Service Innovation Genealogy: The Research Field Tells its Own Story

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The Genealogy of Service Innovation: The Research Field Tells its Own Story

Abstract

This paper examines the development of service innovation as a research field since the publication of Richard Barras' seminal paper 'Towards a Theory of Innovation in Services' in 1986. It presents an exhaustive literature review of 31 years of research on service innovation. It offers some cross-sectorial perspectives on twelve key themes emerging from the literature, and on the broader research landscape and trajectories. Researchers, technologists and policy makers in the field of service innovation face issues arising from theories borrowed from economics since the 1980s and evolving through operationalization of its core themes over the last 20 years. After a description of the field, theoretical underpinnings of the field drawn from organization and management theory are discussed. The field has reached a stage where it can provide theoretical knowledge beyond the scope of the original service innovation theory, such as social innovations. A research agenda is suggested in both theoretical and thematic perspectives.

Keywords: Genealogy; Service Innovation; Theory Building; Service Innovation Waves;

Research Agenda; Organizational and Management Theory

服务创新谱系：研究领域讲述自己的故事

摘要

自1986年理查德·巴拉斯发表开创性的论文《迈向服务创新理论》以来，本文以服务创新的产生为研究领域。这项研究源于对服务创新31年研究的详尽文献综述，在一些跨领域带来了观点。该研究涉及文献中出现了12个关键主题。在服务创新领域中，以及更广泛的研究领域中，涵盖了技术人员，研究人员和政策制定者的发展轨迹。这些领域的发展轨迹借鉴了30年前的经济学理论，并在过去20年通过对其核心主题的实施而进行演进完善。然后，在组织和管理理论的研究领域内，多次利用其理论前提。已经到了一个阶段，在这个阶段，我们可以借鉴原有服务创新理论以外的理论知识，例如社会创新，并从理论和主题的角度提出了一项研究议程。

关键词：谱系；服务创新；文献综述；服务创新浪潮；研究议程；组织管理理论。

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1. Introduction

Over the last three decades, service innovation (SI) research has followed an upward trend. Spreading out from traditional industrial economy innovation theory in the 1980s, it has become one of the top research disciplines on innovation studies (Mansury & Love, 2008; Toivonen & Tuominen, 2009; Vence & Trigo, 2009). In 2017, research papers about service innovation exceeded 400 articles, mostly published in the last seven years. While past generations had to bring external knowledge into service innovation (such as Barras, 1986; Gallouj & Weinstein, 1997), new researchers joining the field now face a theoretical corpus from which they may derive further studies. But how can we teach new researchers about the trajectory of service innovation so far? As the research field established its 'autonomous existence', a 2018 research agenda was presented, embracing societal, organizational and 'methodological and didactic challenges' (Djellal & Gallouj, 2018).

In this paper, we address to the didactic challenge of presenting the research field trajectory in terms of a genealogy, considering: i) how the thematic focus of research on service innovation has emerged and shifted over time; ii) how the main topics of interest in that field have emerged from economics perspectives, moving into the management research field and spread across further theoretical domains; and iii) what future opportunities and gaps are offered to researchers. Although unusual in the social sciences, we chose to use genealogy as a tool to explain the origins and form of development of the SI research field, as it provides "an account of the origin and historical development of something" (Merriam-Webster's collegiate dictionary, 2019, p. 1). We present our genealogy hoping that it will be useful for researchers interested in: a) mapping the

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development of a particular subject in SI to date; and b) detecting future research gaps, which we assume to be path-dependent (Bergek & Onufrey, 2013).

A few attempts have been made to review the service innovation literature as a single corpus of research, either by examining its theoretical approaches (see the work of Breidbach & Maglio, 2015; Drejer, 2004; Gallouj & Savona, 2009; Morrar, 2014; 2010;) or by checking its correspondence with marketing research (Carlborg, Kindström & Kowalkowski, 2014). However, there were some earlier efforts to examine it directly from a sectoral perspective (e.g. Carvalho & Costa, 2011, who explored the tourism sector), a thematic perspective (e.g. De Jong & Vermeulen, 2003, who review new service development) or even by selecting a sample of the world literature (e.g. Bryson & Monnoyer, 2004). Some previous works have explored the thematic constitution of SI research and how its focus has shifted over time (e.g. Gallouj, 2002). Despite those efforts, the didactic challenge (Djellal & Gallouj, 2018) of telling the story of the research field since its beginning remains unanswered. Therefore, we focus on contributing to it by presenting a genealogy of service innovation.

We argue that SI research has reached a critical mass that allows us to carry out an inductive categorization of the main research subjects that have been explored by researchers over the last three decades. In this work we provide the means to let the research field speak for itself through the topics explored by researchers. From a temporal perspective, we map out the evolution of SI to allow us to explain how the research focus has shifted over time and in which direction. We conduct an exhaustive literature review to select research articles on service innovation published since 1986. We extract data from selected papers to compose a general database containing variables related to authorship,

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journal of origin, key words and number of citations. We then create an inductive categorization of the research subjects published over 31 years on service innovation. This procedure allows us to summarize the research topics explored in SI into 12 categories. By investigating similar paths among categories, we identify four main 'waves of research' that gather the 12 categories. We finally summarize these results into a service innovation genealogy that allows us to predict a forthcoming wave.

2. Service Innovation: How the research field has evolved so far

The task of mapping the studies on SI sets this research topic in a broader context that encompasses innovation studies. Since the initial studies of Schumpeter (1912; 1934; 1942), a wide range of papers has been published using an approach commonly described as neo-Schumpeterian, which gained prominence from the 1950s. This timeframe culminates on a paradigm shift in economic studies. The industrial sector maintained its dominant position in the composition of GDP of major world economies during the first five decades of the twentieth century. Consequently, the industrial sector became the focus of analysis for economic performance studies. In a parallel process, the service sector gained prominence in the post-Fordism period (after 1940) that culminated with the decline of industrial activities. Once industry was losing strength, the service sector became increasingly important. This trajectory attracted the attention of researchers on economic performance, including innovation topics, who began to recognize the need to apply sectoral perspectives to their analysis (Pavitt, 1984). This led to the first studies on innovation in the service sector. Those studies did not focus at first on building a proper theory of innovation in services, but mostly applied previous innovation theory knowledge

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to service activities. (Such studies have been called a "technologist approach" by Gallouj, 2002).

The work of Barras (1986; 1990) is commonly taken as the first to offer a proper theoretical effort to build a theory to study innovation in services. In presenting the reverse product cycle, Barras (1986) argues that innovation in services is not endogenous but results from the absorption of innovations originally generated in industry. At that point, the study of SI was restricted mainly to the analysis of technological innovations originating from manufacturing activities (Gallouj & Weinstein, 1997). This approach is commonly referred to as technologist or assimilative (Gallouj & Djellal, 2010). The propositions of Barras brought new researchers to the emerging field of SI research. Its focus has undergone shifts and received cross-field inputs resulting in a very specific research line. Although it is a management research field in its essence, it addresses the activities known to perform under very particular dynamics. As services themselves have undergone major changes in their conceptions, design, delivery forms and performance over the last three decades, SI theory has been engineered over a transient object of study.

In the decades of 1990 and 2000, the debate on the capacity of services to generate genuine innovations became a settled point and new ideas emerged. The focus quickly shifted to building a corpus of knowledge to explain how innovation in services differs from innovation in traditional manufacturing. Inquiries such as 'how do innovations in services occur' and 'what are its specificities' became relevant and rose on the research agenda. A new series of studies emerged seeking to understand the specificities of innovation in services, using an approach dissociated from traditional industrial theory. This approach is known as the 'service-oriented approach' – or the differentiation approach

(Gallouj & Djellal, 2010), and led to the separation of research on innovation in services from research on innovation in manufacturing.

As the distinctions between services and manufacturing activities became blurred (Coombs & Miles, 2000; Miles, 2000), one theoretical inquiry became evident: how could we understand innovation from a cross-sectoral perspective? Sundbo (1997) and Sundbo & Gallouj (2000) led to the construction of an approach to integrate services and goods into a single theoretical perspective for the study of innovation, known as the integrative approach (Gallouj & Djellal, 2010). It marks the state of the art in terms of SI research. Despite the significant amount of published research papers, the concept of SI itself is still considered 'fuzzy and poorly defined' (Snyder *et al.,* 2016).

3. Material and Methods

This paper analyses the entire production of SI from its seminal work (Barras, 1986) until mid-2017. It covers 31 years in an exhaustive literature review that consisted on searching, selecting and extracting information from 401 published papers related to SI. It follows an analogous path to that of Furrer, Thomas and Goussevskaia (2008), by selecting and analysing the original descriptive keywords assigned to each paper by the original authors. Through an inductive analysis, we identify several emerging areas in SI research.

Our research focuses on selecting research papers, although we acknowledge that many important works on service innovation were originally published as books or book chapters. In particular, we highlight the following books that have contributed to the service innovation literature over time: Gallouj's (2002) original model; Metcalfe and Miles (2012), who explore innovation systems; Brown and Osborne (2012) focusing on innovation in public sectors; Gallouj,

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Rubalcaba and Windrum (2013) exploring public-private networks; Toivonen (2016) presenting value creation on service innovation; and the research agenda by Gallouj and Djellal (2018). In addition, much of the relevant literature is gathered in the following handbooks: Gallouj and Djellal (2010); Bryson and Daniels (2015); Agarwal, Selen, Roos and Green (2015); Di Maglio, Kieliszewski, Spohrer, Lyons, Patrício and Sawatani (2018).

Papers have been extracted from the following research directories: Annual Reviews, Oxford Journals, Science (AAAS), Scielo, Cambridge Journals Online, Springer Link, JSTOR Arts & Sciences III Collection (Social Sciences), Academic Search Premier - ASP (EBSCO), Directory of Open Access Journals – DOAJ, SAGE, Science Direct (Elsevier), Emerald Full text (Emerald) and ProQuest – ABI Inform Global, as well as from the following highly relevant journals: Service Industries Journal (SIJ), Journal of Innovation Economics (JIE), Industry and Innovation (II), R&D Management and Journal of Service Management (JSM).

Initially, both 'innovation in services' and 'service innovation' were tested as research parameters. 'Innovation in services' resulted in a large number of texts that did not present in-depth theoretical discussions or methodological frameworks. It did not meet our expectations as we intended to select papers that have contributed to shape the corpus of SI by developing relevant theoretical or methodological discussion of service innovation. We therefore adopted 'service innovation' as the keyword for our selection. This parameter led to highly relevant papers in both methodological and theoretical terms. Initially, 4,036 papers resulted from the query. We further filtered the selection with the following criteria: i) every duplicate was eliminated; ii) whenever possible, the search mechanisms were programmed to result in more specific searches, focusing on social sciences; iii) only papers that discussed, tested or mapped SI were selected.

The final database contains 401 published papers. Considering our criteria of presenting methodological or theoretical discussion of service innovation, it represents the whole production on SI published since the first work (Barras, 1986). The following information has been extracted from each paper: directory of origin, journal of origin, year of publication, title, authors, country of origin for each author, original keywords assigned by its authors and total number of citations on Google Scholar in July 2017. Since 40 papers did not assign any keywords, we retrospectively assigned them based on their titles, contents and methods. The subsequent sections explain in detail how each method was applied.

3.1 Service innovation research literature in numbers

Although previous research has applied innovation theory to service activities, we consider Barras (1986) as the landmark for our analysis as it presents an initial effort to develop a proper service innovation theory. From the first publication by Richard Barras in 1986, it took SI 11 years to produce sufficient publications. From 1986 to 1990, only 6 papers were published. No papers were published from 1991 to 1996, but from 1997 onward the research field experiences constant and increasing growth. From 1997 to 2006, the average publication rate per year reaches 4.8 papers. It quickly rose to 24.6 between 2007 and 2010. From 2011 to mid-2017, the rate reached to 46.6. This data indicates that the production on SI literature has evolved through the following four stages: i) 1986-1996 low number of papers and shifting of production; ii) 1997-2006 low number of papers, but steady production; iii) 2007-2010 moderate growing production; iv) 2011-mid 2017 fast and constant growth.

Stage 1 is an 11 year interval, although it accounts for only 1% of total production. Stage 2 lasts 10 years and registers 11% of total production. Stage 3 only lasts 4 years, but accounts for 18% of total production. And Stage 4 has lasted 7 years and accounts for an impressive 69% of the total. This reveals how recent the mass of production of the research field really is. It only achieves its publication peak from 2011 onward. Recently, the SI literature has experienced uninterrupted growth through Stages 3 and 4. Figure 1 summarizes the SI production over the 31 year period. We present the four stages as time cuts.

[Figure 1 near here]

Journals publishing on SI also provide strong evidences of concentration. Although 151 different journals appear in the database, 14 journals have published 51% of the papers. Eight of those journals - the top publishing ones – account for 41% of total. To compose the SI genealogy, all 401 papers were analyzed. However, in this section, we highlight papers from these six top-publishing journals: a) The Service Industries Journal (67 papers published and 52 citations on average per paper); b) Research Policy 22 papers with an average citation rate of 406; c) Journal of Services Marketing 17 papers with an average citation rate of 95; d) Journal of Service Management 16 papers and average citation rate of 34; e) Journal of Business & Industrial Marketing 13 papers with an average citation rate of 25; f) European Journal of Innovation Management 11 papers with an average citation rate of 69.

Although six journals concentrate most of the literature of SI, their individual contributions are not at all similar. The Service Industries Journal (SIJ) produced more publications and began to publish on SI in the second stage of production in 1997. As the top publishing journal on SI, SIJ has an impressive performance as it has published papers on every

single research topic composing our genealogy (it is the only journal to do so). This means that SIJ publications currently represent the best sample of the whole SI literature, as they explore every research topic. We consider SIJ the top-contributing journal to the SI research field. SIJ also stands out for having published high-diffusion papers in the SI research field, such as Sundbo (1997).

In recent years, SIJ has excelled in its publications on service innovation. Among its most recent topics, there are discussions on how to integrate previous theory into new process models for innovation (Ozseker, 2019); on the determinants of innovation in services (González-Blanco et al, 2019); on how the culture of innovation in services affects the performance of frontline employees (Baradarani & Kilic, 2018); on how to overcome resistance to innovation in services (Stryja & Satzger, 2018); and on how to measure the impact of innovations on stock returns (Szutowski, 2018). Research Policy (RP) is the second top publishing journal, although it published only about 32% of the number of papers SIJ has published. RP published the very first paper on SI and this was quickly followed by a second paper, and also published two out of the six papers that constituted the whole production on SI in Stage 1 (1986-1996). In Stages 2, 3 and 4, RP kept its activity by constantly and increasingly publishing papers on SI while other journals followed.

The Journal of Services Marketing (JSMKT) has also been present ever since Stage 1 (1986-1996). It published two papers in 1989 (Warren, Abercrombie & Berl, 1989). It inaugurated the discussions on New Service Development (Scheuing & Johnson, 1989), a research topic that later became one of the strongest research lines in SI. JSMKT did not publish any paper on SI for the following 17 years. It is a journal that has contributed to the emergence of the research field but remained absent from it until the end of Stage 2. Journal of Service

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Management (JSM) and Journal of Business & Industrial Marketing (JBIM) make similar contributions as they both have their first papers on SI in 2011 (stage 4). They are the newest top players on SI. The European Journal of Innovation Management (EJIM) is the sixth top publishing journal. It published its first papers on SI in 1998, 1999, 2000 and 2002. It then had a 13-year gap, before publishing six papers in 2015.

The trajectories of the six top journals reveal how journals have contributed in different ways to compose and disseminate ideas on SI. While SIJ contributes with the largest and the broadest range of papers published since Stage 2, RP published fewer papers, but was more widespread among researchers. JSM made notable contributions in Stage 1 but was absent from the research field for almost two decades. JBIM and JSM are the emergent players that appeared in Stage 3 and contributed to growing state-of-the-art production on SI. EJIM is a less stable journal in terms of production as it had a long-term gap between 2003 and 2014.

On average, a paper on SI is cited 73 times. Even among top six journals, citation rates do not exceed this number by much. JSMKT reaches 95.94 citations, only 31% higher than average. But there is an evident outlier among the top six journals. Research Policy has been playing the leading role on the field. RP not only inaugurated the discussion on SI in 1986 but kept its leading position as a top journal in number of publications and dissemination of research on the topic by sustaining the highest citation rate for any journal publishing on SI. In terms of citations, RP is an evident positive outlier: the citation rate per paper (406.64) is almost eight times higher than the average citation rate for the whole field. It is also three times higher than the combined average citation rate for the remaining five top journals (SIJ, JSMKT, JSM, JBIM and EJIM) which only achieve a 55.09 citation rate when combined.

In aggregate terms, RP published only 5.4% of the total production on SI, or 22 out of 401 papers, but its papers have obtained 33.4% of citations made to an SI paper. Pioneering in the field, steady production and highly disseminated articles show its leading role. To better explain its effect, the present research performed an exploratory Time Series analysis by isolating the lag-correlation between RP papers x Non-RP papers from all the remaining journals on our database. The effect has been tested from years 1 to 10, following each one of RP's papers. The results reveal that there is indeed statistical significance for the RP effect over Non-RP, meaning that every time RP publishes one paper on SI, Non-RP journals follow by increasing their publications on SI. The effect is observable after one year (correlation 0.58), but it reaches its peak after three years (correlation 0.85), as shown on Table 1. Regarding the negative lag-correlation, after 4 years from a RP publication, a moderate decrease occurs (correlation 0.63) in the number of publications in Non-RP journals, meaning that the effect becomes weaker.

[Table 1 near here]

3.2 The inductive analysis: coding procedures to summarizing the research topics

Coding procedures were applied to summarize explanatory categories in terms of thematic content. The sum of every single original keyword assigned by authors in their papers led to a total of 1,790 keywords for 401 papers. Many keywords had absolute correspondence among themselves, such as 'service science' and 'service sciences' or 'service' and 'services'. Such cases were manually merged and a new list of 819 different unique keywords emerged. Most of the remaining keywords, 602 out of 819, or 73.5% appeared only once in the list, meaning that only one paper in the entire database contained it. As categories are supposed to reveal frequent

research themes, single use keywords were discarded. A set of 217 keywords emerged. Pleonastic terms such as 'services' or 'innovations' were discarded, as well as terms representing countries of origin or research methods. The final list contained 174 keywords used 745 times in the papers.

Content analysis was performed on the 174 unique keywords following the recommendations of Bardin (1977), Bauer and Gaskell (2000) and Flick (2008a; 2008b) to inductively group keywords sharing meanings into explanatory categories. Exhaustive reading and discussion among the research team led to the final categories. Twelve macro research topics emerged, having both statistical (keywords assigned to, at least, two papers) and content criteria. They are presented in Table 2.

The categories we offer are based exclusively on keywords. This means that a paper was assigned to a macro research topic whenever its corresponding keywords fitted that category. If a topic was discussed in a paper, but not in its keywords, it would not be assigned to that particular category. In such cases, cross-cutting issues or background arguments, although present in a paper, may not be acknowledged by our method. We recognize this issue as a particular limitation of the method we applied.

[Table 2 near here]

The 12 research topics that summarize the production in SI prompted further questions. How do they relate to each other? Are there research topics that are commonly explored together? To investigate that, a Multiple Correspondence Analysis (MCA) was carried out on the overall data following the research design from Furrer *et al*. (2008). MCA is a correspondence analysis that graphically displays multiple categorical variables in a multivariate analysis. It uses binary

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ratings to express the presence or absence of an attribute. In this study, it means that each paper was assigned to one or more research topics. In this technique, the chi-square is transformed into an arithmetic measure of distance from a central point that represents the overall mean for the distribution (Hair *et al.,* 2006).

MCA positions each variable (research topics) based on its multiple correlations. If two variables have similar patterns, meaning they are constantly explored together in a given number of papers, they will appear spatially next to each other in the MCA. The further away two categories appear, the lower it is the correlation between the data sample (Bendixen, 1995). For the MCA, the Eigenvalues curve has been calculated to decide how many dimensions would best fit the data. Values for the distribution are 0.15, 0.10, 0.09, 0.08, 0.08, 0.07 and 0.07. As there is no evident break on these values, we chose to perform an MCA with two explanatory dimensions for graphical data representation. Interpretations of MCA consider distance between points and distance from each point to the overall average point (0,0). Research topics appear as circles and their sizes are proportional to the number of papers involved.

4. Results and Discussion

4.1 SI Waves and Genealogy

MCA provides circumstantial evidences for the ensemble of data, but it does not consider the time perspective. It does not explain why a group of topics appear on the left or right portion of the graphic. Therefore, we add the temporal perspective to further explore similar trajectories followed by research topics through the 4 research stages. Considering the MCA and the nature

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of each research topic (emergence, trajectory, growth / decline), three established trajectories have been identified as well as one emergent trajectory. In the following sections, we describe them as the SI Waves.

Central themes marked as 'First wave' are strongly attached, meaning they have been constantly combined in a given group of papers. Although joined in a compact group, First wave topics approach one of the other two groups, reinforcing the impression that provide a basis for research that applies their structural propositions in combination in the Second and Third waves. Second and Third wave topics appear relatively close to each other, but follow their own patterns, meaning they have been explored together as well. The Fourth wave consists of only one research topic (Social Innovations) visibly isolated from other topics and representing an expanding trend from SI into diffused management research lines. Figure 2 presents the MCA.

[Figure 2 near hear]

4.2 The first wave: 'Core discussions'

The First wave contains four structural research topics from which all the remaining seven topics derive: Performance, Service interactions, Industries X Services and Typologies. It gathers the themes that explore the core issues, the structural questions for the research field. Ever since its beginning, SI has been discussing what models or types of innovations could represent innovations in services (Typologies), how useful industrial innovation theory could be (Industries X Services), how emerging forms of production, like co-creation and co-production, could affect innovation in services (Service interactions). Also, it has discussed what tools are appropriate to measure SI (Performance). When presenting each research topic in the following paragraphs, we

also present the percentage of papers it contains in relation to the total (401). These percentages, however, are non-exclusive, since the same paper may belong to more than one category.

'**Performance**' is the largest research topic in the SI literature: 22.2% of the papers on SI consider some form of measuring or evaluating innovation. Such popularity is no surprise, as innovation diagnosis requires evidence of qualitative improvement (Schumpeter, 1934), an original premise of innovation that remains strong on neo-Schumpeterian studies. On average, papers in this category have been cited 53.62 times. This topic was born with the research field in the 1980s – it made an early appearance and has since grown constantly. After 31 years, production on performance remains strong. There are no valleys or reductions in the number of papers published in this category over the years.

'**Interactions**' accounts for 17.5% of SI literature, or 70 papers. It emerged in 1990 with Barras (1990). Although it appeared early, it was eight years before a second paper was published (Chan, Go & Pine, 1998). From 1998 onward, its production has constantly grown. Its current average citation rate is 70.23 and it holds three of the ten top cited papers on the SI literature. Muller and Zenker (2001) is the top cited paper for the whole category, with 1039 citations, followed by Barras (1990) and Alam & Perry (2002).

'**Industries X Services**' is the third category in number of SI papers (7.7%) but it represents a commonly observed design. It emerged with the research field itself as both Barras' papers (1986; 1989) fit into this category. Despite the evolution of the field and the emergence of service-oriented theoretical approaches, the comparative choice has remained the default for the sector. This category emerged early with regular production in all four stages of SI research.

Average citation rate for this category is 130.94, which makes it, along with typologies, a strong outlier in terms of diffusion across the research field.

'**Typologies**' accounts for 13.2% of SI literature. Chronologically speaking Barras (1986) is the first paper and Gallouj and Weinstein (1997) the second. It is no coincidence that four of the top ten cited papers in the SI literature are typological. This category is an outlier when compared to the others. Although small, its average citation rate is 158, much higher than all the others. Papers in this category determine the theoretical limits and approaches for discussions in SI. We consider that it has been setting the research design for the whole literature.

The rise of the first wave is a landmark for the research field. Its four research topics have emerged in research Stage 1 (1986-1996), so they are all considered 'early appearances'. Although they appeared 31 years ago, none of the research topics has declined in terms of publications. They remain active and have not perished as their production has kept growing ever since. As they gather the defining questions for the research field, they play the role of '**Founding themes**'. Its research topics have the highest citation rates in the SI literature, even though there are not very many papers, as they provide the theoretical and methodological basis for the design of research.

The **Core discussions** in SI originally came from Economics of Innovation and Industrial Innovation Theory into management studies. The process of theory building in organization and management theory (OMT) commonly begins by borrowing topics from alternative disciplines in a process where 'foreign theories are domesticated for consumption' (Oswick, Fleming & Hanlon, 2011, p. 318). Although the four research topics among the core discussions do not all have theories of their own, their assumptions and ideas commonly originate from economics, but apply them at an organizational level.

Oswick et al (2011, p. 322) offer a typology for theoretical contributions to OMT by mapping the spectrum of applicability and the domains of consumption for a theory. They argue that borrowing is the most common path and usually the first for knowledge building in a field. They name it the 'foreign to domestic to domesticated' pattern for theory building. A research field is commonly inaugurated by '**Radical traveling theories**' that consist of theories 'produced outside the discipline' and known to be 'general theories that have considerable conceptual latitude'. As Barras (1986; 1990) draws from Economics of Innovation into OMT and adopts a broad spectrum, we argue that the core discussions contain the 'Radical traveling theory' in SI as they 'represent a significant challenge to and departure from the contemporary and conventional preexisting insights in a particular discipline' (Oswick *et al.,* 2011, p. 322).

Following the theory development path, a Radical travelling theory would lead to the emergence of an 'Innovative domestic theory' that would be 'developed and consumed within the same discipline' by introducing 'new insights into OMT that significantly challenge existing knowledge (…) from an insider perspective' (Oswick *et al.,* 2011, p. 323). In SI development, we argue that Gallouj and Weinstein (1997) and their integrative approach play this role as they revisited Barras (1986; 1990) to develop an SI theory adopting a managerial approach.

4.3 The second wave: 'Sources and activities'

Second wave is called 'Sources and Activities' and focuses on the sources, meaning drivers or vectors for SI, and the activities mobilized to generate them. It contains four research topics that share the common purpose of explaining who acts to create innovation and in what ways: Capacities, Knowledge, Networks and ICT (Information and Communication Technologies).

After the first wave inaugurated the core discussions, production in SI evolved to discuss practical aspects of the innovation process – actors involved, how they interact, what sort of knowledge is mobilized as input, what competences are demanded from actors in the process and how technologies impact innovation. As they provide operationalization for SI, we call the research topics of the second wave '**The operationalizing themes**'.

'**Capacities**' accounts for 17% of total production in SI. Organizational capabilities, individual competences, human capital and learning are some of its defining areas. It explores the link between strategic management and SI. It emerged in 2000 with Chryssochoidi and Wong (2000) and has been productive ever since. It currently has an average citation rate of 51.24.

'**Knowledge**' represents 15% of the whole production in SI. It includes papers exploring knowledge management, generation, sharing and diffusion through its many manifestations. Knowledge Intensive Business Services (KIBS) and Knowledge Intensive Services (KIS) are highly knowledge-dependent services. It also includes papers exploring open innovation and its specificities – knowledge generation, research or development sharing. It emerged in 1999 with Hipp (1999), a pioneer work that explores KIBS as a locus for knowledge production. The category has since experienced consistent growth and currently has an average citation rate of 89.5.

'**Networks**' includes 12% of the SI literature. Information and innovation networks, business collaboration and innovation systems constitute this research topic. Goes and Park (1997) inaugurated this category, so it emerged in the second stage of research (1997 to 2006). Although it did not emerge in the early stages of SI literature, this category shows strong production ever since its early years. Its average citation rate is 69.27. The emergence of a

'Networks' topic is reinforced by papers on the state-of-the-art in SI, such as Desmarchelier et al. (2019, p. 1), who suggest that innovation networks have been explored in service economies as 'public-private innovation networks in services, market service innovation networks, public service innovation networks and public services innovation networks for social innovation'. This work shows that innovation networks, social innovations and public service innovations are actually intertwined in service economies and launches a specific research agenda based on measuring the performance of networks.

'**ICT (Information and communication technologies)**' account for 10% of production, meaning it is one of the smallest categories in our database. However, information technology-based SIs have attracted attention ever since the 1980s as IT frequently composes the base connecting clients and service providers (Kandampully, 2002). Indeed, the category appeared early, as the first papers were published in research stages one and two. Literature production in this category is small but has been constant since the beginning of the research field. The average citation rate for this category is 58.55.

Discussions on the role played by technology in service innovation have been present since the beginning of the SI research field, and most of the technologist approach derives from it. Actually, broad discussions about technology in SI would probably account for about half of the whole literature. However, this specific topic mostly gathers keywords that are assigned to information or communications technologies (ICT, IT, technology, technology-based services, mobile communication systems and communication technologies). For this reason, a relatively small number of papers appears in the ICT category.

The transition from first to second wave expresses a shift in terms of research design. When researchers in first wave traced the basic patterns to identify, distinguish and measure SI,

they allowed the research field to evolve to a point where new questions emerged. As basic

theoretical structures were settled and the field learned what SI was, the focus shifted to explain

how it occurs at the micro level. Unlike the first wave, research topics in the second wave are

numerous in terms of papers. It contains the third and fourth largest topics in terms of publishing

numbers. The citation rates are smaller than the average for the first wave, but again, this is no

surprise as second wave's studies focus on micro aspects of SI and tend to attract attention from

researchers who are interested in specifics.

In terms of theory development, Sources and Activities contains the 'Orthodox domestic

theories' as they are 'narrow in orientation and predominantly targeted at and consumed by a

domestic audience. This offers incremental extension of, revision to or refinement of an existing

body of theory within a specific subarea of a discipline' (Oswick *et al.,* 2011, p. 324). As the

research topics in the second wave focus on how to operationalize core aspects of innovation in

services, they correspond to the 'domestication' of theoretical knowledge on SI.

4.4 The third wave: 'Peripheral applications'

The third wave is called 'Peripheral applications' and contains studies focusing on empirical tests

of SI applications. Three research topics fit here: customers, New Services Development (NSD)

and public services. These topics test aspects of SI from the perspective of peripheral areas in

organizational and management theory such as public administration for public services,

marketing for customer related studies and design (for new services development). As the core

aspects of SI and its sources and activities were explored by research topics in the previous

waves, research designs in this wave apply previously established knowledge to new

organizational contexts, that correspond to peripheral research fields, which explains our choice of nomenclature for the three topics included in this wave.

'**Customers**' is the first largest category, with 17.2% of all production on SI. An important share of its papers comes from marketing research. Its first paper dates to 1989 (Warren, Abercrombie & Berl, 1989) and the category had a 10-year gap before its second paper was published in 1999 (Martin, Horne & Schultz, 1999). From 1999 onward, this category has gained strength and at least one paper has been published every one or two years. Ever since 2010, this category has achieved an impressive yearly publication rhythm of more than ten papers.

'**NSD (New Service Development)**' is the next biggest category in SI literature, as 12.7% of papers fit into this category. This category emerges with Scheuing and Johnson (1989) in Stage 1 but it is a long time before a second paper is published. Only in 2006 new papers joined the category (Nijssen, Hillebrand, Vermeulen, Kemp, 2006; Alam, 2006b). From the third research stage on, it finally reaches a constant publication rhythm. The average citation rate for this category is 45.04.

'**Public services**' is the third category in this research field, with 27 papers, or 6.7% of total production. It is the youngest category of all, as its first paper (Pärna & Von Tunzelmann, 2007) only emerged in 2007. In 2008, Windrum and Koch (2008) argue that public services have mostly been acknowledged as highly bureaucratic and non-innovative. The authors then highlight the innovative character of that field by exploring how innovation and entrepreneurial action occur in these services. Public services literature has been later analyzed by Djellal et al. (2013), who point that it had been so far neglected even among innovation studies. However, the authors

argue that innovation in public services could and should be analyzed with the same integrative models already used for the analysis of innovations in services. Nowadays, this category is a promising research field as the literature acknowledges that there is a gap relating to the efficient management of innovation in the public sector. This category represents a theme that is currently expanding.

Research subjects in the third wave appear at different research stages. While customer studies and NSD published their first papers in research stage one (1986-1996), public services only began to be discussed SI in Stage 3 (2007-2010). Marketing studies were quickly incorporated into SI theory in the 1980s and were later followed by research on product and services design. But public administration only began to be considered in SI after 2006. Given the nature of the themes in the third research wave, we name them 'The diffused testers'.

In theoretical terms, we classify the Peripheral applications as 'Novel travelling theories' as they 'are consumed beyond the discipline in which they are produced (…) and concentrate on a single narrow subarea of organizational inquiry (…)' (Oswick *et al.,* 2011, p. 324). As the research topics in this Wave focus on applications of SI theory into subareas of OMT (public services, marketing, design), we argue that the third SI Wave gathers the 'domesticated' theoretical knowledge in SI research field.

4.5 The fourth wave: 'The blending-out themes'

The fourth wave contains one single research topic: **Social innovations**. It is an emergent research topic that gathers nine papers published in 2015 and 2016, or 2.2% of the SI literature. Although social innovation could initially be taken as a model or type of SI, we argue that this is

not the case. As van der Have and Rubalcaba (2016, p. 1925) advocate, knowledge on social innovation is currently fragmented among research communities but is 'on its way to be considered an emerging field'. As social innovation is confirmed to be a research field, its manifestation through services has been explored by researchers focusing on typical SI themes, such as co-creation in services (Merickova, Nemec & Svidronova, 2015; Windrum et al., 2016), SI performance and its relation to corporate social capital (Jian & Zhou, 2015) and civil participation as a driver for innovation in public services (Merickova & Svidronova, 2016). The link between social innovation and service innovation becomes evident with Djellal and Gallouj (2012), who argue that they have been developed in parallel and have shared rare intersections. The authors, however, argue that the dialogue between the two fields of study is the way to reduce the innovation gap in economies and, even more, to allow the emergence of "a new comprehensive innovation paradigm" (Djellal & Gallouj, 2012, p. 134-135).

As van der Have and Rubalcaba (2016) point out, in economics it is commonplace to admit that social innovations result from new service solutions (OECD, 2000) or new services that fulfil social needs (EC, 2013). Evidently, not all social innovations are SIs. However, the papers in this category provide a clear picture of how SI theory has been sharing knowledge with social innovation. Traditional themes for SI appear as state-of-the-art discussions for social innovations: a) co-creation as driver for innovation (Mericknova, Nemec & Svidronova, 2015 and Windrum *et al.,* 2016); b) innovation performance (Jian & Zhou, 2015); service-centered discussions, such as the nature of electronic services (Liao, 2015), and even the use of service science as a source for social entrepreneurship (Peng *et al.,* 2016).

The intersection between SI theory and the emergent research field of social innovation has been following breaking new ground in terms of theory development. By contributing to the

development of Social Innovation theory, we argue that SI research is finally extending some of its 'domestic-knowledge' to a new research field. This does not mean, however, that SI has stopped receiving theoretical inputs from other study fields. In fact, both paths coexist. Just as SI generates useful knowledge for social innovation, for example, the field of social innovation itself also absorbs typical SI knowledge, as shown by Djellal and Gallouj (2012).

Although both movements in the Third and Fourth waves applied SI knowledge into new areas, their reach is somewhat different. When applying SI knowledge to public services, service design or service marketing studies (Third wave), SI theory is being tested within OMT domains, but its basic phenomenon is not being reshaped or reconfigured. In the Fourth wave, however, the phenomenon of SI and its manifestation are being combined with knowledge from OMT-foreigners (Community Psychology, Creativity, Social challenges and Local Development, as defined by Have and Rubalcaba, 2016) in a process known as correspondence, a step forward into 'conceptual blending' (Oswick *et al.,* 2011).

By engaging with a domain external to OMT, social innovation follows a new path in terms of theoretical development, as it abandons the 'theory borrowing' pattern. It is the optimum path in terms of theory development. When borrowing theoretical knowledge from SI and applying it to social innovation concepts, seeking resonance or dissonance, the emerging research field is exercising the highly desirable 'two-way analogical theorizing' (Oswick *et al.,* 2011). As SI seems to be able to finally 'lend' theoretical knowledge, we argue that it represents a new movement for the research field. We name this fourth wave 'The conceptual blending'. We argue that social innovation is the first foreign research domain to borrow from SI, but may be followed by other emerging themes in the future.

Regarding the classification of "social innovation" as a blending-out theme, it should be emphasized that it reflects a specificity of the field. The path developed by "social innovation" is peculiar because it has been developed in parallel to SI, as shown by Gallouj and Djelllal (2018, p.8): "Service Innovation Studies and Social Innovation Studies are two research areas that have developed separately" and "paradoxically, these two research fields, while similar in many ways, seldom intersect". As the two fields of study have developed in parallel and later met in a common point, it is a case of "blending". It is unlike the path followed by public services, for instance, as they faced "the gradual integration (…) (as a field of innovation) into "Service Innovation Studies" (Desmarchelier et al., 2018, p. 1).

4.6 The SI genealogy

By grouping the twelve research topics of the four waves of production on SI, we compose the genealogy of this topic. Our data show that the four waves and their themes – Founding themes, Operationalizing themes, Diffused testers and Blending-out themes – co-exist in the current research stage and actively produce. The theory shows no sign of exhaustion or obsolescence, but is maturing, with three clear stages that result from sequential evolution of the general research questions for an autonomous research field. The genealogy also presents, for each research topic, the year of publication of its first paper. Thus, from a temporal perspective, it is possible to identify that First Wave contains topics that emerged in Stage 1 (1986-1996), while the Second Wave concentrates on topics that emerged in Stages 1 and 2 (1986-2006). The Third Wave contains topics that appeared in Stages 1 and 3 (1986-2010), while the Forth Wave contains only one topic that appeared in Stage 4 (2011 onwards). Figure 3 shows our genealogy for the field.

[Figure 3 near hear]

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5. Conclusions

Our research established an inductive categorization to identify the main research subjects that have shaped the SI literature since the first publication, addressing the didactic challenge of presenting SI story. We argue that 12 research topics summarize the literature in the field over 31 years. We encapsulate the genealogy of SI theory into four waves of theory building: core discussions, constituted by the 'Founding themes' (Performance, Interactions, Industries X Services and Typologies); Sources and Activities, that contains the 'Operationalizing themes' (Knowledge, Capacities, Networks and ICT); Peripheral applications, that contains the 'Diffused testers' (Customers, NSD and Public services); and Conceptual blending, that contains the 'Blending-out themes'. Although these themes have emerged consecutively since the 1980s, the four SI waves actively co-exist today. None of the research themes shows signs of exhaustion in its frequency of publication, meaning that the SI research field is currently active and expanding towards new applications across management studies.

The genealogy is potentially useful for forecasting future advances in the SI literature. The first SI wave emerged in Stage 1 (1986-1996) from launching and diffusing SI's core ideas from the domains of economics into general social sciences such as organizational and management studies. It contains the 'Radical traveling' theories (Oswick *et al.,* 2011) of SI. Unsurprisingly, the two top cited papers Barras, (1986); Gallouj and Weinstein, (1997) fit into this wave and have helped shape the whole literature ever since. While Barras' work acquired a reputation as the 'Technicist approach', Gallouj and Weinstein (1997) contested it by launching the 'Integrative approach'. Such duality has been shaping SI theory since that time.

The second wave focuses on the sources of SI and emerged majorly in Stages 1 and 2 (1997-2006). It contains topics focusing on operational aspects of SI, and is highly oriented to

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discussion of SI theory at a micro level. This research contains the 'Orthodox domestic theories' (Oswick *et al.,* 2011, p. 324) as they are 'consumed by a domestic audience'. The third wave broadened SI's scope by expanding and incorporating its topics into subareas of economics and management that have appropriated the core ideas into their own research subjects. We describe them as 'Novel travelling theories' (Oswick *et al.,* 2011), as they originate from the SI domain, but are tested in other management research areas. Although two of the topics emerged in stage one, they only gained more attention in Stages 2 and 3.

Finally, in its fourth wave, the SI literature faces 'conceptual blending' by offering its 'domestic theories' to the emergent study field of social innovations (Oswick *et al.,* 2011). It is a remarkable movement as it indicates theoretical maturation with the inversion of the flow of knowledge production. As the First wave contained both a radical travelling theory and an innovative domestic theory, it established the emergence of the research field and the beginning of the 'foreign-domestic-domesticated' path (Oswick *et al.,* 2011). As the Second wave gathered multiple orthodox domestic theories, it followed the 'domestication' step. It was quickly followed by the appearance of the 'domesticated' novel travelling theories in the Third wave. But in the Fourth wave, SI is finally moving from borrowing to blending its domestic knowledge into new areas of management studies.

Considering the trajectory SI has experienced so far, future paths are expected to occur in two unfolding scenarios. 1) In theoretical terms, SI is expected to evolve its current, 'domesticated' theory into new 'foreign' areas (Oswick *et al.,* 2011). 'Social innovation' is the first case of 'blending', but the path is likely to get stronger with new research areas emerging in future years by borrowing domestic SI theory to initiate future cycles of 'foreign to domestic to domesticated'. From a domestic perspective, in future SI theory is likely to keep broadening its

offerings of domestic knowledge to foreign research fields until a new corpus of theoretical knowledge emerges (possibly derived from or contradicting Barras and Gallouj), leading to a new cycle of domestic research development. 2) Regarding thematic options, our study reveals that the Founding themes (First wave) have been central to the discussions so far, as they divide the MCA horizontally. As they show no sign of exhaustion, it is likely that they will remain active in the field and will combine with other research themes, either already known or emergent. As MCA frequently indicates topics that are initially close to each other may merge, we expect to see current research topics getting closer to the central themes, as well as future themes emerging and approaching the central ones. Regarding managerial implications, future challenges are likely to arise in in the context of managing emergent forms of innovation (such as social innovation) and tracking performance.

The following three gaps in the current literature constitute a research agenda for the years from 2020 onward. First, following the path of well-established themes, emergent topics such as 'public services' are likely to approach the central area on the MCA through combination with the Founding themes. This means that research designs combining public services and interactions or performance will emerge. Second, partially-established themes that already occupy a central position in the MCA, such as Wave 2 themes, will also produce combinations with partially isolated themes, such as NSD. Finally, Social Innovation is expected to approach the central position in the MCA, as it will become domesticated in its own research field by contributing to domestic SI theory.

In addition, it is also likely that new research topics derived from the single-appearance keywords, that were omitted from the analysis, may arise. For future studies, we recommend

using complementary methods of analysis, not based on frequencies, that can predict future

combinations of the research topics outlined here.

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Table 1

RP production effects on Non-RP production over 10 years

Effect after 1 year from RP publication	0.586857084464089*
Effect after 2 year from RP publication	-0.329715963589089
Effect after 3 year from RP publication	0.857008230395858*
Effect after 4 year from RP publication	-0.632521640353498*
Effect after 5 year from RP publication	0.613719639940182*
Effect after 6 year from RP publication	-0.674923095988458*
Effect after 7 year from RP publication	0.933650844040083*
Effect after 8 year from RP publication	-0.842389110066386*
Effect after 9 year from RP publication	0.724948695604341*
Effect after 10 year from RP publication	-0.47335532863034*

* Significant effects.

Table 2 – Operational and constitutive description of research topics and top-cited papers

Research topics	Operational description	Constitutive description (main original keywords)	Three top-cited papers
Performance	Performance indicators and its measures considering traditional outputs such as value, innovation performance or success, as well as service-typical signals of performance such as quality.	Performance, innovation performance, service quality, value, measurement and success factors.	1. Gallouj, F., & Weinstein, O. (1997). Innovation in services. Research policy, 26(4), 537-556. 2. Barras, R. (1986). Towards a theory of innovation in services. Research policy, 15(4), 161-173. 3. Muller, E., & Zenker, A. (2001). Business services as actors of knowledge transformation: the role of KIBS in regional and national innovation systems. Research policy, 30(9), 1501-1516.
Interactions	Interactions between actors involved on service innovation (customers and service providers). Mostly discusses co-creation, co-production, Service Dominant Logic, service deliveries, service encounters and servitization. It is a strategy associated to service-dominant-logic.	Service-dominant logic, co-creation, value cocreation, interaction, service delivery, servitization, co-production and service encounter.	1. Muller, E., & Zenker, A. (2001). Business services as actors of knowledge transformation: the role of KIBS in regional and national innovation systems. Research policy, 30(9), 1501-1516. 2. Barras, R. (1990). Interactive innovation in financial and business services: the vanguard of the service revolution. Research policy, 19(3), 215-237. 3. Alam, I. (2006). Removing the fuzziness from the fuzzy front-end of service innovations through customer interactions. Industrial Marketing Management, 35(4), 468-480.
Industries X Services	Parallels between industrial innovation and innovations observed in services. Among its main topics are industrial services, manufacturing and new product development related to SI.	Manufacturing, industries x services, industrial services, new product development, operations management, product development and service experience engineering.	1. Barras, R. (1986). Towards a theory of innovation in services. Research policy, 15(4), 161-173. 2. De Brentani, U. (1989). Success and failure in new industrial services. Journal of Product Innovation Management, 6(4), 239-258. 3. Nijssen, E. J., Hillebrand, B., Vermeulen, P. A., & Kemp, R. G. (2006). Exploring product and service innovation similarities and differences. International Journal of Research in Marketing, 23(3), 241-251.
Typologies	Discussions of specific models or types of innovations in services, such as organizational innovation, process innovation, product innovation, radical innovation, relational innovation, systemic innovation or technological innovation.	Organizational innovation, typology, service characteristics, product innovation, radical innovation, innovation mode, lancasterian representation, process innovation, systemic innovations, technological innovation, taxonomy of innovation.	1. Gallouj, F., & Weinstein, O. (1997). Innovation in services. Research policy, 26(4), 537-556. 2. Barras, R. (1986). Towards a theory of innovation in services. Research policy, 15(4), 161-173. 3. Sundbo, J. (1997). Management of innovation in services. Service Industries Journal, 17(3), 432-455.

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Knowledge	Knowledge generation, sharing, management and diffusion across services, mostly on KIBS and KIS. It also accounts for SI critical knowledge generation through R&D (research and development) and open innovation.	KIBS, knowledge, knowledge sharing, knowledge management, knowledge diffusion, R&D and open innovation.	1. Muller, E., & Zenker, A. (2001). Business services as actors of knowledge transformation: the role of KIBS in regional and national innovation systems. Research policy, 30(9), 1501-1516. 2. Drejer, I. (2004). Identifying innovation in surveys of services: a Schumpeterian perspective. Research Policy, 33(3), 551-562. 3. Monica Hu, M. L., Horng, J. S., & Christine Sun, Y. H. (2009). Hospitality teams: knowledge sharing and service innovation performance. Tourism Management, 30(1), 41-50.
Capacities	Organizational and individual capacities for service innovation. Gathers firm capabilities (such as innovativeness) and individual competences (entrepreneurial competences), human capital and learning.	Entrepreneurial orientation, innovativeness, entrepreneurship, dynamic capabilities, innovation policy, competences, innovative capability, motivation, capabilities, drivers, employee-driven innovation, human capital, ideation, innovation capacity, learning and team culture.	1. Drejer, I. (2004). Identifying innovation in surveys of services: a Schumpeterian perspective. Research Policy, 33(3), 551-562. 2. Kandampully, J. (2002). Innovation as the core competency of a service organisation: the role of technology, knowledge and networks. European Journal of Innovation Management, 5(1), 18-26. 3. Chen, J. S., Tsou, H. T., & Huang, A. Y. H. (2009). Service delivery innovation antecedents and impact on firm performance. Journal of Service Research, 12(1), 36-55.
Networks	Networks and their effects on SI mostly by exploring collaborations through partnerships, networks and innovation systems for cooperation (local, regional or national).	Collaboration, networks, innovation networks, information networks, innovation systems, network competence, partner match and cooperation among organizations.	1. Muller, E., & Zenker, A. (2001). Business services as actors of knowledge transformation: the role of KIBS in regional and national innovation systems. Research policy, 30(9), 1501-1516. 2. Goes, J. B., & Park, S. H. (1997). Interorganizational links and innovation: The case of hospital services. Academy of management journal, 40(3), 673-696. 3. De Vries, E. J. (2006). Innovation in services in networks of organizations and in the distribution of services. Research Policy, 35(7), 1037-1051.
ICT	ICT as a locus for SI exploring how communications systems, technology, telecommunications, ICT and IT impact and mediate service innovation.	ICT, IT, technology, technology-based services, mobile communication systems and communication technologies.	1. Magnusson, P. R., Matthing, J., & Kristensson, P. (2003). Managing user involvement in service innovation experiments with innovating end users. Journal of Service Research, 6(2), 111-124. 2. Evangelista, R., & Savona, M. (2003). Innovation, employment and skills in services. Firm and sectoral evidence. Structural Change and Economic Dynamics, 14(4), 449-474. 3. Frambach, R. T., Barkema, H. G., Nooteboom, B., & Wedel, M. (1998). Adoption of a service innovation in the business market: an empirical test of supply-side variables. Journal of Business Research, 41(2), 161-174.

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Customers	Customer behavior, value co-creation and forms of interaction between customers and service providers. As there is no evident unification of terms, it gathers papers using consumer, customer, client or user.	Consumer behaviour, customer service, customer involvement, user innovation, customer satisfaction, customer interaction, customer co-creation, customer orientation, customer experience, customer value, customization and lead users.	1. Alam, I., & Perry, C. (2002). A customer-oriented new service development process. Journal of services Marketing, 16(6), 515-534. 2. Alam, I. (2006). Removing the fuzziness from the fuzzy front-end of service innovations through customer interactions. Industrial Marketing Management, 35(4), 468-480. 3. Oliveira, P., & von Hippel, E. (2011). Users as service innovators: The case of banking services. Research Policy, 40(6), 806-818.
NSD	Design (proposition) of new potentially innovative services (New Service Development) by increasing the chances of breakthrough performance to a new service, gathering service design and ergonomics.	New Service Development, service design, design thinking, design-driven innovation and ergonomic design.	1. Scheuing, E. E., & Johnson, E. M. (1989). A proposed model for new service development. Journal of Services marketing, 3(2), 25-34. 2. Nijssen, E. J., Hillebrand, B., Vermeulen, P. A., & Kemp, R. G. (2006). Exploring product and service innovation similarities and differences. International Journal of Research in Marketing, 23(3), 241-251. 3. Oliveira, P., & von Hippel, E. (2011). Users as service innovators: The case of banking services. Research Policy, 40(6), 806-818.
Public services	Public policies, public sector innovation and innovations in public services. The agenda points at typical public organizations features such as governance and state traditions (De Vries, Bekkers & Tummers, 2015).	Public sector innovation, public service innovation, public services, public-private and public policy.	1. Windrum, P., & García-Goñi, M. (2008). A neo-Schumpeterian model of health services innovation. Research Policy, 37(4), 649-672. 2. Fuglsang, L. (2010). Bricolage and invisible innovation in public service innovation. Journal of Innovation Economics & Management, 5(1), 67-87. 3. Djellal, F., Gallouj, F., & Miles, I. (2013). Two decades of research on innovation in services: Which place for public services? Structural Change and Economic Dynamics, 27, 98-117.
Social innovations	Co-creations among public and private actors, social entrepreneurship, community engagement for innovation, citizenship behavior and civil actions as sources for innovations.	Social innovation, social entrepreneurship, citizen involvement, civil society and social economy.	1. Merickova, B. M., Nemec, J., & Svidronova, M. (2015). Co-creation in local public services delivery innovation: Slovak experience. Lex Localis, 13(3), 521. 2. Sanzo-Perez, M. J., Álvarez-González, L. I., & Rey-García, M. (2015). How to encourage social innovations: a resource-based approach. The Service Industries Journal, 35(7-8), 430-447. 3. Windrum, P., Schartinger, D., Rubalcaba, L., Gallouj, F., & Toivonen, M. (2016). The co-creation of multi-agent social innovations: a bridge between service and social innovation research. European Journal of Innovation Management, 19(2), 150-166.

Figure 1

Stages 1, 2, 3 and 4 in three decades of publications on SI

(1986 to mid-2017)
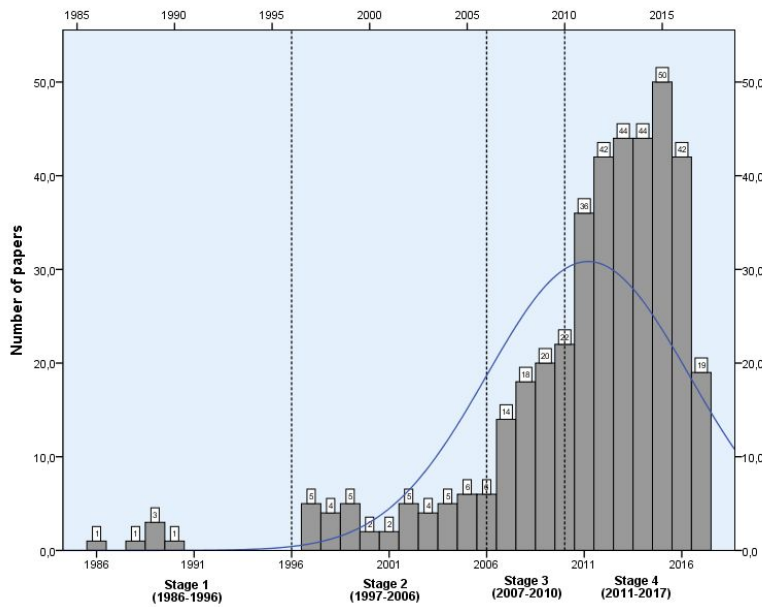
Figure 2

Multiple Correspondence Analysis for 401 papers in 31 years
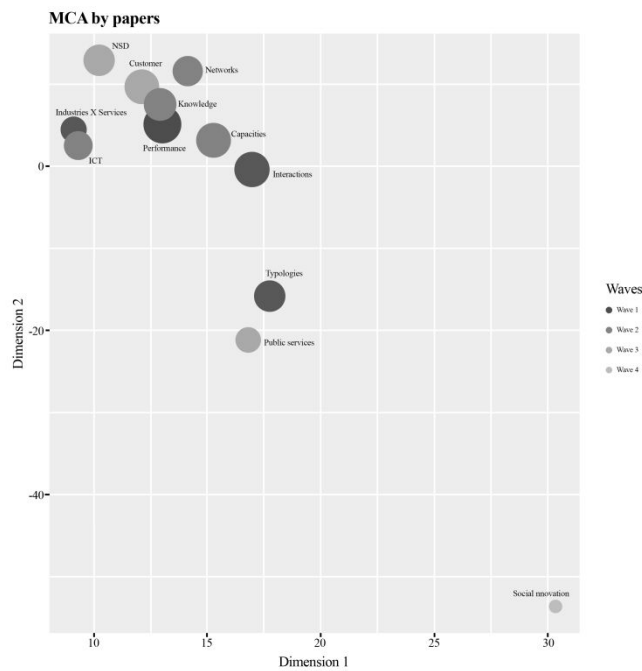
Figure 3

Genealogy of the SI research field
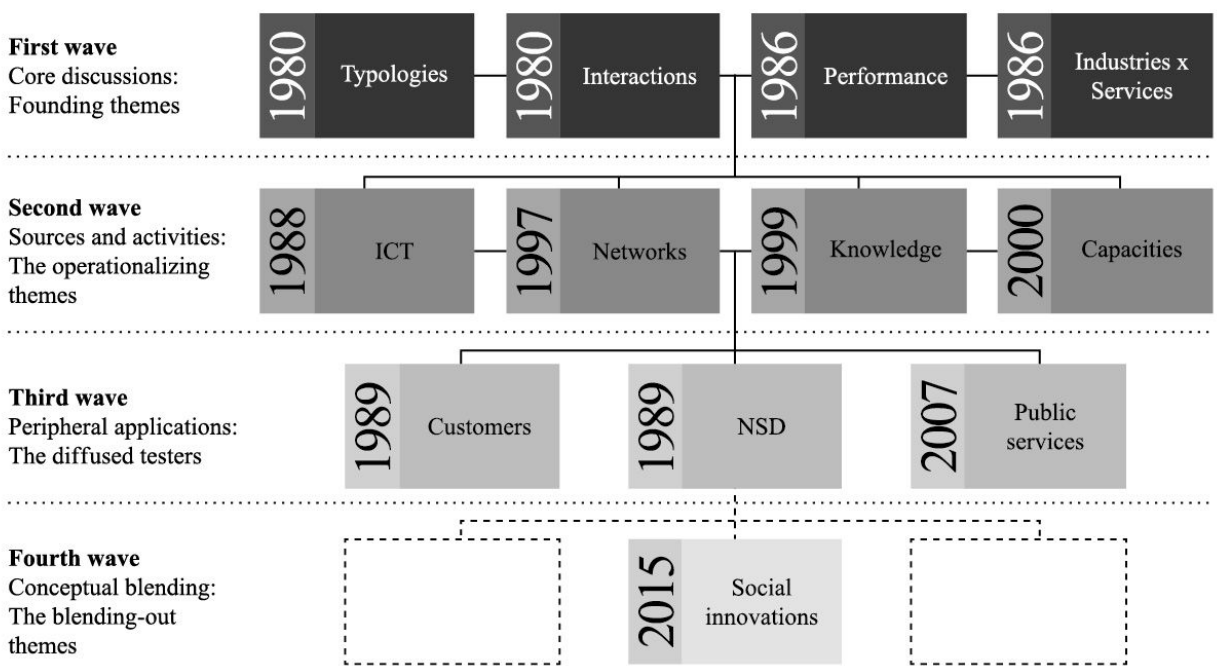
服务创新谱系：研究领域讲述自己的故事

摘要

自 1986 年理查德·巴拉斯发表开创性的论文《迈向服务创新理论》以来，本文以服务创新的产生为研究领域。这项研究源于对服务创新 31 年研究的详尽文献综述，在一些跨领域带来了观点。该研究涉及文献中出现了 12 个关键主题。在服务创新领域中，以及更广泛的研究领域中，涵盖了技术人员，研究人员和政策制定者的发展轨迹。这些领域的发展轨迹借鉴了 30 年前的经济学理论，并在过去 20 年通过对其核心主题的实施而进行演进完善。然后，在组织和管理理论的研究领域内，多次利用其理论前提。已经到了一个阶段，在这个阶段，我们可以借鉴原有服务创新理论以外的理论知识，例如社会创新，并从理论和主题的角度提出了一项研究议程。

关键词：谱系；服务创新；文献综述；服务创新浪潮；研究议程；组织管理理论。

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Table 1

Summarizing of methods applied to compound the service innovation genealogy

Actions	Results
1. Selection of papers from multiple research directories applying "service innovation" as search parameter	4.036 papers
2. Filter of the original 4.036 papers applying three criteria: i) every duplicit was eliminated; ii) whenever possible, the search mechanisms were programmed to result in more specific searches, focusing on social sciences; iii) only papers that discussed, tested or mapped SI were selected	401 papers
3. Composition of a database containing the following information from every paper "directory of origin, journal of origin, year of publication, title, authors, countries of origin for each author, original keywords assigned by its authors and total number of citations on Google Scholar	Database containing 401 papers and 8 variables
4. Presentation of a histogram containing publications per year on SI (Figure 1)	Classification of the stages of publication in SI (I, II, III and IV)
5. In-depth analysis for six top-publishing journals on SI	Classification of journals according to citation rates
6. Extraction of keywords from 401 papers and manual merge to eliminate writing duplicities	1.790 keywords manually merged to 819 different unique keywords
7. Extraction of keywords stated by at least two papers	217 keywords
8. Discard of methodological, geographical or pleonastic keywords	List of 174 keywords appearing 745 times on 401 papers
9. Performance of content analysis on 174 keywords to inductively group them into explicative categories	List of 12 research topics that summarize SI literature
10. Operational and constitutive description of 12 Research topics (Table 3)	List of 12 research topics containing their respective operational description, constitutive description and top-cited papers
11. Performance of MCA containing 12 research topics gathered on 401 papers	MCA presented on Figure 2
12. Distribution of 12 research topics into four service innovation waves in a SI genealogy	Final genealogy presented on Figure 3