nuevos ingresos. Desde la perspectiva del marketing y las ventas, los servicios permiten el establecimiento de relaciones

PALABRAS CLAVE

Servitización,
Diseño de Servicios,
Sistemas de Producto
Servicio, Colaboración
Universidad-Empresa

KEY WORDS

Servitization, Service
Design, Product
Service Systems,
University-Business
Collaboration, New
Service Development

más estrechas con el cliente, así como un aumento de la confianza entre el proveedor y el cliente, además, de un incremento de la credibilidad y la generación de escenarios propicios para la identificación de nuevas necesidades del cliente. Del punto de vista de la innovación, se habilita el acceso a información relevante para futuros procesos de Investigación y Desarrollo (I+D). Finalmente, se produce un aumento de la eficiencia en la entrega e implementación gracias a que se dispone de un intercambio de información más fluido con el cliente, y se habilitan procesos de cooperación que posibilitan reconocer de manera más rápida los cambios en los requerimientos del cliente.

No obstante a estas ventajas, si la servitización no se maneja adecuadamente puede conllevar a un retroceso en la actividad de la firma (Benedettini, Neely, y Swink, 2015). En este sentido, Vladimirova (2012) agrupa los retos de la servitización en 5 perspectivas: (i) organizativa, (ii) financiera, (iii) relación con el cliente, (iv) cadena de valor y (v) mercado. En síntesis y en base a dicha autora, los retos organizativos se basan en la necesidad de establecer una nueva estructura capaz de diseñar y entregar PSS fundamentados en una nueva cultura sobre la generación del valor (del valor añadido al valor co-creado y al valor en-uso). Los retos financieros se refieren a los riesgos derivados de la redistribución de los recursos y las inversiones requeridas para la provisión de los nuevos servicios. Los retos respecto de la relación con el cliente se producen debido a que existe un cambio en dicha relación (de una relación fundamentada en la transacción de artefactos, a escenarios relacionales en base a contratos a largo plazo). Los retos ligados con la cadena de valor se fundamentan en que la servitización puede conllevar a delegar o a asumir determinadas acciones hasta ahora ejecutadas por otros actores (proveedores, distribuidores, aliados, etc.). Finalmente, los retos de mercado se originan debido a las incertidumbres de la nueva oferta integrada producto-servicio en el mercado (ej. falta de demanda debido a una errónea identificación de los requerimientos del cliente, reticencias y desconfianza por parte del cliente a adquirir propuestas de valor distintas a las convencionales, etc.).

Así, para dar respuesta a dichos retos, varias disciplinas han tratado de discernir bajo qué condiciones es conveniente optar por la servitización y cómo abordar dicha transformación, incluyendo cómo diseñar propuestas de valor integradas de producto-servicio.

Autores como Bitner y Brown (2008) o Gebauer, Fleisch y Friedli (2005) indican que dicha labor se ve dificultada porque no se considera la experiencia ofertada al cliente en su conjunto, y es aquí donde el diseño de servicios cobra interés y se incorpora a las disciplinas que podrían contribuir en la servitización.

3. EL ROL DEL DISEÑO DE SERVICIOS EN CONTEXTOS INDUSTRIALES MANUFACTUREROS

BEI diseño de servicios (*Service Design*) en una nueva disciplina centrada en las personas para la innovación en servicio construida a través de incorporar herramientas provenientes del marketing, la gestión operacional y las ciencias de la información al enfoque de la innovación a través del diseño (Patrício y Fisk 2013). Analizando publicaciones (ej. Segelström, 2013; Viladàs, 2011; Zomerdijs y Voss, 2010) donde se estudian los procesos de diversas agencias de diseño de servicios se puede concluir que la contribución del diseño de servicios al NSD se agrupa en dos niveles de intervención: (i) identificación de las necesidades de los clientes – por medio de metodologías del Diseño Centrado en las Personas (HCD en sus siglas en inglés) - y (ii) un nuevo enfoque para el diseño de la propuesta de valor – a través de herramientas de visualización-.

Respecto al primer nivel de intervención, Grönroos (2000) indica que la mayor contribución del diseño a la innovación en servicio es que todo el proceso de NSD se puede plantear desde la óptica del usuario. Esta afirmación se fundamenta en la aplicación que el diseño de servicios hace de los métodos del HCD, quienes permiten empatizar con los usuarios del servicio y capturar de una manera rápida y fiable las necesidades de los mismos. Según Hanington (2003) los métodos HCD pueden ser clasificadas en base a tres categorías: (i) métodos tradicionales, (ii) métodos adaptados y (iii) métodos innovadores. Los métodos tradicionales incluyen técnicas (cuestionarios como el SERVQUAL, Focus Group, entrevistas, etc.) adoptadas de disciplinas como el marketing, que se aplican para investigar grandes volúmenes de usuarios/clientes. Los métodos adaptados incluyen técnicas (observación de usuario, tests de usabilidad, etc.) provenientes de disciplinas interesadas en el comportamiento humano como por ejemplo, las ciencias sociales o las ciencias computacionales que han sido adaptadas para propósitos de diseño. Finalmente, los métodos innovadores



incluyen técnicas (ej. Cultural Proves) desarrolladas por y para la disciplina del diseño, que están ligadas al diseño participativo y tienden a requerir una participación activa de los sujetos de estudio con el objeto de descubrir nuevos puntos de vista sobre los contextos de uso.

Respecto al segundo nivel de intervención, la adopción del pensamiento de servicio o *Service Thinking* contribuye a la adquisición de la visión holística necesaria para considerar el contexto completo de entrega de la propuesta de valor servitizada-incluyendo todas las interacciones entre personas, artefactos físicos, espacios y tecnologías (Blomkvist, Holmlid, y Segelström, 2010) -. Para ello, el diseño de servicios provee de herramientas de visualización capaces de manejar la complejidad de las ofertas integradas de producto-servicio (Morelli, 2006). Dichas visualizaciones permiten entender y compartir los comportamientos de los usuarios durante la provisión del servicio, y por consiguiente, habilitar al diseño o el re-diseño del mismo a través de enfoques de co-creación como el expuesto por Sanders y Stappers (2014).

Diana, Pacenti y Tassi (2009) dividen las herramientas de visualización del diseño de servicios en Mapas, Flujos, Imágenes y Narraciones. Los Mapas, son técnicas de representación (ej. Service Ecologies, Behavioral Maps, etc.) que permiten tener una imagen general del sistema de servicio, y de las relaciones de los agentes que conforman dicho sistema. Los Flujos, son técnicas de representación (ej. Customer Journey Maps, Blueprints, etc.) que permiten visualizar los procesos de servicio, mapeando las interacciones que se dan entre los diferentes agentes y la propuesta de valor. Las Imágenes, son técnicas que permiten, por una parte, prototipar conceptos -ya sean materiales o inmateriales-relacionados con el servicio (ej. Evidencing/Tomorrow Headlines, etc.), y por otra, visualizar los requerimientos del cliente a través de arquetipos de usuarios pertenecientes a diversos segmentos de mercado (ej.: Personas, Empathy Maps, etc.). Finalmente, las Narraciones, son técnicas de representación que permiten comprender, pre-visualizar y prototipar la experiencia de uso del servicio de los clientes a través de secuencias de imágenes realistas (ej. Storyboards) o técnicas de Rol Play (ej. Service Walkthroughs, Cognitive Walkthroughs, etc.).

4. EXPERIMENTADO CON EL DISEÑO DE SERVICIOS A TRAVÉS DE LA COLABORACIÓN-UNIVERSIDAD EMPRESA

Según Gebauer y Friedli (2005), cuando las personas de la organización industrial comprenden los beneficios de la transición hacia los servicios se activa la dinámica transformadora requerida en la servitización. Por ello, los casos de estudio que a continuación se presentan no son casos aislados, sino que se plantean inmersos en un proceso de Aprendizaje Organizacional (OL en sus siglas en inglés).

Los OL son procesos colectivos de adquisición de competencias que modifican la manera en la que las organizaciones gestionan diversas situaciones. Crossan, Lane y White (1999) entienden el OL como un proceso dinámico subdividido en cuatro subprocesos: (i) intuir, (ii) interpretar, (iii) integrar e (iv) institucionalizar, que ocurren a su vez en tres niveles organizacionales: (i) individuo, (ii) grupo y (iii) organización. En esta misma línea, Beckman y Barry (2007) indican que la innovación a través del diseño también es un proceso de OL. Así, a partir del modelo dinámico de OL de Crossan, Lane y White (1999) y el modelo narrativo de aprendizaje de Beckman y Barry (2007) se ha activado un modelo para la adopción del diseño de servicios en empresas industriales manufactureras vascas a través de la colaboración universidad empresa.

Dicho modelo (**Figura 1**) se ha concebido como un proceso de aprendizaje fundamentado en la colaboración universidad-empresa a largo plazo y dividido en tres etapas: (i) mostrar el potencial del pensamiento de servicio (*haz que me importe y enséñame algo nuevo*) (ii) experimentar con el diseño de servicios (*dime de qué carezco y muéstrame oportunidades*), e (iii) implementar el diseño de servicios (*hazlo tangible*). Dichas etapas se realizan enmarcadas en los semestres lectivos del Máster en Diseño Estratégico y Trabajos Fin de Máster de Mondragon Unibertsitatea.

En síntesis, el objetivo de la primera etapa, es mostrar el potencial del pensamiento de servicio a las empresas manufactureras a través de demostraciones conceptuales de servicios asociado a sus productos actuales. El propósito de la segunda etapa, es que las personas pertenecientes a dichas empresas experimenten con las metodologías y las herramientas del diseño de servicios de manera directa a través de talleres de co-creación. Finalmente,



la tercera etapa, trata de implementar el diseño de servicios en la empresa manufacturera a través de la integración de un diseñador en su estructura interna (Figura 1).

Figura 1. Modelo de Aprendizaje para la adopción del Diseño de Servicios en Empresas Manufactureras a través de la Colaboración Universidad-Empresa



Los casos de este artículo se localizan en la etapa 2. Las empresas participantes (Tabla 1) están inmersas en procesos de servitización pero su punto de partida es distinto y difieren en sus motivaciones. La Tabla 1, muestra la tipología y tamaño de empresa, su modelo de negocio y servicios ofertados actualmente, así como las motivaciones que les llevan a participar en esta experimentación. Dichas empresas provienen de la etapa 1 (Iriarte et al., 2014).

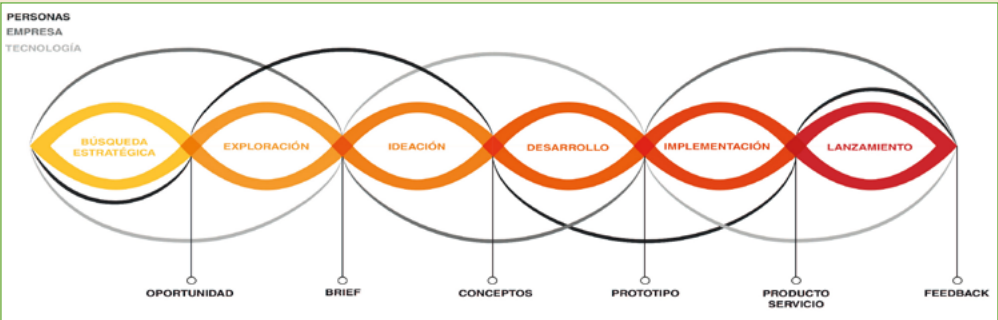
En las experimentaciones, los estudiantes de diseño, bajo la observación participativa de los investigadores y la colaboración activa de los mandos intermedios de las seis empresas participantes aplican la metodología de innovación centrada en las personas del Centro de Innovación en Diseño (DBZ) de Mondragon Unibertsitatea (2014) (Figura 2) para el diseño de nuevos PSS, donde se integran tanto las metodologías HCD como las herramientas de visualización del diseño de servicios.

El proceso, comienza con la *Búsqueda Estratégica* y la *Exploración*, cuyo objetivo es detectar nuevas oportunidades para productos y servicios. En estas fases frecuentan las observaciones y diálogos con usuarios para encontrar problemas, necesidades o inquietudes que puedan dar pie a oportunidades de nuevos productos y

Tabla 1. Empresas manufactureras participantes en la experimentación

	Empresa A Fabricante de productos deportivos	Empresa B Fabricante de electrodomésticos	Empresa C Fabricante de sistemas de elevación	Empresa D Fabricante de máquinas herramienta	Empresa E Fabricante de componentes de automoción	Empresa F Fabricante de útiles de control
Tipo	B2C	B2C	B2B	B2B	B2B	B2B
Tamaño	PYME	Empresa de gran tamaño	Empresa de gran tamaño	Empresa de gran tamaño	Empresa de gran tamaño	PYME
Modelo de negocio actual	Orientado a Producto	Orientado a Producto	Modelo Híbrido Orientado a producto más servicio	Proveedor de soluciones	Orientado a Producto	Proveedor de soluciones
Tipos de servicios ofertados actualmente en base a la clasificación de Baines y Light-foot (2013) (servicios base, intermedios o avanzados)	Servicios-base (instalación, garantía y mantenimiento)	Servicios –base (instalación, garantía y mantenimiento)	Servicios-intermedios (instalación, mantenimiento, sustitución y modernización)	Servicios-intermedios (Soluciones llave en mano, diseño, instalación, mantenimiento, monitorización y modernización)	Servicios-avanzados (Desarrollo conjunto de productos en cooperación con el cliente, acuerdos de soporte con el cliente)	Servicios-avanzados (Desarrollo conjunto de productos en cooperación con el cliente)
Motivaciones para explorar nuevas posibilidades a través del diseño de servicios	Explorar la posibilidad de expandir su modelo de negocio a través del “pago-por-uso” para productos <i>fitness</i>	Explorar nuevas posibilidades de servicios basados en la inclusión de nuevas Tecnologías de Información y Comunicación (TICs) en sus productos	Mejorar y sofisticar los servicios ofertados alineándolos con la estrategia de marca	Apoyar la estrategia de servitización en nuevos sectores objetivo	Explorar nuevos servicios orientados a sus componentes tecnológicamente maduros	Explorar nuevas oportunidades de PSS a partir de su <i>Know How</i> tecnológico

Figura 2. Metodología para la Innovación Centrada en las Personas (Mondragon Unibertsitatea, 2014)



servicios. Las dos siguientes etapas, *Ideación* y *Desarrollo*, se centran en generar soluciones, creando primero conceptos y desarrollándolos mediante el testeo con prototipos de diversa índole. La involucración de los usuarios en la generación y testeo de las soluciones favorece la obtención de mejores soluciones y facilita la toma de decisiones. Después, se da paso a la *Implementación* de la idea de producto/servicio y su posterior *Lanzamiento*. Una vez que el producto/servicio está en el mercado el *Feedback* de mercado aporta información cara a posibles mejoras. Los procesos de divergencia y convergencia se repiten en cada una de las etapas, y las diversas fases se solapan y se retroalimentan.

Las experimentaciones abarcan hasta la fase de desarrollo, obteniéndose prototipos funcionales de nuevos PSS enmarcados en las casuísticas específicas de cada empresa. La **Figura 3** ilustra uno de los conceptos generados. Dicha figura es un ejemplo de la técnica de representación *Evidencing* donde se pre-visualizan a través de imágenes los *Touchpoints* de servicio. Este concepto en concreto es un PSS basado en una pulsera para niños que incorpora un sistema de geolocalización.

Al principio y al final de cada fase de la metodología se realizan talleres de co-creación con manos intermedias de las empresas participantes. El objetivo de los talleres es el que las empresas experimenten directamente tanto con las metodologías HCD como con las técnicas de visualización del diseño de servicios. Los talleres de co-creación se dividen en tres fases. Primero los investigadores presentan a los participantes de las empresas el objetivo del taller, introducen la fase de la metodología correspondiente y las herramientas utilizadas por los alumnos en la misma. Después, en base al trabajo realizado, los estudiantes presentan el avance del proyecto, incluyendo las metodologías y técnicas utilizadas. En la tercera fase, a partir de las técnicas de visualización mostradas y guiados por los investigadores, las empresas participantes en el taller evalúan los resultados y proponen planes de acción para la materialización de las oportunidades/soluciones detectadas.

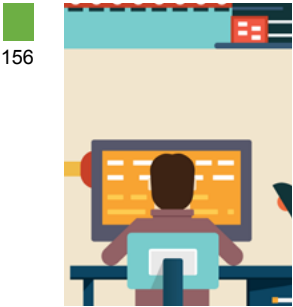
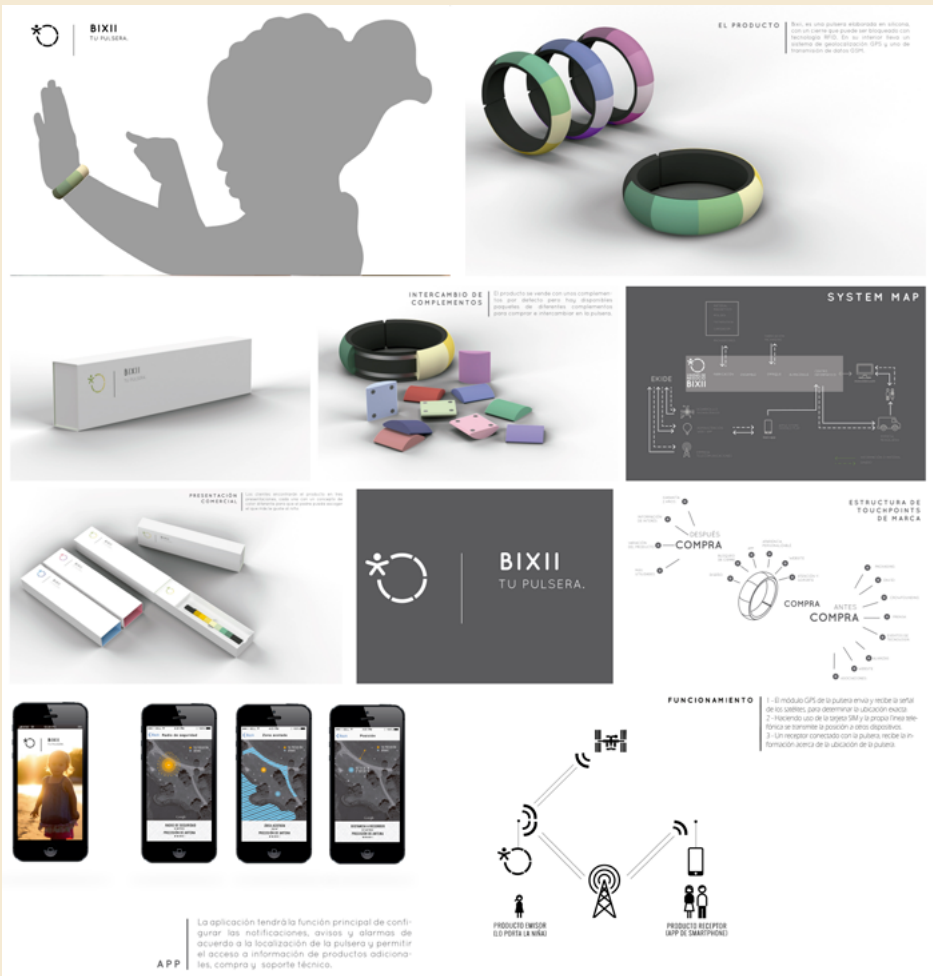


Figura 3. Batería de imágenes representativas de unos de los conceptos de PSS



5. RESULTADOS Y DISCUSIÓN

Los talleres de co-creación son observados por dos investigadores, siguiendo el modelo de Jorgensen (1989). Además, después de cada taller, se realizan entrevistas semiestructuradas individuales (16 en total) y grupales (6 en total) al personal de la empresa participante siguiendo el modelo de Hove y Anda (2005). Cada entrevista tiene una duración media de 30 minutos. En ella se cuestiona a las empresas a cerca de: (i) conocimiento previo sobre el diseño de servicios, (ii) idoneidad y grado de novedad del marco de tra-

bajo y de las herramientas aplicadas, (iii) calidad y potencial de los resultados obtenidos, y (iv) grado de interés cara a adoptar el marco de trabajo y las herramientas mostradas dentro de la propia organización. A continuación se indican los resultados recogidos de las entrevistas en función de las cuatro cuestiones planteadas (Tabla 2).

Tabla 2. Valoración de los datos recogidos de las entrevistas a las empresas participantes

	Empresa A Fabricante de productos deportivos	Empresa B Fabricante de electrodomésticos	Empresa C Fabricante de sistemas de elevación	Empresa D Fabricante de máquinas herramienta	Empresa E Fabricante de componentes de automoción	Empresa F Fabricante de útiles de control
Conocimiento previo sobre el diseño de servicios	Nulo	Nulo	Nulo	Nulo	Nulo	Nulo
Idoneidad y grado de novedad del marco de trabajo y de las herramientas	Idóneo	Idóneo	Idóneo	Idóneo	Idóneo	Idóneo
Calidad y potencial de los resultados	Resultado valioso, pero no es el momento para su puesta en marcha inmediata debido a las incertidumbres financieras	Resultado valioso, pero no es momento para su puesta en marcha inmediata debido a la falta de recursos financieros	Resultado valioso, pero “solo” afecta a la parte de marketing del negocio	Resultado valioso	Resultado valioso	Resultado valioso
Interés cara a adoptar el diseño de servicios	Sí	Sí	Sí	Sí	Sí	Sí

i. Conocimiento previo sobre el diseño de servicios

Las empresas indican desconocer por completo al diseño de servicios. No obstante, los datos recogidos de las entrevistas indican que mientras que las empresas, sobretudo en el B2C, aplican metodologías HCD para el diseño de producto, las técnicas de visualización del diseño de servicios les son desconocidas tanto para las empresas que operan en el B2C como para aquellas que operan en el B2B (*“Tenemos experiencia en el diseño y desarrollo de producto, pero no conocíamos el diseño de servicios”* [Brand manager, Empresa A], *“Hemos estado utilizando herramientas del HCD desde*

hace mucho tiempo, nos son familiares, también los métodos innovadores” [Director de innovación, Empresa B]. *“Estamos familiarizados con la innovación a través del diseño y con las metodologías HCD, pero las herramientas de visualización del diseño de servicios son nuevas para nosotros”*) [Diseñador de producto, Empresa C].

ii. Idoneidad y grado de novedad del marco de trabajo y de las herramientas aplicadas

Las empresas indican que el diseño de servicios proporciona nuevas habilidades para el diseño de ofertas integradas de producto-servicio orientados al cliente (*“Hemos podido llevar a cabo todo un proceso de búsqueda, investigación y desarrollo de nuevas propuestas de productos y servicios (...) destaco el manejo de herramientas que ayudan a profundizar en la resolución de problemas desde la perspectiva del usuario/cliente”*) [Director de negocio, Empresa F], *“Lo que he podido ver en esta experimentación es la habilidad de los diseñadores para considerar todas las dimensiones de la experiencia de usuario, y cómo son capaces de hacer esta experiencia tangible en productos, servicios, interfaces, etc.”* [Director de innovación, Empresa B]).

A su vez, las empresas indican que el diseño de servicios proporciona herramientas capaces de visualizar y prototipar la interacción del cliente con la propuesta de valor “servitizada” en su conjunto (*“Las herramientas de visualización como el Customer Journey Map nos han sido muy útiles para mapear toda la experiencia de nuestros clientes desde diferentes perspectivas, eso era algo que teníamos en mente, pero no éramos capaces de explicarlo”*) [Brand manager, Empresa A].

Además, el diseño de servicios proporciona un enfoque capaz de pre-visualizar y prototipar los aspectos materiales e inmateriales de la propuesta de valor “servitizada” a través de los Touchpoints y de situaciones de servicio (*“Creo que una de las competencias destacables es su capacidad de materializar los atributos intangibles de la propuesta de valor a través de los Touchpoints de servicio”*) [Director de Innovación y promoción, Empresa E]). Esto lleva a una mejor comprensión de cómo se materializa la nueva propuesta de valor y cómo se le muestra el valor al cliente (*“Creo que las visualizaciones como los Customer Journey Maps (...) nos permiten definir de una manera sistemática qué tipo de Touchpoints tenemos que entregar a nuestros clientes, cuándo tenemos que entregarlos*



y por quien (...) “me gusta el concepto de Touchpoint, es importante identificarlos y desarrollarlos correctamente porque nuestros comerciales están siempre pidiendo evidencias y referencias para entregárselas a nuestros clientes” [Director de negocio, Empresa D]].

iii. Calidad y potencial de los resultados obtenidos

Las empresas indican que los resultados obtenidos por los estudiantes son satisfactorios, pero consideran que las soluciones más validas son aquellas que suponen cambios incrementales. Por ejemplo, aquellos conceptos de PSS que conllevan ventajas como el aumento de la familiaridad con el cliente pero que no suponen un cambio hacia los servicios como núcleo de la oferta. Las soluciones que suponían un mayor salto hacia los servicios como oferta (cambios radicales hacia una oferta centrada en servicios) son descartadas por las empresas debido a las incertidumbres financieras que suponen.

Así, las empresas demandan contemplar todas las dimensiones de cambio hacia una oferta servitizada (*“Las ideas obtenidas son valiosas pero requieren de recursos e inversiones importantes que no habéis contemplado” [Director Gerente, Empresa A], “Este ejercicio ha sido interesante, pero en mi opinión las ideas válidas “solo” afectan a la parte de marketing de nuestro negocio, (...) [Product Manager, Empresa C]. “Los conceptos que hemos conseguido son interesantes, aunque la mayoría se centran en una mejora de la experiencia del cliente, en la servitización existen más dimensiones de cambio (...) por ejemplo, los riesgos financieros se han considerado” [Director de promoción e innovación, Empresa E]].*

Además, se presentan dificultades para aplicar los enfoques del diseño en contextos industriales B2B (*“El léxico nos era muy desconocido, nosotros estamos centrados en la tecnología, el producto, los procesos, la calidad (...) no estamos habituados a conceptos como experiencias de usuario, co-creación, Touchpoints, diseño centrado en las personas, etc.” [Project manager, Empresa D]), “Puede ser difícil invitar a nuestros clientes a participar en esos talleres de co-creación” [Director de negocio, Compañía, D], “No creo que podamos integrar las metodologías innovadoras de HCD son demasiado intrusivas” [Técnico de innovación, Empresa E].*

iv. Grado de interés cara a adoptar el marco de trabajo y las herramientas mostradas dentro de la propia organización

Todas las empresas se muestran dispuestas a seguir experimentando con el diseño de servicios (*“Tenemos que integrar este nuevos enfoque y sus herramientas en nuestros procesos de desarrollo para entender mejor a nuestros clientes”* [Director Gerente, Empresa A]), cuatro de ellas proceden a integrar estudiantes en sus estructuras con el objetivo de implementar las ideas resultantes de la experimentación. Las empresas que optan por integrar a los estudiantes lo hacen debido a que alguno de los conceptos obtenidos se alinea con estrategias ya en marcha a corto plazo.

6. CONCLUSIONES

Esta experimentación ha de ser entendida en su contexto de aplicación. El diseño de servicios se ha aplicado en empresas ya inmersas en procesos de servitización donde las motivaciones de la transformación habían sido previamente identificadas por las empresas. Así, en estos casos, el diseño de servicios más que un habilitador de la servitización ha tenido un rol de facilitador del proceso, pues los drivers estratégicos del cambio estaban ya identificados por las empresas y los resultados de PSS más valiosos para las empresas han sido aquellos que concordaban con estrategias que ya existentes.

Los resultados indican que a través del diseño de servicios las empresas manufactureras (tanto B2B como B2C) pueden diseñar y materializar propuestas de valor integradas de producto-servicio a partir de la experiencia ofertada al cliente. No obstante, las empresas destacan como propuestas más válidas aquellas que suponen ventajas en la mejora de la relación y la fidelización con el cliente, sin que supongan un reposicionamiento de la empresa hacia los servicios como núcleo de la oferta. Este hecho va en consonancia con Kowalkowski (2010) quien indica que la transición entre vender productos a vender servicios y la transición hacia lógicas de servicio, han de verse como dos dimensiones de cambio distintas. Así, la experimentación muestra que las empresas industriales pueden integrar el diseño de servicios sin que estén pensando en una transición hacia los servicios como núcleo de su oferta. No obstante, el diseño de servicios precisa incorporar la capacidad para contemplar y gestionar todos los elementos de cambio inherentes a la servitización (ej. innovación en modelos de negocio, gestión de riesgos



financieros, diseño de nuevas estructuras organizativas, gestión de los cambios en la cadena de valor, etc.) si quiere guiar también la transición de una empresa manufacturera hacia una oferta centrada en servicios.

La utilidad del enfoque y de las herramientas del diseño de servicios parece evidente en los procesos de servitización tanto en contextos B2C como en B2B, siempre y cuando esté alineada con estrategias de servitización ya en marcha. No obstante, un mayor desarrollo conceptual y ulteriores casos prácticos de implementación en diversos sectores son necesarios para la generalización de los resultados obtenidos de dicha investigación.

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NOTES

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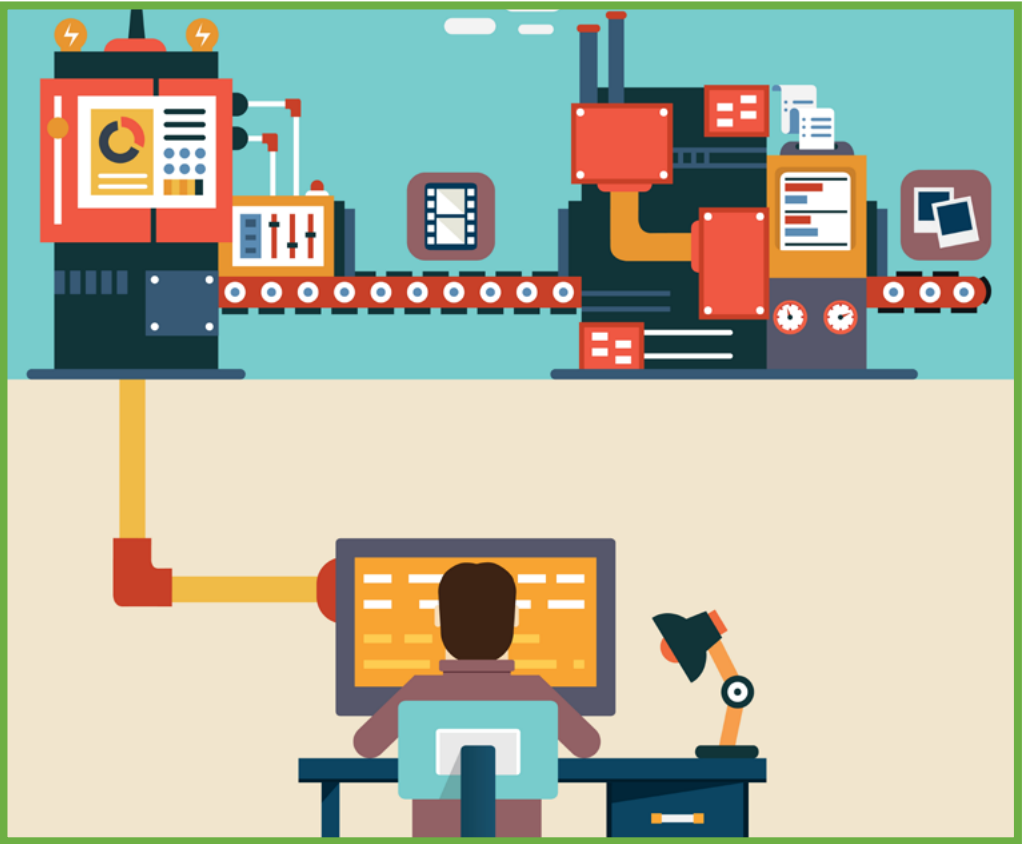
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Service design for servitization. University-business collaboration case studies in basque manufacturing companies¹

Diseño de servicios para la servitización. Experiencias con empresas manufactureras vascas a través de la colaboración universidad-empresa

I. INTRODUCTION

Nowadays, factors such as the evolution of IT, globalization, higher production cost efficiencies, and market saturation are pushing industry to continuously reinvent its value propositions, and therefore its business models. Integrating services with products —Servitization— is a strategy many manufacturers are using to improve their competitiveness (Baines and Lightfoot, 2013). Several studies to date indicate that servitization is already present across the globe (Neely, Benedettini and Visnjic, 2011), nationally (Santamaria, Nieto and Miles, 2012) and regionally (Kamp and Mayor, 2014). There are many examples of companies offering advanced services such as guaranteed availability (IBM, Hilti, Machinery Link, ABB Turbo Systems, Otis), performance-based solutions (Rolls-Royce, BASF Coatings, Xerox contracts, Smartville.), as well as turn-key solutions (Heidelberg Printing Machines, Lantal Textiles, Tetra Pak and 3M). MONDRAGON Corporation —one of the largest business groups in Spain, and the largest in the Basque country— is no exception. Iriarte et al.'s study in 2015 revealed that 67% of MONDRAGON's large



EXECUTIVE SUMMARY

In order to design integrated product-service offerings and implement servitization processes, manufacturers need practical and tangible methodologies. Service design has been suggested as a way to facilitate such processes. This paper assesses the results gathered from an experiment of the implementation of service design in six Basque manufacturers already undergoing servitization processes. Data was collected by means of participatory observation and semi-structured interviews. The findings suggest that service design allows manufacturers to go beyond product-oriented mindsets and to design integrated product-service value propositions through focusing on the experience offered to customers. Moreover, it concludes that service design can be applied without needing to fully transition towards services as a core offer. Nonetheless, manufacturers participating in this experiment highlighted the need to consider business competencies in service design in order to properly assess and manage all the change elements inherent to servitization.

RESUMEN DEL ARTÍCULO

Las empresas manufactureras precisan de metodologías prácticas para el diseño de ofertas integradas de producto-servicio. La disciplina del diseño de servicios ha sido sugerida como un habilitador para la servitización. Este artículo valora los resultados de la aplicación del diseño de servicios en seis empresas manufactureras inmersas en procesos de servitización. Los datos recogidos en base a la observación participativa y a entrevistas semiestructuradas infieren que el diseño de servicios permite a las empresas manufactureras superar una visión exclusivamente centrada en producto, y además abordar el diseño integral de la propuesta de valor a través de la experiencia ofertada al cliente. Además, se concluye que el diseño de servicios puede ser aplicado sin que esto suponga una transición hacia los servicios como núcleo de la oferta. No obstante, las empresas indican la necesidad de incorporar al diseño de servicios competencias de negocio para contemplar todos los elementos de cambio inherentes a servitización.

manufacturers are now offering product-based services. The majority of these services (78%) are intermediary services linked to product installation, maintenance and support. However, some companies are now offering advanced services for the design and development of new applications and solutions. Nevertheless, only a minority (20%) recognize to apply a structured approach for New Service Development (NSD). MONDRAGON's manufacturers echo the findings of Meier, Roy and Seliger (2010): that industry is already offering Product Service Systems (PSS) without the sufficient methodological support. Thus, the issues raised by Baines et al. (2009) remain unaddressed: there are three major gaps in servitization. Firstly, there

***Several studies
to date indicate
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regionally***

is the issue of how competitive integrated product-service offerings can be designed within the context of an industrial organization. Secondly, there is the question of what organizational strategy can be used to deliver such offerings. The final gap relates to the way in that industrial organizations can successfully transition to implement such strategies.

Early experiments with manufacturers (Iriarte et al, 2014; Sangiorgi et al, 2012; Thurston and Cawood, 2011; Bhamra, Moultrie and Thurston, 2014) suggest that service design is able to provide tangible frameworks and practical tools to guide manufacturers into servitization. Although service design is influencing the way in which services are designed in several Business to Consumer (B2C) service sectors (Zomerdijsk and Voss, 2010), its application in industrial contexts is still scarce and poorly studied, especially in Business to Business (B2B) companies. Nevertheless, initiatives undertaken to date (i.e. PDR (2013) [Design Wales, PDR, Welsh Government] or the initiative described by Sangiorgi et al. (2012) [Design Council, Lancaster Imagination, The Hub, Live!Work]) are promising since they suggest that service design allows manufacturers to (i) adopt a more customer-oriented business approach, (ii) recognize and communicate value to customers, (iii) provide better customer segmentation, and (iv) provide a systematic approach to service innovation (Sangiorgi et al., 2012).

Nevertheless, although these studies demonstrate a number of benefits resulting from workshops with small and medium manufacturing enterprises (SMEs), they do not provide any follow-up information on the adoption of service design methodologies and tools implemented by the manufacturers. Thus, as indicated by Bhamra,

Moultrie and Thurston (2014), there is a need to build models for the adoption of service design within the manufacturing sector, and to investigate more case studies for an in-depth exploration of the actual contributions of service design to the servitization of industry.

Therefore, in order to determine the benefits of service design during servitization processes, this paper will firstly explain the motivations for and challenges involved in servitization. Secondly, there is a short description of service design, outlining how it can contribute when applied during the design of integrated product-service offerings within the context of an industrial organization. Thirdly, there is an explanation of how a university-business collaboration experiment was conducted. This experiment applied service design in the PSS design processes of six Basque manufacturing companies. These companies were already undertaking servitization processes. Finally, this paper details the results and the conclusions of the research, its limitations and possible future lines of investigation.

KEY WORDS

Servitization, Service Design, Product Service Systems, University-Business Collaboration, New Service Development

PALABRAS CLAVE

Servitización, Diseño de Servicios, Sistemas de Producto Servicio, Colaboración Universidad-Empresa

2. SERVITIZATION IN INDUSTRY: MOTIVATIONS AND BARRIERS

Kujala, Ahola and Huikuri (2013) compiled a list of five areas in which manufacturers can benefit from adding or integrating services: (i) strategic, (ii) financial, (iii) marketing and sales (iv) innovation and (v) efficiency in implementation. From a strategic perspective, services enable product differentiation and also create favorable market barriers. From a financial point of view, services increase revenues based on installed products and can generate new lines of revenues. From a marketing and sales perspective, services promote closer relationships between manufacturers and their customers, increasing trust and credibility, thus helping companies to identify and satisfy new customer needs earlier. With respect to innovation, services give companies access to information for exploration in R&D. Finally, the provision of services increases the efficiency of product delivery and implementation as a result of improved information exchange and cooperation, enabling business to quickly identify customer requirements.

However, though there are clear benefits, if servitization is not properly managed, it can affect to the performance of manufacturers (Benedettini, Neely, and Swink, 2015). Vladimirova (2012) categorizes the challenges of companies embarking upon

servitization processes in five areas: (i) organizational, (ii) financial, (iii) customer relationships, (iv) value chain, and (v) market. Organizational challenges arise as a result of the need to establish new structures capable of designing and delivering PSS in a new business culture pivoting around value creation (from value added to value co-created and value in use). Financial challenges relate to the risks arising from the redistribution of resources and the new investments required for the provision of services. Customer relationship challenges occur because of changing relationships previously based on the transaction of artifacts into longer-term relationships. Value chain challenges arise as a result of changes arising from companies delegating or taking over certain actions thus far undertaken by other agents (for example, suppliers, distributors, or partners). Finally, market challenges arise because of the uncertainties of the new offering in the market (for example, lack of demand owing to a misunderstanding of customer requirements, customer resistance to change, or customer doubts about purchasing non-traditional offerings).

Thus, in order to address these challenges, several disciplines have attempted to identify the optimal conditions for the adoption of servitization strategies and how to approach this transformation, including how to design integrated product-service value propositions. Authors, such as Bitner and Brown (2008), or Gebauer, Friedli and Fleisch (2005), indicate that this process is hampered by failing to consider the customer experience as a whole; and here is where service design gains interest to servitization.

3. THE ROLE OF SERVICE DESIGN IN INDUSTRIAL MANUFACTURING CONTEXTS

Service design is a new human-centered discipline for service innovation; it incorporates tools from marketing, operational management and information sciences into design processes (Patrick and Fisk, 2013). Through a study of literature thus far on the performance of several service design agencies (such as Segelström, 2013; Viladàs, 2011; Zomerdijk and Voss, 2010), we divided the contribution of service design to New Service Development into two levels: (i) the identification of customer needs —through Human-Centered Design (HCD) methods— and (ii) a new approach to address value proposition design —through the use of visualization tools.



With respect to the first level, that of the identification of customer needs, Grönroos (2000) indicates that the most important contribution of service design is that the whole process of NSD can be seen from the perspective of the user. This is because by applying HCD methods, companies are able to empathize with their customers or users, and to quickly and reliably tap into their needs. According to Hanington (2003), HCD methods can be classified into three categories: (i) traditional methods, (ii) adapted methods and (iii) innovative methods. Traditional methods include techniques such as the SERVQUAL questionnaire, focus groups, and interviews; these are adopted from disciplines such as marketing, and then applied to investigate large volumes of users or customers. Adapted methods include techniques from disciplines dealing with human behavior, such as social sciences or computer sciences, for example user observation or usability testing, which are adapted for design purposes. Finally, innovative methods include techniques, such as cultural probes, developed by and for designers, and which are linked to participatory design; these tend to require an active participation of users in order to discover new perspectives on use contexts.

Regarding the second intervention level, the adoption of Service Thinking helps to obtain a holistic vision, which is necessary to consider the whole context where the servitized value proposition is delivered—including all interactions between people, physical artifacts, spaces and technologies (Blomkvist, Holmlid and Segelström, 2010). To do this, service design provides visualization tools capable of handling the complexity of integrated product-service offers (Morelli, 2006). These visualizations allow companies to understand and share information on user behavior during the service provision, therefore enabling to design or redesign the service through co-creation approaches (Sanders and Stappers, 2014).

Diana, Pacenti and Tassi (2009) divide service design visualization tools into Maps, Flows, Images, and Narratives. Maps, such as Service Ecologies or Behavioral Maps, provide an overall picture of the service system, including the relationships among the different agents. Flows, such as Customer Journey Maps or Blueprints, are useful tools for viewing service processes and mapping the interactions among the different agents and the value proposition. Images, such as Evidencing/Tomorrow Headlines, are visualization

tools that, on the one hand, allow to prototype concepts —either material or immaterial— related to the service, and, on the other hand, illustrate customer requirements through archotyping users from different market segments, for example through Personas or Empathy Maps. Finally, narratives are visualization techniques that allow companies to understand, preview and prototype user behavior through sequences of realistic images —such as Storyboards, or Role Play techniques (Service Walkthroughs, Cognitive Walkthroughs, etc.).

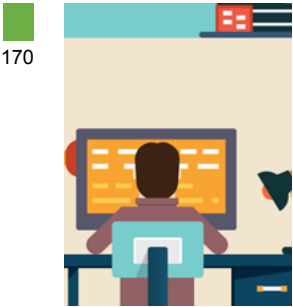
4. EXPERIMENTING WITH SERVICE DESIGN IN UNIVERSITY-BUSINESS COLLABORATIONS

According to Gebauer and Friedli (2005), when employees in industrial companies come to understand the benefits of shifting towards services, this is when the transformation dynamics required in servitization processes are activated. In this line, the case studies presented in this article are not isolated cases, but part of long-term Organizational Learning (OL) processes.

OL are collective processes for the acquisition of skills that modify the way in which organizations manage situations. Crossan, Lane and White (1999) interpret OL as a dynamic process divided into four sub-processes: (i) intuiting (ii) interpreting, (iii) integrating and, (iv) institutionalizing, which occur at three organizational levels: (i) individual, (ii) group and (iii) organization. In the same line, Beckman and Barry (2007) indicate that design innovation is also an OL process. Thus, using the dynamic OL model devised by Crossan, Lane and White (1999) and the narrative learning model of Barry and Beckman (2007), this study created a model for the adoption of service design in Basque industrial manufacturing companies.

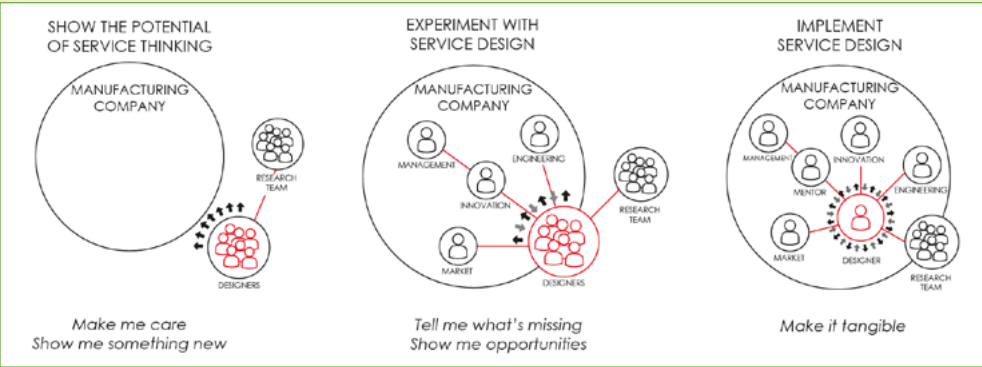
The model —shown in **Figure 1**— was designed to be a learning process based on long-term university-business collaboration; it was divided into three stages: (i) show the potential of service thinking (make me care and show me something new) (ii) experiment with service design (tell me what's missing and show me opportunities), and (iii) implement service design (make it tangible). Each stage was conducted within the framework of the Strategic Design Master's degree taught at Mondragon Unibertsitatea.

The aim of the first stage was to show the potential of service design to manufacturing companies; this was done by means of conceptual demonstrations of service concepts based on the manufacturers'



current products. The second stage aimed to allow the manufacturers' middle-managers to directly experiment with the methodologies and tools of service design in co-creation workshops. Finally, the third stage sought to implement service design in the manufacturers through them hiring a service designer (**Figure 1**).

Figure 1. Organizational Learning model for the adoption of service design in manufacturers through university-business collaboration



The case studies listed in this paper refer specifically stage two. The manufacturers participating in the experiment (**Table 1**) were already immersed in servitization processes, but had different starting points and motivations. **Table 1** shows the sector and the size of each company, its business model, the services currently offered, and the reasons they have to participate in the experiment. These companies come from stage 1 (Iriarte et al., 2014).

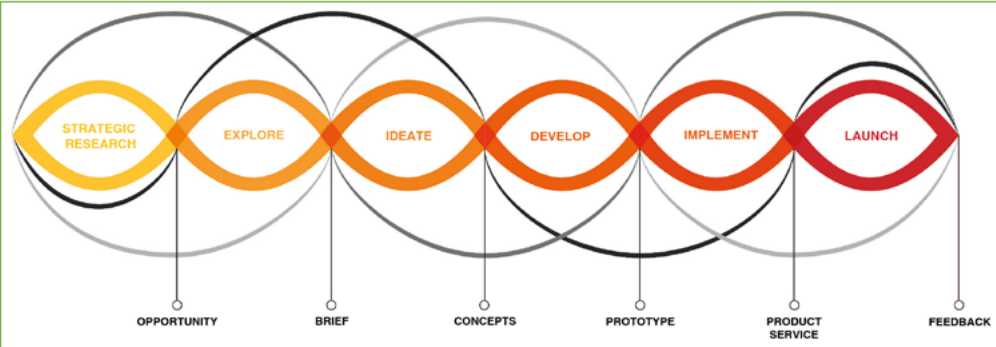
In the experiments, observed by the authors of this paper and with the active cooperation of the companies' middle-managers, students applied Mondragon Unibertsitatea's Human-Centered Innovation Methodology (**Figure 2**); these techniques encompass both HCD methods and service design visualization tools for the design of new Product Service Systems (PSS).

The process followed by the students began with strategic research and exploration phases, in which opportunities for new products and services were identified. These initial phases were guided by their personal observations and by discussions with users in order to discover problems, needs or interests that could potentially lead to the creation of new products and services. The next two stages, idea-

Table 1. Participant manufacturing companies

	Company A Sports goods manufacturer	Company B Household appliance manufacturer	Company C Elevation systems ma- nufacturer	Company D Machine tool builder	Company E Automotive components manufacturer	Company F Control device manufacturer
Type	B2C	B2C	B2B	B2B	B2B	B2B
Size	SME	Large	Large	Large	Large	SME
Current Business Model	Product- oriented	Product- oriented	Hybrid model (product plus services)	Solutions provider	Product- oriented	Solutions provider
Services offered based on the Baines & Lightfoot (2013) classi- fication (base services, inter- mediate servi- ces, advanced services)	Base-services (Installation, warranty, and maintenance)	Base-services (Installation, warranty, and maintenance)	Intermediate services (installation, maintenance, substitution, and moderni- zation)	Intermediate services (Turn-key so- lutions: design, installation, maintenance, monitoring, and modernization)	Advanced services (Joint product development in cooperation with custo- mers, customer support agree- ments)	Advanced services (Joint product development in cooperation with customers)
Motivations for exploring new opportu- nities through service design	To explore the possibility of expanding their current business model through pay-per-use models for their fitness products	To explore new service possibilities by the inclusion of information technologies in their devices	To improve and sophis- ticate their services linking them with their brand strategy	To support their servitiza- tion strategy in new target sectors	To explore new service possibilities for their mature products	To explore new PSS possibilities based on their technological know how

Figure 2. Human-Centered Innovation Methodology (Mondragon Unibertsitatea, 2014)



tion and development, focused on generating solutions through creating concepts and subsequently developing them through prototyping and testing. User involvement for idea generation and solution testing favors better solutions and facilitates decision-making. The next stage is the implementation of the product/service idea and its subsequent market launch. Once the product/service is in the market, continuous feedback loops are in place to provide information on possible improvements. Divergence and convergence processes are repeated in each stage, and the phases overlap in time and feed into each other.

The experiments in this paper record the work up to the development phase, during which students built functional prototypes for new PSSs designed to meet the specific interests of each company.

Figure 2 illustrates one of the concepts generated, displaying an example of evidencing visualization techniques whereby the PSS concept was previsualized through images of the service touchpoints. The concept illustrated in **Figure 3** is a PSS based on a bracelet for kids with a geolocation service system incorporated in it.

At the start and the end of each phase, co-creation workshops with middle-managers from participant manufacturers were held. The aim of the workshops was to allow these key employees to directly experiment with HCD methods and service design visualization tools. Co-creation workshops were divided into three stages. First, researchers presented the aims of the workshop, introducing the corresponding methodological phase, and the tools used by the students. Then, according to the work carried out, the students presented the progress of the project, explaining the methodologies and techniques applied. In the third stage, guided by researchers, participant companies evaluated the results obtained using service design visualization techniques, and then proposed action plans for materializing the opportunities and solutions suggested.

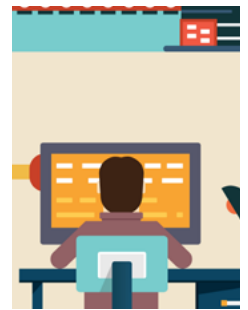


Figure 3. Series of images of one PSS concept



5. RESULTS AND DISCUSSION

Co-creation workshops were observed by two researchers, using Jorgensen's (1989) participant observation model. After each workshop, individual semi-structured interviews (16 in total) and group interviews (6 in total) were carried out with the employees of participant companies using Hove and Anda's (2005) guidelines. Each interview lasted an average of 30 minutes. Employees were questioned about (i) their previous knowledge of service design, (ii) the suitability and novelty of the framework and the tools applied by the

students, (iii) the quality and potential of the results obtained, and (iv) their interest in adopting the framework and tools within their organizations. **Table 2** summarizes the results gathered from the interviews.

Table 2. **Data collected from interviews with participant companies**

	Company A Sports goods manufacturer	Company B Household appliance manufacturer	Company C Elevation systems ma- nufacturer	Company D Machine tool builder	Company E Automotive components manufacturer	Company F Control device manufacturer
Previous knowledge of service design	None	None	None	None	None	None
Suitability and novelty of the framework and the tools applied	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Quality and potential of the results obtained	The outcome is valuable but, owing to financial uncertainties, will not be applied at this time	The outcome is valuable, but owing to a lack of resources, the proposals will not be implemented at this time	The outcome is valuable, but only affects product marketing	The outcome is valuable	The outcome is valuable	The outcome is valuable
Interest for adopting SER- VICE DESIGN within their organizations	Yes	Yes	Yes	Yes	Yes	Yes

i. Prior knowledge of service Design

Prior to the experiment, all the participants claimed to have no prior knowledge of the existence of service design. However, the data collected from interviews indicates that, while manufacturers, especially in B2C, were already applying HCD methods for product design, service design visualization tools were unknown by manufacturers operating in both the B2C and B2B sectors. In this respect, a Brand Manager from Company A stated, *“We have expertise in product design and development, but we didn’t know there was such a thing as service design”* Likewise, the Head of Innovation of Company B indicated, *“We have been using HCD tools in a long time and we are familiar with them, also with the innovative ones”*. Moreover, a Product Designer from Company C stated, *“We are fa-*

miliar with design-driven innovation and HCD methods, but service design visualization tools are new to us”.

ii. Suitability and novelty of the framework and the tools applied

The manufacturers indicated that service design provided them with new skills to design more customer-oriented product-service offers *“We have been able to conduct a R&D process for new product and service ideas [...] I would highlight the use of these tools for problem solving taking into account user or customer perspectives”* [Business Manager, Company F]. Likewise, the Head of Innovation from Company B explained, *“What I have seen in this experiment is how designers are able to consider all the dimensions of user experience, and how they are able to make it tangible in products, services, interfaces, etc”.*

The companies also indicated that service design provided them with tools capable of visualizing and prototyping customer interaction with the ‘servitized’ value proposition as a whole. In this respect, a Brand Manager from Company A stated that, *“Visualization tools, such as the Customer Journey Map, have been very useful to map out the entire customer experience from different perspectives, which was something we had in mind, but we weren’t able to explain”.*

Moreover, service design was recognized as an approach capable of previewing and prototyping both tangible and intangible attributes of the ‘servitized’ value proposition, something it does through representing service touchpoints and moments *“I think that one of the remarkable skills is the students’ ability to materialize the intangible attributes of the value proposition through the so-called service touchpoints”* [Head of Innovation, Company E]. This leads to a better understanding of how the new value proposition becomes tangible and how value is demonstrated to the customer. This was noted by a Business Manager from Company D who said, *“I think visualizations, such as the Customer Journey Map, [...] allow us to define, in a systematic way, what kind of touchpoints we should deliver to our customers, when they should be delivered and by whom [...]. I like the concept of touchpoints; it is important to identify and develop them properly because our salesforce constantly asks us for testimonials and evidences for our customers”.*



iii. Quality and potential of the results obtained

All the participating companies indicated that the outcomes obtained by the students were satisfactory. However, they deemed that the most valuable solutions to be the ones dovetailing with their incremental ongoing change processes. They also particularly valued the PSS concepts with the benefits of increased familiarity with customers, but which did not involve a shift into services as the core offer. The solutions that led to a major change towards services —radical changes towards service-oriented offerings— were discarded by the companies owing to their inherent financial uncertainties.

Likewise, the companies stressed a need for service design to encompass all the dimensions of change involved in incorporating servitized offerings. Along this line, the CEO from Company A stated, *“The ideas are valuable, but they require significant resources and investments, which you didn’t consider”*. Similarly, a Product manager from Company C also informed that, *“The exercise has been interesting, but, in my opinion, the valuable ideas only affect to the marketing side of our business”*, while the Head of Innovation of Company E said, *“The concepts that we have obtained are interesting, but most of them just focus on improving customer experience; servitization involves deeper change [...], for example, financial risks are not considered”*.

The interviews also highlighted some challenges for implementing design approaches in industrial B2B contexts. In this respect, a Project Manager from Company D stated that, *“The terminology used was very unfamiliar for us; we are focused on technology, products, processes, quality [...]; we are not used to concepts such as user experience, co-creation, touchpoints, human-centered design, etc”*. Likewise, a Business Manager from Company D also pointed out that, *“It may be difficult to invite our customers to participate in these co-creation workshops”*, and this statement was backed by an Innovation Technician from Company E who stated that, *“I don’t think that we can integrate such innovative HCD methods; they are too intrusive”*.

iv. Interest in adopting the applied framework and tools in the organizations

All participant companies expressed a willingness to continue experimenting with service design. *“We need to integrate this new approach and its tools in our development processes to better under-*

stand our customers [CEO, Company A]”. Four of the manufacturers agreed to incorporate design students into their structures in order to implement the ideas generated. However, the companies which decided to hire the students did so because the results dovetailed with their ongoing servitization strategies.

6. CONCLUSIONS

This experiment must be understood within the framework in which it was applied. The service design experiments were undertaken in companies already immersed in ongoing servitization processes, meaning the participating manufacturers had already identified a need for change. Therefore, in these case studies, service design, rather than being an enabler of servitization, worked to facilitate and materialize existing processes. The companies had already identified strategic change drivers and the resulting PSSs were considered most valuable by the participants when these were aligned with existing strategies.

The results indicate that service design allows manufacturers — both operating in B2B and B2C— to go beyond product-oriented mindsets and to take on board ‘servitized’ value proposition design through the experience offered to the customer. Participant companies highlighted that the most valuable proposals were those leading to improvements in customer relationships, without involving a repositioning of the firm towards services as the core offer. These results are in line with the findings of Kowalkowski (2010), who indicates that the transition from selling products to selling services, and the transition from product to service logics, must be seen as two different shifts. Therefore, it can be concluded that industrial companies can integrate service design into their development processes without necessarily thinking in a shift towards services as their core offer. However, it must be noted that the companies stated that, if they were to also shift towards service-oriented value propositions, there was a need to incorporate into service design business competencies —business model innovation, financial risks management, designing new organizational structures, managing changes in the value chain— in order to properly manage all the change elements inherent to servitization.

Thus, as long as its application is aligned with ongoing servitization strategies, the usefulness of service design seems to be evident to support servitization processes in both B2B and B2C industrial con-



texts. Nevertheless, further conceptual development and the subsequent implementation of case studies in different manufacturing sectors are needed to extrapolate the results obtained by this experiment in order to determine more general conclusions.

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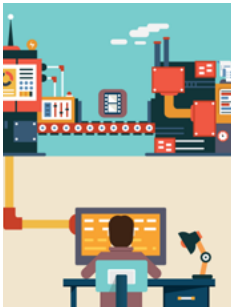
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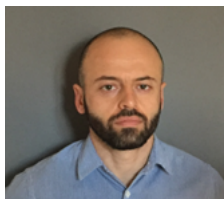
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NOTES

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How Does Music as a Digital Service Affect Consumer Attitude and Behaviour?¹

Servitización Digital: Actitud y Comportamiento del Consumidor en la Industria Musical

I. INTRODUCTION

Everyone enjoys music, but what is it? Is it a product, a service, an experience? How do we sell it and what is its value? Recorded music sold in physical format, either on vinyl or CD, has historically generated significant financial returns. Global recorded music sales in 1997 were USD 27.6 billion. However, once music entered the digital domain those recorded music revenues radically reduced, falling over USD 10 billion to USD 16.5 billion in 2012 (Bustinza et al., 2013a).

Music is now available to the consumer as both product and service (Sandulli and Martin-Barbero, 2004; Parry et al., 2012). One can buy a physical CD, a vinyl record, a digital download, access streaming services, or listen via internet radio which can be personalised to your tastes. There are a growing number of sales channels through which music firms reach out to their audiences, but revenues have not significantly increased in over a decade. With so many new ways to access music, why haven't sales revenues gone up?

Music sale's experience has changed as a result of *servitization*, a phenomenon described as the move by traditional manufacturing

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EXECUTIVE SUMMARY

Digital technologies allow users to share files, which in some circumstances violates property rights and constitutes consumer misbehaviour. This form of behaviour, often called piracy, is cited as causing revenue loss to the creative industries. Existing empirical evidence is silent on consumer's individual beliefs and their attitudes towards copyright infringement. A new concept dubbed the 'Robin Hood' tendency is developed as a quantitative measure of consumer belief that illegally copying and distributing digital resource is a legitimate form of behaviour. Analytical applications are developed which exploit a unique dataset comprising 18,000 data points for music consumers from ten countries. Results show that digital markets suffer from consumers who demonstrate the Robin Hood tendency and identifies that countries with strong institutions have fewer consumers with this attitude. Furthermore, evidence suggests that copyright law enforcement should be coupled with efforts to educate consumers as to the effect their misbehaviour has content creators.

RESUMEN DEL ARTÍCULO

La tecnología digital permite la posibilidad de compartir ficheros, lo que en ciertas condiciones puede suponer violar los derechos de propiedad intelectual. La descarga ilegal de archivos está considerada como una de las causas principales del descenso de las ventas en el conjunto de las industrias creativas. Hasta el momento existe una carencia de estudios que analicen el papel de las convicciones y actitud individual de los consumidores en lo referente a la legitimidad que se tiene al 'piratear'. En el presente trabajo se desarrolla un nuevo concepto llamado actitud 'Robin Hood'. Este constructo es una medida de la creencia respecto a que compartir ficheros digitales sin el consentimiento de los autores es un comportamiento legítimo. El análisis estadístico se basa en una muestra de 18.000 consumidores residentes en diez países. Los resultados demuestran que la actitud 'Robin Hood' es mayor en aquellos países cuyas instituciones presentan una excesiva burocracia. Además los resultados sugieren que para mantener un nivel de ventas alto en servicios musicales digitales es necesario fortalecer los procesos de concienciación del consumidor como complemento de las diferentes medidas legales llevadas a cabo.

firms to generate revenue through the provision of service associated with their product (Vandermerwe and Rada, 1989). Firms in this sector are moving from a focus on selling music as a physical product towards creating value from selling music in digital formats which gives rise to different business models, including many music listening services. In developing a broad portfolio of ways to access music, the digital servitization of the music industry has been progressing for a decade (Bustanza et al., 2015).

As we move from the physical to the digital sales channel, a physical tangible object is no longer present at the point of sale, even though a physical object may arrive in the post later (Martin-Peña and Diaz Garrido, 2013; Porter and Hepelmann, 2014). Exchange value underpins the traditional view of the customer–producer relationship with each party exchanging one value unit for another, e.g. a vinyl album for money. With the servitization of the music industry, a physical product is often no longer present at all when someone buys a digital track online or pays for streaming service (Bustanza et al., 2013b). The focus of value for online digital music services is very different. Access to almost any desired music is possible within a very short time of asking for it. Consumer payment may happen for a digital download, or a streaming service. It may not happen if the consumer accesses music through a streaming service which makes its money from advertisements and where the artist may get a small revenue per play. Or it may not happen if consumers illegally download or stream the music from a pirate website.

Music piracy significantly decreases sales revenues and is a common problem around the world. Based upon conservative analysis, an estimated 28% of people participate in illegal file sharing (Bustanza et al., 2013a). That's almost a third of the potential market and clearly represents a major problem for the music industry and the artists who don't get paid for their creative efforts. There are attempts to explain that taking music without paying is not right and collectively consider how to support artists. The general objective here is to develop a more comprehensive empirical framework, filling the gaps not covered by previous literature.

The concept of illegal file-sharing of digital music has come to represent the ultimate bargain for the consumer as property can be

***In developing a
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acquired at no cost (Danaher et al., 2014). Piracy behaviour is complicated as empirical research using survey data has shown that a significant portion of illegal file sharers also claim to purchase music (Bustinza et al., 2013a). Such action may appear economically irrational as why would a consumer pay for an item they can get for free? We elucidate this apparent discrepancy between theory and evidence by demonstrating that a subgroup of illegal file sharers misbehaves but subsequently purchase because they want to avoid feeling guilty (Henning-Thurau et al., 2007).

In contrast to other retail offers which collect transaction data from consumers, managers from the music industry have much less access to actual consumer transaction data and therefore survey data is employed (Parry et al., 2014a). For this reason the empirical analysis in this work relies on a survey conducted during work with industry experts from one of the big 3 global music firms. The survey contains detailed information from more than 18,000 consumers residing in ten different countries. The particular aims of this article are threefold:

- To contribute to extant literature by identifying a type of consumer attitude that links to misbehaviour and is named the Robin Hood tendency. This is a consumer deviance that considers illegally copying and distributing digital resource as a legitimate form of behaviour.
- To develop an analytical approach to show the links between national institutions and the Robin Hood tendency.
- To quantify the commercial consequences of consumer misbehaviour, in this particular context the effects of illegal file-sharing (actual consumer behaviour) and the Robin Hood tendency (consumer attitude or belief) on the likelihood of a consumer making a purchase.

The paper is organized as follows. The next section describes the theoretical underpinning which is followed by research question development. The paper then presents results and discusses theoretical and managerial implications of the findings.

KEY WORDS

Digital service, consumer survey, individual misbehaviour, file-sharing, purchasing propensity

PALABRAS CLAVE

Servicios digitales, comportamiento del consumidor, piratería, industria musical, propensión de compra

2. MUSIC AND DIGITAL SERVICES

Digital technologies have empowered consumers in many positive ways; however, it has also given them the option to easily and illegally obtain music and video files –that traditionally were highly priced– for free. Consumers’ illegal activity is a real challenge for marketers who need to achieve flows of monetary transactions for digital content when copies of that content are often readily available within consumer networks at no cost. This problem touches upon consumer beliefs and their willingness to pay.

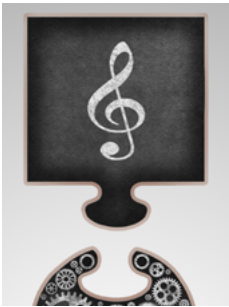
Digital technology has forced firms to improve their competitiveness with particular focus placed upon consumer understanding of value offerings (Casadesus-Masanell and Ricart, 2011). For this reason, consumer behaviour and patterns of consumption have become relevant topics for cosmopolitan brands. Though the majority of consumers display citizenship behaviour that helps organizations, a number act in ways which damage organizations and other customers.

Consumer behaviour is culturally influenced and differs across cultures and locations. These cross-cultural behavioural differences have been correlated to other factors such as institutional causes and the origin of the legal framework of the consumers’ country (Bustinza et al., 2013a). Currently there is extensive research on file sharing (see Parry et al., 2014a), but there is a lack of empirical exploration of causes and consequences of consumer misbehaviour.

2.1. Unpacking Consumer Misbehaviour: The Robin Hood Tendency

Levi et al. (2009) conceptualize legitimacy as the factors which create a sense of obligation that can translate into an individual’s willingness to comply with regulations and laws. According to Fullerton and Punj (2004), consumer misbehaviour is defined as those acts which transgress accepted norms of conduct in consumption situations through actions of interest externally visible. They further state “...to a surprising extent, much of this misbehaviour is tolerated, suggesting that it has become accepted a part of the consumer experience.” (2004, p. 1239) even when these acts of consumer misbehaviour break the “social contract”.

Lovelock (1994) develops the concept of consumer misbehaviour and coins the term “jay customer” to mean consumers who



deliberately cause problems for the firm, employees, or fellow consumers. From the point of view of the consumer, jay customer behaviour does not have to be irrational in nature. When a consumer perceives injustice this kind of behaviour may be displayed to resettle equity. But do consumers perceive injustice associated to the appropriation of others' property rights?

In the context of the piracy it is normally assumed that file-sharers consider that digital files do not have a physical presence, and hence there is nothing to be stolen. Such a construct is built upon a lack of empathy in the interaction of human-to-machine and explains why some illegal file-sharers do not recognize the uncivil nature of their behaviour. However, some consumers believe in copyright as a legitimate means of property rights protection and consequently suffer from a psychological cost if they download content illegally (Hennig-Thurau et al., 2007). Thus, consumers are categorized into three different groups according to their beliefs and actions with regards to property rights. The first group believes existing regulations are legitimate and act legally, so create no protection transaction costs. The second group agrees with the spirit of property rights legislation but for reasons such as financial difficulty decide to engage in illegal download of files. The third group believes that copying and distributing digital resource is a legitimate form of behaviour, exhibiting an attitude described by the authors as a 'Robin Hood' tendency.

Bustinza et al. (2013a) provide evidence at the global level of the heterogeneity of the purchasing behaviour of illegal file sharers. They found that 53.5% of file sharers do not engaged in purchasing music at all. This evidence suggests that, of those who illegally file share, there likely exists a well-defined group of consumers who exhibit the Robin Hood tendency. This is summarized in the following research question:

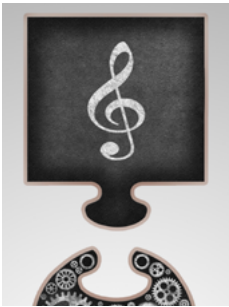
RQ1a: The belief that illegally copying and distributing digital resource is a legitimate form of behaviour can be encapsulated in a single factor dubbed Robin Hood Tendency.

Rodriguez-Pose (2013) have recently pointed out that economic development in a given geographical area is linked to formal institutions such as Education, Legal Systems and Infrastructure, and informal institutions such as social norms, traditions, social conventions, and individual beliefs. In particular, economic development is linked to those institutions that constrain key factors

of the economy, such as labour skills and technological innovation. In this regard, the legal system of a country is normally considered a key driver of development. Legal arrangements affect the system of incentives available and allow the grouping of country legal systems according to their legal tradition (Laffont, 2006). In the analysis of commercial law, legal tradition can generally be divided into common law from England and civil law from France. English common law has a higher adaptability and capacity to enforce established rights than French civil law. Given two countries with the same level of development, it is expected that the higher the level of legal enforcement, the lower the level of corruption and economic malfunction that will be witnessed. When economic agents are poor, financial fines for corruption are limited. As stated “the optimal level of corruption per transaction open to corruption is also high” (Laffont, 2006, p. 163). Corruption, as a type of misbehaviour, is increased when institutional change happens. Corruption within bureaucracy has a detrimental effect on the economic growth of underdevelopment countries, and entrepreneurs have condemned it. Financial fines also begin to increase until a point where fines are so high that the volume of corruption decreases and it is less costly to fight corruption. As happens with corruption illegal file-sharing is linked to law enforcement (Danaher et al., 2014) and thus it is possible to state the following empirical hypothesis:

RQ1b: The speed in which national institutions react to individual requests (i.e. bureaucracy) is positively linked to the country-average Robin Hood tendency.

Assuming perfect substitution, where the quality and information contained in the copied file is the same as the original, there is no economic reason for illegal file-sharers to pay for a resource and access to resource attributes that can be obtained for free. Individuals who engage in illegal file sharing gain new content at zero cost, but the resource owner incurs a transaction cost as they lose potential revenue (Teece and Al-Aali, 2013). Formally, this concept has been described as purchase substitution (Liebowitz, 2006), a phenomenon produced when consumers illegally copy an object or item which then acts as a substitute for a legal purchase. In the extreme the existence of purchase substitution implies that all those engaging in illegal file sharing provide no revenue for the resource owners as they demonstrate an unwillingness to pay. These arguments lead to the following research question:



RQ2: File sharers have a lower likelihood of purchasing than non-file sharers.

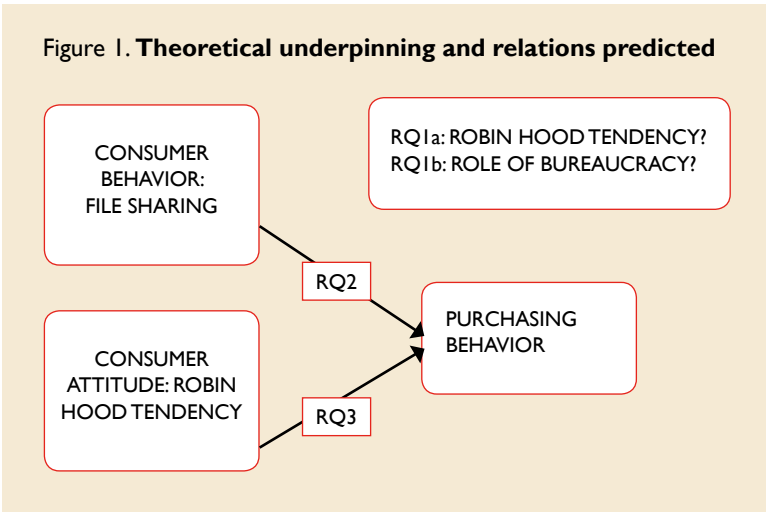
However, the presence of a behavioural direction such as illegal file sharing moderates, but does not dominate, an individual’s attitude towards purchase of an item. Bustinza et al. (2013a) found that some illegal file sharers also purchase; a fact that can be justified by a psychological cost of acting illegally; namely a feeling of guilt, or in the framework of the present research, the lack of the Robin Hood tendency among some illegal file-sharers.

The relationship between the Robin Hood tendency and the likelihood to purchase is under-explored. In the present article we posit that the presence of the Robin Hood tendency in a consumer should reduce their positive attitude towards purchasing, and this effect should be economically more acute amongst the illegal file sharer population. This leads to the following two research questions.

RQ3a: Individuals with a high Robin Hood tendency have a lower likelihood of purchasing than those individuals with low tendency.

RQ3b: The negative effect of illegal file sharing behaviour worsens when the individual shows a high Robin Hood tendency.

Figure 1 summarizes the model and research questions showing the variables to be estimated, which are explained in detail in next section.



3. EMPIRICAL ANALYSIS

3.1. Data Collection

The music industry is led by 3 major music-licensing firms who hold over 70% of the market share in terms of property rights to music resource. Industry revenues have been in sharp decline over the past decade (Parry et al., 2012). Music consumer surveys collected by one of the 'Big 3' global music companies from ten different countries provide data concerning individual characteristics, beliefs, file sharing activity and music consumption patterns.

With online survey data it is possible to analyse the behavioural motivations and develop upon the theoretical foundations discussed previously. The data contains 18,842 observations from ten different countries: Spain, Germany, France, Italy, Netherlands, UK, US, Canada, Australia and Japan (for a detailed sample description see Bustinza et al., 2013a or Vendrell-Herrero et al., 2016).

3.2 Estimating Robin Hood Tendency

The present article contributes to the extant literature providing a new construct dubbed the Robin Hood tendency through the use of Likert scales, which measure unobservable attitudes and reduces social desirability bias (Hair et al., 2001). As such, we used the predicted value of a factor analysis, a method recommended by Lafuente et al. (2010).

A measure for individuals' respect for property rights is created using three items (ROB1: I am not willing to pay for music; ROB2: I prefer to risk downloading music illegally rather than buying it legitimately; and ROB3: I prefer to acquire music without paying – i.e. download from file-sharing sites, etc.) to form a five-point Likert scale creating the measure for an individual's Robin Hood tendency. Analysis of the data was performed to test RQ1 and reported 56.5% of the items' variance explained. Analysis of the scale's internal consistency yields a Cronbach's alpha value of $\alpha=0.92$. Using Confirmatory Factor Analysis the composite liability is calculated as 0.83 with an average extracted variance over 0.5. These values confirm this is a good instrument for measuring the variables (Hair et al., 2001).

The variable obtained gives an indication of the Robin Hood tendency of the individual. The variable follows a normal distribution with mean zero and standard deviation of one. Positive values mean that the individual shows attitudes coherent with a Robin



Hood tendency and higher values imply that the individual shows stronger traits of this consumer misbehaviour. In contrast negative values imply that the individual shows a respect for property rights. **Table 1** reports the average Robin Hood tendency by gender, age and working status. It can be observed that (i) males have a higher Robin Hood tendency than females; (ii) a positive Robin Hood tendency is most profound in those aged between 25 and 39 years old; and (iii) groups with lower income (students and the unemployed) demonstrate a greater extent of Robin Hood tendency.

Table 1. **Mean values of Robin Hood Tendency by personal characteristics**

		ROBIN HOOD TENDENCY
Categories	Personal characteristics	Mean
Gender	Male	0.064
	Female	-0.072
Age	Aged under 24	-0.066
	Aged 25-39	0.345
	Aged 40 -59	-0.160
	Aged over 60	-0.163
Working Status	Income Full time	-0.077
	Income Part time	-0.042
	Out of Job Market	-0.081
	Students	0.234
	Unemployed	0.101

3.3 Institutional Quality as a Driver for Robin Hood Tendency

The estimation of the Robin Hood Tendency has been calculated at the individual level but those individuals can be grouped at meta-levels using variables such as the legal framework of their country of origin. In this regard previous literature suggests that those from countries with a French legal origin are positively correlated to corruption or other kinds of consumer misbehaviour. The evidence supports this literature and shows that French Legal origin countries (0.238) on average show a larger Robin Hood tendency

than German (-0.082) or English (-0.126) legal origin countries. This reinforces the established idea that legal frameworks affect individual attitudes; but at this level of aggregation the evidence seems weak.

The alternative approach taken in this application and also in previous literature on the subject (Bustinza et al. 2013a and Vendrell-Herrero et al 2016) is to aggregate consumers at country level. The advantage is that there are many variables measuring the quality of institutions at country level which can be included in a regression to explain the Robin Hood Tendency. For that purpose, information from the Doing Business platform was downloaded (www.doingbusiness.org), specifically that information linked to the number of days required to enforce a contract, start-up a business and get a construction permit for 2010, the same year the survey was conducted. These variables were selected as each measures the speed in which governments react to individual actions. Consumers in countries with solvent institutions and relatively fast processes in dealing with requests will perceive a larger threat of being punished than consumers dealing with slower more bureaucratic governments. According to RQ1b the threat of punishment will be negatively linked to a Robin Hood tendency.

Figures 2, 3 and 4 show graphically the estimations of regressing the time required to enforce a contract, start-up a business and get a construction permit, to aggregated Robin Hood tendency respectively. The evidence shown in the three Figures provides evidence at a macroeconomic level of a positive relationship between the speed in which governments react to individual requests and consumer misbehaviour. However, the explanatory capacity of the models differs amongst the variables considered. The R^2 differs from slightly more than 12% in the model represented in **Figure 2** to almost 58% in model represented in **Figure 4**. The significance of the parameters estimated also differs and it is significant only in the third model (p-value = 0.011), and is non-significant for the models estimating enforcement of contracts (p-value = 0.318) and starting-up a business (p-value = 0.159). Even though in the latter cases the significance is low the findings clearly suggest a negative correlation between institutional quality and consumer misbehaviour.



Figure 2. The correlation between time to enforce a contract and Robin Hood tendency

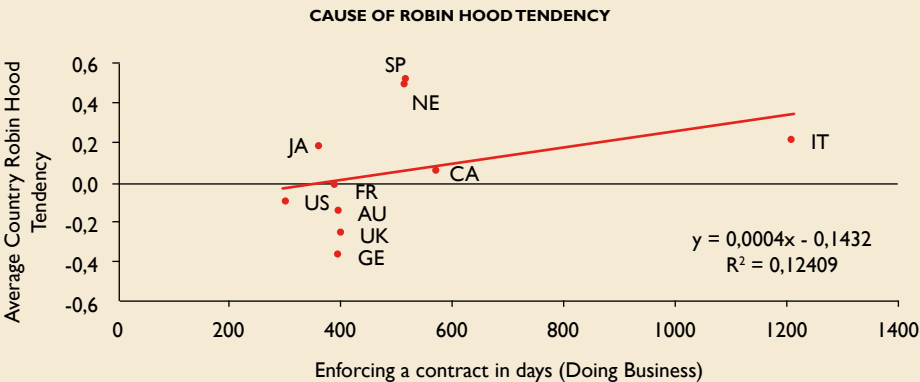
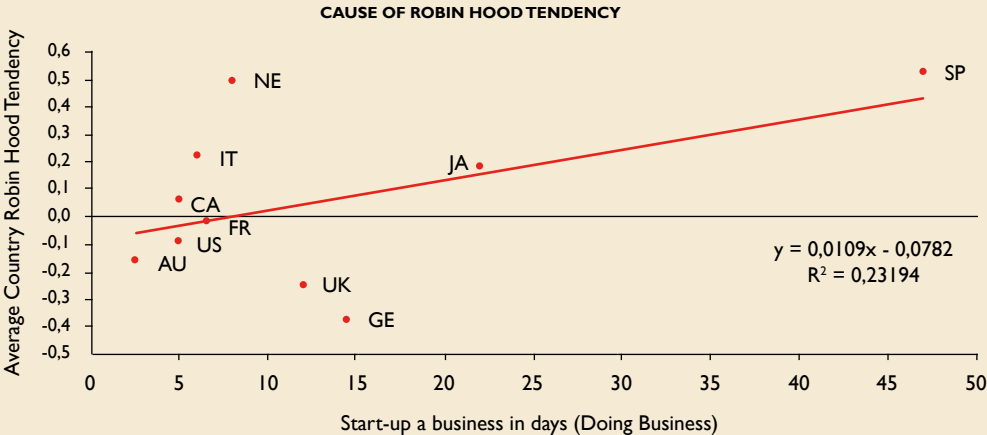
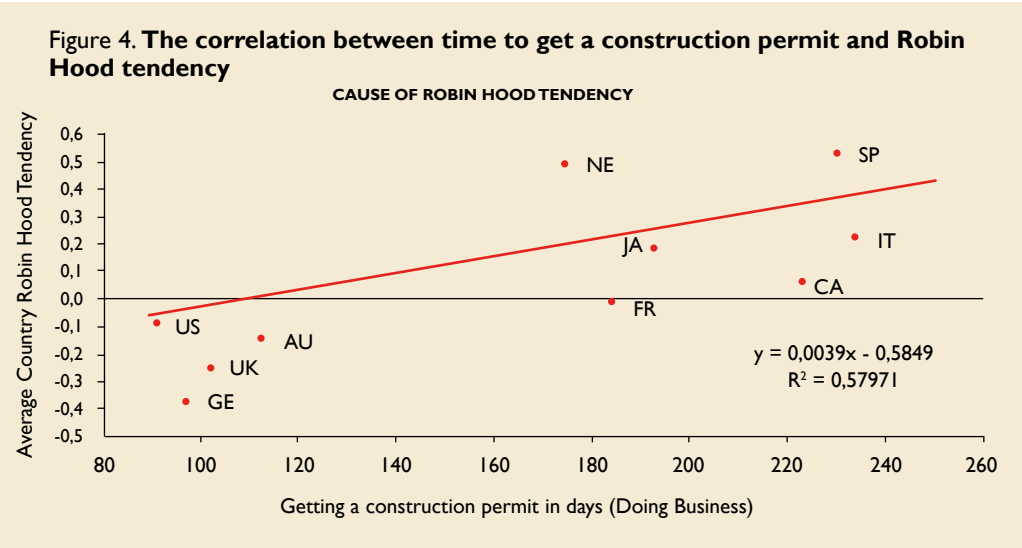


Figure 3. The correlation between time to start-up a business and Robin Hood tendency



3.4 Commercial Consequences of File Sharing and Robin Hood Tendency

The third aim of this research is to better understand the attitude vs actual behaviour dichotomy and its links to consumer purchasing. Our analysis in the music industry is underpinned by the fact that digital services are empowering consumers, and hence when consuming music they can take a decision to access content legally or illegally.



A consumer's propensity to buy music is not directly observed. What is observed instead is their actual choice, purchase or not. Therefore, a binary regression (i.e. Logit) is the appropriate empirical strategy to estimate the propensity to purchase. In this article we use the same data as Vendrell-Herrero et al. (2016) where 70.8% of the individuals in the sample are buyers, split further into physical buyers, digital buyers and consumers that buy both formats. In **Table 2** of Vendrell-Herrero et al. (2016) the authors include the actual behaviour of file sharing as an independent variable to explain the consumer decision to purchase music in digital or physical form. In both models the coefficient is negative and statistically different from zero. Results of the LOGIT model are provided in **Table 2**, and consistent with Vendrell-Herrero et al. (2016), the coefficient is negative and significant. According to the marginal effect parameter illegal file sharers are 4 percentage points less likely to purchase music than non-file sharers. This result confirms the expectation of Research Question 2 and hence it is accepted. What should firms do in reaction to this negative effect? Whilst some argument remains as to the level of remuneration that artists and copyright holders should be paid for their work, there is general agreement that current laws are insufficient for protection of rights in the digital environment and different IPR legislation is necessary, but the challenge lies in what form the legislation should take (Parry et al., 2014b). In this regard, previous empirical research has made economic assessments of

new regulations protecting property rights, supporting claims that IPR legislation protects industry revenue (Danaher et al., 2014).

Table 2. **Determinants of the propensity to purchase**

DEP VAR. BUY MUSIC	LOGIT	
Behaviour: File Sharer	BETAS	MARGINAL EF.
	-0.25***	-0.04***
	(0.04)	(0.01)
Attitude: Robin Hood tendency	-1.05***	-0.18***
	(0.02)	(0.01)
Control Variables	YES	YES
INTERACTIVE TERM: FILE SHARER X ROBIN HOOD TENDENCY:		
Pr (Buy) > 0.7	Negative	
0.4>Pr (Buy)>0.7	Zero	
Pr (Buy) < 0.4	Positive	
CORRECTED PREDICTED PROBABILITY:		
Pr(Buy)=0	47.67%	
Pr(Buy)=1	89.92%	
Overall	77.60%	
Log likelihood	-8683.06	
Pseudo R²	0.23	
Number of observations	18842	

Standard errors reported within parentheses. Level of statistical significance: *** 1%, ** 5%, * 10%. Control variables include gender, working status, age, passion for technology, passion for music, hours listened of music per week, legal origin and geographical location. Results of the interactive term is based on Ai and Norton (2003) graphical method.

But this is a part of the history of the internet. By introducing regulation firms and policy makers are not necessarily affecting consumers' beliefs of what is right. We extended the analysis in Vendrell-Herrero et al. (2016) by including the variable Robing Hood and the interaction between Robing Hood and File Sharing into the discrete choice regression model. This analysis allows a clear answer to be given to the question “why do file sharers purchase?” (Bustinza et al., 2013a). As predicted by Henning-Thurau et al. (2007) analysis demonstrates that the feeling of guilt, in this case a recognition that copyright is legitimate, the inverse of Robin Hood tendency, is positively linked to purchasing behaviour. We found that the parameter of Robin Hood is negatively and statistically significant

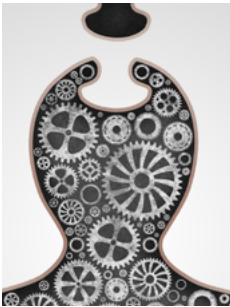
at 1% (see Table 2). The size of the parameter is four times bigger than the parameter of the file sharing (both in the coefficient and in the marginal effect). According to our results an increment of 1% in the Robin Hood tendency decreases an individual's likelihood of purchasing music by 0.18 percentage points. This result supports Research Question 3a, and seems to indicate that the Robin Hood tendency has a more relevant impact on purchasing than the actual behaviour of file sharing.

According to Ai and Norton (2003) some caution is needed when estimating the interactive terms in discrete choice models. In this regard the use of graphical analysis of interactive terms has been strongly encouraged in social sciences. With this approach it is possible to target consumers depending on their propensity to purchase.

From a managerial perspective it seems reasonable to assume that music industry managers will seek to re-engage consumers who show a large probability of purchasing rather than engaging with those consumers who would likely not consider purchasing. The data suggests that for illegal file sharers with a high-predicted probability of purchasing (higher than 70%) a larger Robin Hood tendency would decrease their probability of purchasing. This implies that the negative impact of file sharing becomes even more negative in the presence of an individual that has little regard for property rights, in our context the Robin Hood tendency. This result supports Research Question 3b.

4. CONCLUSIONS

We contribute to consumer and market quantitative research providing empirical insights in the under-explored area of consumer misbehaviour in the music industry. For this aim a novel concept is presented, named the Robin Hood tendency. This tendency describes a consumer attitude displayed by those that believe illegally copying and distributing digital resource is legitimate. This Robin Hood measure allows us to determine differences between consumer attitudes and final behaviour, a novel approach to understand consumers in the music industry context. Empirical analysis from a large consumer survey dataset provides evidence of the institutional causes and commercial consequences of this misbehaviour. Understanding this new concept is important for consumer insight departments in creative industries; industries severely affected by



the digital disruption (Vendrell-Herrero et al., 2016). Under this new competitive scenario, digital servitization has transformed traditional products into complex systems that combine product, services and customer knowledge (Porter and Heppelmann, 2014; Bustinza et al., 2015)

Furthermore, this method informs managers in multinational companies of the likelihood of consumer misbehaviour in a given country. In particular, the evidence offers analysts a relatively low cost way to understand aggregated causes of certain consumer attitudes, providing there is sufficiently detailed country specific information available from secondary sources. Moreover, sources of heterogeneity are found when estimating the averages of Robin Hood tendency at country level, which allows correlation of the national measure of Robin Hoods against legal origin and quality of institutions, measured by the amount of days that institutions need to respond to individual queries. The results support a negative link between quality of institutions and consumer misbehaviour, such that countries with highly rated institutions also had fewer consumers who misbehave. This result is consistent with previous research (Rodriguez-Pose, 2013) and calls for the acceleration and simplification of the processes of enforcement of policy in countries where institutions are slow to respond (Parry et al., 2014).

In terms of strategy, a direct managerial implication from the empirical results is that industry needs to campaign to influence individual beliefs to increase the respect given to property rights in addition to efforts to enforce property rights legislation. Respect for property rights increases the likelihood of an individual purchasing. This result is consistent with the positive relationship between the perception of being caught and the willingness to pay shown by Sinha and Mandel (2008). File sharers have a probability of purchasing greater than 60%. As illegal file sharers respect for property rights increases, their propensity to purchase legally is increased in all formats.

A further implication is the importance and relevance of data gathering, which is required in order to have a better understanding of the consumer. In demand-centric sectors (Parry et al., 2012) collecting and analysing data is a vital requirement. The quantitative methods used here:

- Open a new stream of behavioural research with novel methodological insights on how identify and evaluate consumer misbehaviour.

- Show how to combine data sources at aggregated levels. Analysis at country level provides potentially valuable insight for multinationals.
- Assesses the commercial consequences of consumer misbehaviour through discrete choice modelling.

With regards limitations, demand functions are estimated using logistic regressions, so the purchasing propensity is observed, not the volume purchased. Data does not provide individuals potential expenditure on resource, which means that the changes in expenditure are directions and give no measure of total monetary gain or loss. This is a limitation since the actual economic impact is not estimated.

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NOTES

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