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Defining service innovation: A review and synthesis

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ABSTRACT

Research on service innovation appears in several research disciplines, with important contributions in marketing, management, and operations research. Although the concept is widely used, few research papers have explicitly defined service innovation. This dearth of research is the motivation for the present study. Through a systematic review of 1301 articles on service innovation appearing in academic journals between 1979 and 2014, this article examines research defining service innovation. The study identifies the key characteristics within 84 definitions of service innovation in different perspectives (assimilation, demarcation and synthesis) and shows how the meaning of the concept is changing. The review suggests that the large variety in definitions limits and hinders knowledge development of service innovation.

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1. Introduction

Academic research is reflecting an increasing focus on service innovation (Dotzel, Shankar, & Berry, 2013; Ordanini & Parasuraman, 2010) through an increased number of publications and interest from diverse research disciplines (Carlborg, Kindström, & Kowalkowski, 2014; Toivonen & Tuominen, 2009). However, the concept of service innovation is broad and loosely defined and needs further exploration and development (Ostrom et al., 2010). The definition of service innovation is especially problematic because no common understanding exists regarding its meaning (Flikkema, Jansen, & Van Der Sluis, 2007; Toivonen & Tuominen, 2009).

Theory building on service innovation is still novel (Flikkema et al., 2007), which explains the rather vague and dispersed definitions of the core concept. For example, this vagueness can be seen in the interchangeable use of new service development (NSD) and service innovation (Menor, Tatikonda, & Sampson, 2002). In addition, the term service innovation is also used to acknowledge a new service, that is, an invention that has not been successfully introduced on the market (Schumpeter, 1934). Also, contrasting views exist regarding how new an innovation needs to be (Toivonen & Tuominen, 2009) and on how to evaluate the value of an innovation (Skålén, Gummerus, & Magnusson, 2014). By investigating how different definitions of service

innovation address these issues, the vagueness of the service innovation concept can be analyzed.

Through a systematic literature review, this study examines seemingly divergent perspectives of service innovation and identifies unique and shared characteristics in definitions of service innovation. The commonly used assimilation, demarcation, and synthesis perspectives on service innovation (Coombs & Miles, 2000) claim to be separate and distinct, and this study aims to identify how the definitions of service innovation have developed across perspectives. This article presents an exhaustive examination of research on service innovation, particularly research that addresses the problem of conceptualizing and defining service innovation. The basis of the article is a literature review of service innovation research published in academic journals between 1979 and 2014. These articles range across such disciplines as service management, marketing, business, social science, engineering, and health care research. The study uses network analysis and text mining to identify how research defines service innovation and discusses how the definitions of service innovation have developed on four issues (a process or outcome, invention versus innovation, new for whom and exchange value versus use value) across perspectives.

2. Defining service innovation

2.1. Different perspectives in service innovation research

To identify the differences in basic assumptions about service innovation, Coombs and Miles (2000) categorize existing research into three different perspectives: assimilation, demarcation, and synthesis.

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Studies using the assimilation perspective are the most numerous (Gallouj, 2002) and focus on the impact of new technology, which early studies considered the main driver of service innovation (Tether, 2005; Toivonen & Tuominen, 2009). The assimilation perspective can be used to study and analyze service innovation by using and adapting the same theories and instruments developed for traditional product innovation research, but without translation or modification (e.g., Evangelista, 2000; Miozzo & Soete, 2001). An important assumption of this perspective is that the service sector is becoming more technology- and capital-intensive (Gallouj & Savona, 2008). The assimilation approach can be traced back to Pavitt's (1984) sectorial taxonomy for innovation, in which services are supplier-dominated; in other words, service firms are passive recipients of innovations from other sectors.

The demarcation perspective, by contrast, suggests that service innovation fundamentally differs in nature and character from product innovation (Coombs & Miles, 2000). This perspective challenges the theoretical foundation for innovation studies (Drejer, 2004) and argues for new service-specific theories and concepts with which to understand and analyze service innovation (Barras, 1986; Hipp & Grupp, 2005; Tether, 2005). Demarcation researchers argue that studies on innovation have failed to recognize the specificities of services and have overlooked the important contributions that services make to products (Gadrey, Gallouj, & Weinstein, 1995). In particular, demarcation studies illuminate important elements that previous research has neglected (Drejer, 2004; Droege, Hildebrand, & Forcada, 2009). Research has emphasized the peculiarities of service output and processes, such as the intangible nature of services, the need for customer integration, and the contributions of organizational knowledge and non-technological elements (Hipp & Grupp, 2005). Drejer (2004) argued that one of the most important contributions of the demarcation perspective is the expansion of what can be considered an innovation.

The synthesis perspective is a critique of both the assimilation and the demarcation perspectives of service innovation (Coombs & Miles, 2000; Gallouj & Savona, 2008). The main idea of this perspective is that theories on service innovation should be broad enough to encompass innovation in both services and manufacturing (Coombs & Miles, 2000) and should provide an integrative perspective that is not limited to technological innovations. The neo-Schumpeterian view of service innovation (e.g., Drejer, 2004; Fliikkema et al., 2007; Sundbo, 1997; Toivonen & Tuominen, 2009) stresses that economic development is driven by the emergence of new combinations (innovations) that are economically more viable than previous solutions.

Even though all of these perspectives clearly contribute to the development of the broad research field of service innovation, one can argue that the differences in defining the concept and the understanding of what a service innovation is create confusion. Different perspectives of what service innovation entail and lead to different actions and use of different methods, as will be described in the next section.

2.2. Divergence about the definition of service innovation

Well-developed definitions are essential to scientific theory building (MacInnis, 2011; MacKenzie, 2003). MacKenzie (2003) stated that a major shortcoming of many research articles is that they fail to adequately define the focal concept(s) of the study. A definition can be seen as a statement that captures the meaning, the use, and the function of a term or concept (MacInnis, 2011). Precisely defining and labeling constructs is fundamental for knowledge sharing and perspective taking and enables others to understand the theory and be able to criticize and reproduce the observations. MacKenzie (2003) argued that a good definition should specify the concept's conceptual theme in unambiguous terms in a manner that is consistent with prior research and that clearly distinguishes it from related concepts. Failure to define a concept can produce a series of subsequent problems. A theoretical definition must also be followed by an operational definition that translates the verbal

meaning into a prescription for measurement to enable empirical research. Poor conceptualization makes it difficult to develop proper measurements and specify relationships between different concepts, which can undermine the study's credibility. Failure to specify the meaning of a particular concept leaves room for misunderstanding, vagueness, and doubt about the quality of the study.

The debate about what an innovation is and how to define it goes back almost a century (Schumpeter, 1934). Independent of conceptualization, articles differ greatly regarding what service innovation is and how it is used. Building on a Schumpeterian approach, Toivonen and Tuominen (2009 p. 893) defined service innovation as "a new service or such a renewal of an existing service which is put into practice and which provides benefit to the organization that has developed it; the benefit usually derives from the added value that the renewal provides the customers. In addition, to be an innovation the renewal must be new not only to its developer, but in a broader context." This definition highlights some interesting aspects of service innovation. First, the definition separates the outcome of service innovation from the process of development. Second, for an invention to become an innovation, it must be used and put into practice. Third, the invention must be new to one of the actors. Fourth, the invention must create value for some actor. In the following, these four issues will be discussed in detail.

Frequently, researchers do not make clear whether or not they are using the concept of innovation to refer to the innovation process or to the outcome of this process (Toivonen & Tuominen, 2009). Literature on new service development (NSD) commonly views service innovation as a process and often uses the terms NSD and service innovation interchangeably (Menor et al., 2002). For example, Biemans, Griffin, and Moenaert (2015, p. 2) stated that one should view NSD and service innovation as synonymous; they defined both concepts as a "process of devising a new or improved service, from idea or concept generation to market launch". Furthermore, Skålén et al. (2014) argues that the process of developing new services cannot be separated from the implementation and value creation of the new services, and that the two should be seen as different stages of service innovation. In this sense, Skålén et al. (2014) extend the definition of service innovation to include development and realization as well as the outcome. However, doing so creates confusion when talking about successful service innovation, since it is not clear if this statement refers to the successful process or outcome.

Schumpeter (1934) views innovation as a novel combination of new and existing knowledge, which should be clearly distinguished from inventions. Schumpeter argued that to differentiate the new offering from the process of its commercialization and the evaluation of the outcome. While an invention can refer to any new product, service, process, or idea, an invention must be introduced in the market and make a substantial profit before it can be considered an innovation because inventions in themselves have no inherent value. Gummesson (2014) argues that commercialization and diffusion of inventions is of more value to firms and societies than the initial invention. As a consequence, there is a need to distinguish between inventions and innovations.

Interesting differences occur in the interpretation of "new". Schumpeter (1934) argued that innovation not only creates value for the firm that developed it, but also changes the market in such a way that other companies imitate and follow, which leads to development of the branch. While this view of newness is fairly strict, recent developments in the service innovation literature have departed from this view towards regarding new as the degree of newness. Defining innovation based on the degree of newness or novelty is now a common way to categorize innovation (Sundbo, 1997; Toivonen & Tuominen, 2009). A common separation is to divide innovations into radical and incremental, where radical usually refers to innovations that are new to the world and incremental innovations are those that are new to the market (Sundbo, 1997). Following this view, innovations that are only new to the firm that adopts them should not be considered as innovations. Helkkula (2010) stated that companies and other external actors cannot

independently decide whether something is an innovation. This issue was also raised by Hipp and Grupp (2005), who identified that firms have difficulty distinguishing between “real” innovations and incremental customer adaptations.

Traditionally, the benefit of innovations is measured in economic value for the developing firm, although this has changed in recent definitions. Consequently, some researchers who view service innovation as outcome or change instead define value from the customer perspective (Lusch & Nambisan, 2015; Michel, Brown, & Gallan, 2008). The main argument for this change is that defining innovation in the form of economic value for the developer provides a limited view of what an innovation is. Even if a new service creates significant benefits for customers, the service might not generate revenue to the developer. For example, innovation in health care might actually generate increased costs for the developer or society, but can still improve well-being for a patient and provide substantial value to individuals and society. In addition, there is a growing trend for innovations that others can use free of charge, where the benefit for the developer is the intrinsic enjoyment of creating and peer acknowledgment, rather than monetary value (von Hippel, 2005).

Following the debate on the definition of service innovation through the four issues raised above, one could argue that service innovation is likely to be the result of a number of components, contextual aspects, actors, and interactions (Toivonen & Tuominen, 2009). Consequently, innovation research should take a broad perspective of the process for determining what an innovation is. However, a broad definition of service innovation should not be misinterpreted as a vague definition as the latter makes it difficult to know what objects is being studied. Of course, a better understanding and knowledge of the crafting of innovations is essential, both for companies wanting to innovate and theory building. However, this fact does not imply that considering and defining the outcome of this process is less important. In the following section, the present review and analysis of definitions of service innovation used in articles from 1979 to 2014 is presented.

3. Research method

This study used a systematic literature review to identify articles that define or conceptualize the concept of service innovation. In line with MacInnis's (2011) framework for conceptual contributions in marketing, the analysis involves differentiating between perspectives of service innovation. Such a distinction provides a typological framework that illustrates how entities (definitions and articles) are different by revealing the underlying key characteristics of the different perspectives of service innovation. The present study examines not only how the three perspectives are unique, but also what they have in common and whether an emergent perspective of service innovation can be identified.

3.1. Search strategy

The review identified relevant articles (Tranfield, Denyer, & Smart, 2003), which enabled a transparent, documented research process with criteria for including and excluding articles. The systematic review involved the following steps: State research questions, develop guidelines for collecting literature, decide on inclusion and exclusion criteria, develop a comprehensive search plan for finding literature, develop a codebook for classifying and describing literature, code the literature, and synthesize the literature (Tranfield et al., 2003).

The present study explores the various ways in which service innovation has been defined in the literature in order to determine whether the three perspectives differ in their definitions. The main search strategy identified research articles that defined the concept of service innovation. In order to capture this, inclusion and exclusion criteria were developed. The initial inclusion criteria were broad to ensure that all relevant articles were identified, were peer-reviewed empirical or

conceptual articles, were published in English, and were fully accessible and that the main focus was on service innovation or included a definition of service innovation.

A database search was conducted to find articles that contained the following terms in their abstract, title, or keywords: “service(s) innovation” and “innovation in service(s).” The scope of the search was not limited to any particular field, subject of research, or journal so that a full overview of service innovation research could be obtained. However, closely related terms such as service development, was purposely not included (Menor et al., 2002). In other words, this article focuses on defining service innovation as an outcome, not solely as the development process.

3.2. Sample selection

The initial search yielded 1301 empirical or conceptual articles, 1003 of which were in English. Fig. 1 provides an overview of the literature. All articles were scanned for relevance, which revealed two clear trends. First, although many of the articles used the term “service innovation” in the abstract, few actually defined, conceptualized, or emphasized the term. Second, many of those articles that did specifically focus on service innovation did not provide a specific definition of the concept. This lack of a definition provides further merit to our claim that a clear understanding of service innovation is missing in the literature. In total, 300 articles that had a clear focus on service innovation were selected for further analysis.

Two authors independently read the selected 300 articles to ensure that they met the inclusion criteria and to identify those that defined or conceptualized service innovation. Those authors compared and discussed the results; in cases of disagreement, a third author was consulted. The final sample included 84 articles that provided at least one of the following: a clear definition, a conceptualization, or an explicit referral to a specific definition or conceptualization of service innovation.

Several articles on the topic of service innovation used alternative terms such as “innovation” (Hertog, Gallouj, & Segers, 2011) “innovation in services” (Gallouj & Weinstein, 1997), “service-logic innovation” (Michel et al., 2008) and “experience service innovation” (Fuglsang, Sundbo, & Sørensen, 2011). Because these terms are used interchangeably to describe innovation in a service context, all was considered to be alternative concepts for service innovation.

3.3. Data analysis

To analyze the sample of articles, a combination of qualitative content analysis and quantitative analysis was used, which is a method for systematically and objectively evaluating texts (Lombard, Snyder-Duch, & Bracken, 2002). The analysis was conducted in three steps – classification, coding, and text analysis – using qualitative text mining (Feldman & Sanger, 2007). Researchers often face the question of how to summarize text and determine what words and concepts are more significant than others. To go further than merely summarize, quantitative text analysis was used so that our review would be more than just descriptive statistics and qualitatively comparing and present definitions. Text mining, also known as text data mining or knowledge discovery from textual databases, refers to the process of extracting interesting and non-trivial patterns or knowledge from text documents (Feldman & Sanger, 2007). The rationale for this process builds on social network theory, which describes linkages among social entities or nodes in a network and the implications of these linkages and can be used on text to determine which words are significant (Xie, 2005). Different measures of centrality were used to determine the significance of words in definitions and comparing between different perspectives of service innovation. Centrality refers to the positions of the node (in this case, words) within the text. Generally, the higher the centrality measure, the more significant or central the word is to the corresponding network (text).

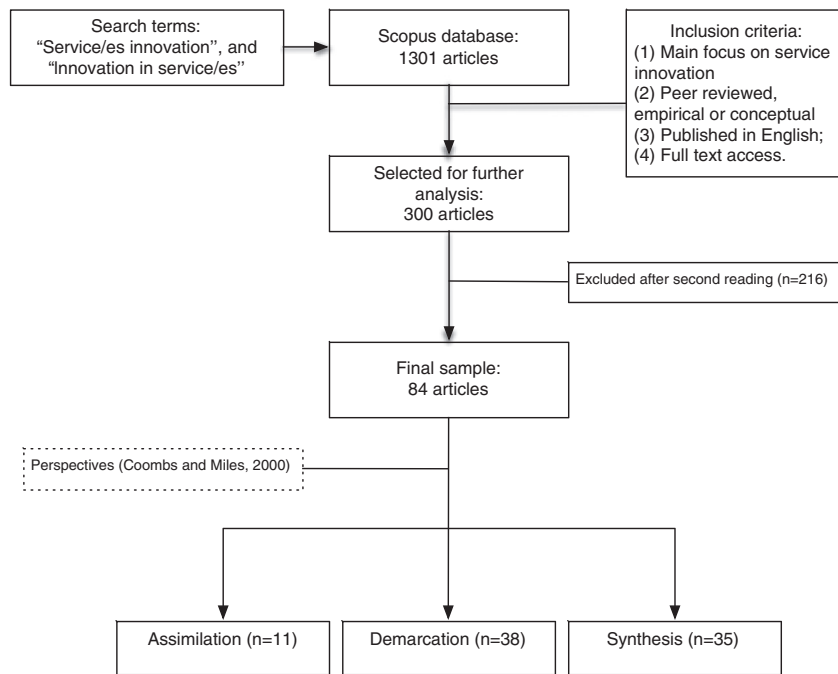


Fig. 1. An overview of the literature review.

That is, influential words are identified through their structural position within the formed networks (Xie, 2005).

All selected articles were downloaded and definitions were captured in digital plain-text format. Each article was then coded according to several predetermined variables, such as context, definitions, approach, and type of study (for example, empirical, conceptual) in order to describe the characteristics of the sample. All definitions were then sorted into Coombs and Miles's (2000) commonly used perspectives of service innovation; namely, assimilation, demarcation, and synthesis. This approach served to analyze and classify the literature on service innovation (Drejer, 2004; Droege et al., 2009; Droege et al., 2009). Perspectives were identified using a combined strategy to classify definitions on the basis of whether authors explicitly did or did not take a position on one of the perspectives (Droege et al., 2009).

The study analyzed the specific definition of service innovation offered in each article; by "cleaning" the definitions from "service innovation is defined as ..." and focusing only on the words included in the actual definition of the concept. In addition, all common words such as "and" or "of" were removed. All text were stemmed, a procedure that involves reducing all words with the same stem to a common form (Lovins, 1968). By using this method, the key characteristics for the definitions of each perspective were identified, summarized and visualized.

4. Findings

Of the 84 articles in the final sample, eleven used an assimilation perspective, 38 used a demarcation perspective, and 35 used a synthesis perspective. This section presents the result of the text analysis, along with a sub-set of illustrative examples of definitions within each perspective.

4.1. Defining service innovation in the assimilation perspective

In the assimilation perspective, most articles that defined service innovation used the term "innovation". This is consistent with the tradition of taking concepts and definitions from product innovation and using them in service research (e.g., Chan, Go, & Pine, 1998; Ko & Lu, 2010; Straub, 2011). The researchers applying this approach did not recognize

service as a separate category; rather, they used the term "innovation" for products, services, and processes. The most central word in definitions of service innovation within the assimilation perspective was "new" (3.80), followed by product (2.32), process (2.19), organization (2.11), service (1.59), and significant (1.40). Combined, this finding indicates that service innovation is viewed as a new product, process, or service that is significantly different from previous offerings. In addition, the terms "organization" (2.11), "benefit" (0.80) and "successful" (0.73) were used, which indicates a focus on outcome or producer of the new service. This is also reflected in the centrality measures for the full-text articles; in addition to "service" (5.06) and "innovation" (4.5), the most central words were "new" (1.96), "firm" (1.86), "risk" (1.24), "management" (1.15), "recourse" (1.11), "process" (1.06), "capability" (1.06), "market" (0.98) and "product" (0.93). (See Table 1 and 2).

4.2. Defining service innovation in the demarcation perspective

The 38 articles adopting a demarcation used a variety of terms to relate to service innovation. The actual term "service innovation" was most common, followed by "innovation" and a number of terms that were only used once, such as "experience service innovation" (Fuglsang et al., 2011) and "product-related service innovation" (Gebauer, Krempf, Fleisch, & Friedli, 2008). This implies that the demarcation perspective is more diverse than the assimilation perspective, not only for the concepts as such, but also for the interpretation of specific concepts (See Table 3).

The most central words in definitions of service innovation within the demarcation perspective were "service" (6.18), "new" (4.84), "change" (1.51), customer (1.37), "offer" (1.30), "firm" (1.23), and "process" (1.15). Notably, "service" was used 1.22 times in each definition. These measures indicate that a view of service innovation as a new service or new offer that entails some form of change for either the firm or customer. However, definitions within the demarcation perspective put less emphasis on the intended benefit of the innovation. Even if some definitions use the term value "value", looking at the frequency, this is only used in 17% of the definitions. In addition, innovation is emphasized as a term in the actual definition, as a result of authors using the word "innovation" in different ways. For example, (Lin, 2012) used "innovation activities," and Carvalho (2010) used "innovation patterns"

Table 1
Definitions of service innovation from an assimilation perspective.

Assimilation		
Source	Term	Definition
Pearson (1997)	Innovation	"Changes in the process of producing existing lines of insurance for example, improvements in risk assessment (new policy conditions, new classifications of existing risks), in marketing, and in organization. Primary product innovation (PPI) can be defined as new products for new risks, which together sometimes constitute new branches of the insurance industry, in the way that, for instance, employers' liability and railway accident insurance formed branches of accident insurance." (p. 238)
Chan et al. (1998)	Innovation	"The purposeful and organized search for changes, and the systematic analysis of the opportunities such changes might offer for economic or social innovation." (p.115) ^a
Ko and Lu (2010)	Innovation	"Technology-based inventions, driven by the emergence of new markets or new service opportunities. (p. 164)
Straub (2011)	Innovation	"Successful launching of new, improved or more competing products, services or organization structures." (p.182)
Brown and Osbourn (2013)	Innovation	"The intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group organization or wider society." (p.188) ^b
Ferreira, Raposo, and Fernandes (2013)	Innovation	"Innovation is the mechanism by which firms design and launch the new products, processes and systems necessary to meeting changes both in marketplace technologies and in models of competition" (p.734)
Björk (2014)	Innovation	"New products, services, systems, and processes" (p. 183)
Giannopoulou et al. (2014)	Service	"A type of product innovation involving the introduction of a service that is new or significantly improved with respect to its characteristics or to its intended uses" (p.25)
Henrike and Schultz (2014)	Innovation	"Creation of solutions, which can either be emerging incremental adaptations or completely new solutions for products, services, or processes to significantly benefit the care situation of patients" (p.330)
Kuo, Kuo, and Ho (2014)	Service Innovation	"A new way of business thinking to reform relatively conservative and inflexible operational procedures and processes, which can transform organizations to better meet the needs of their markets" (p.697)

^a Adopted from Drucker (1985).

^b Adopted from West and Farr (1990).

Table 2
Centrality measures within assimilation.

Definition				Full text			
Term	Occurrences	Frequency	Centrality	Term	Occurrences	Frequency	1.1.1.1.1.1.1 Centrality
New	13	1.18	3.80	Service	1501	136.46	5.06
Product	6	0.55	2.32	Innovation	1756	159.64	4.50
Process	5	0.46	2.19	New	606	55.09	1.96
Organization	5	0.46	2.11	Firm	797	72.46	1.86
Service	5	0.46	1.59	Risk	417	37.91	1.24
Significantly	3	0.27	1.41	Management	460	41.82	1.15
Design	2	0.18	1.23	Resource	172	15.64	1.11
Group	2	0.18	1.23	Process	369	33.55	1.06
Idea	2	0.18	1.23	Capability	135	12.27	1.06
Introduction	2	0.18	1.23	Market	311	28.27	0.98
System	2	0.18	1.23	Product	322	29.27	0.93
Change	4	0.36	1.07	Innovative	241	21.91	0.83
Market	3	0.27	0.91	Model	331	30.09	0.82
Insurance	4	0.36	0.82	Industry	258	23.46	0.77
Benefit	2	0.18	0.80	Result	215	19.55	0.77
Innovation	2	0.18	0.76	Ability	110	10	0.75
Improve	2	0.18	0.73	Offer	99	9	0.75
Launch	2	0.18	0.73	Development	266	24.18	0.73
Successful	2	0.18	0.73	Activity	203	18.46	0.73
Adoption	1	0.09	0.63	System	206	18.73	0.72
Application	1	0.09	0.63	Competency	200	18.18	0.68
Competition	1	0.09	0.63	Level	232	21.09	0.67
Define	1	0.09	0.63	Customer	130	11.82	0.67
Domain	1	0.09	0.63	Knowledge	266	24.18	0.65
Firm	1	0.09	0.63	Variable	241	21.91	0.63

in their definitions of service innovation. In the full-text articles, in addition to "service" (4.03) and "innovation" (3.18), terms such as "firm" (1.19), "new" (1.1), "market" (0.94), "management" (0.89), "customer" (0.8) were the most central words (See Table 4).

Even if this still suggests an internal focus in terms of firm and management, in comparison to the assimilation perspective, the centrality of customers is emergent both in definition and full text.

4.3. Defining service innovation in the synthesis perspective

The synthesis perspective includes 35 articles that defined service innovation. "Service innovation" and "innovation" were the two most used concepts, followed by concepts that were only used in individual studies, such as "health-service innovation" (Windrum & García-Goñi,

2008) "service-logic innovation" (Michel et al., 2008), "innovation in services" (Sundbo, 1997), and "market-creating service innovation" (Berry et al., 2010). The greater reliance on the concepts of service innovation and innovation is consistent with the purpose of the synthesis perspective, which is to encompass all types of innovation (See Table 5).

The most central word in definitions of service innovation within the synthesis perspective was "service" (3.23), followed by "new" (2.78), "change" (1.4), "customer" (1.35), "product" (1.2), and "process" (1.18). Similarly to the demarcation perspective, the centrality measures indicate that service innovation is viewed as a new service, product or process that implies some degree of change for the customer. However, within definitions of service innovation in the synthesis perspective, the emphasis on the benefit is slightly higher as both "value"

Table 3
Definitions of service innovation from a demarcation perspective.

Demarcation		
Source	Term	Definition
Oke (2007)	Service innovation	"New developments in activities undertaken to deliver core service products for various reasons, e.g. to make those core service products more attractive to consumers." (p. 566)
Gebauer et al. (2008)	Product-related service innovation	"An offering not previously available to a firm's customers, resulting from additions to or changes in the service concept." (p. 388)
Chen, Tsou, and Huang (2009)	Service delivery innovation	"May be regarded as novel mechanisms of delivery that offer customers greater convenience and improve a firm's competitive position." (p. 39)
Cheng and Krumwiede (2010)	Service innovation	"Fundamental change in services that represent revolutionary changes in technology or service benefits." (p.162)
Lin, Chen, and Chiu (2010)	Service innovation	"Manufacturers' engagement in various innovation activities to enhance customer satisfaction, including after-sale services, warranty policy, maintenance routines, and order placement systems." (p. 114)
Love, Roper, and Hewitt-Dundas (2010)	Service innovation	"New or significantly improved service" (p. 987)
Salunke, Weerawardena, and McColl-Kennedy (2011)	Service innovation	"As the extent to which new knowledge is integrated by the firm into service offerings, which directly or indirectly results in value for the firm and its customers/clients." (p. 1253)
Enz (2012)	Service innovation	"The introduction of novel ideas that focus on services that provides new ways of delivering a benefit, new service concepts, or new service business models through continuous operational improvement, technology, investment in employee performance, or management of the customer experience." (p.187)
Jian and Wang (2013)	Service innovation	"Enterprises' intangible activities formed in the process of service, using a variety of innovative ways to meet customer needs and maintain competitive advantage." (p. 27)
Breunig et al. (2014)	Service Innovation	"New service experience or service solution that consists of one or several of the following dimensions: a new service concept, new customer interaction, new value system/business partners, new revenue mode or new organizational or technological service delivery system" (p.46)

Table 4
Centrality measures within demarcation.

Definition				Full text			
Term	Occurrences	Frequency	Centrality	Term	Occurrences	Frequency	Centrality
Service	56	1.22	6.18	Service	7642	166.13	4.03
New	38	0.83	4.84	Innovation	5995	130.33	3.18
Change	12	0.26	1.51	Firm	2211	48.07	1.19
Innovation	18	0.39	1.38	New	2060	44.78	1.1
Customer	15	0.33	1.37	Market	1761	38.28	0.94
Offer	10	0.22	1.30	Management	1650	35.87	0.89
Firm	12	0.26	1.23	Customer	1485	32.28	0.8
Process	12	0.26	1.15	Research	1299	28.24	0.7
Product	8	0.17	0.98	Product	1260	27.39	0.68
Market	5	0.11	0.96	Business	1167	25.37	0.63
Introduce	5	0.11	0.80	Process	1081	23.5	0.59
Organization	5	0.11	0.77	Performance	917	19.93	0.5
Delivery	5	0.11	0.76	Value	911	19.8	0.49
Technological	4	0.09	0.75	Model	840	18.26	0.45
System	6	0.13	0.74	Capability	747	16.24	0.4
Value	8	0.17	0.71	Development	738	16.04	0.4
Result	7	0.15	0.68	Knowledge	724	15.74	0.39
Organizational	3	0.07	0.57	Industry	712	15.48	0.38
Offering	5	0.11	0.56	Strategy	674	14.65	0.37
Development	3	0.07	0.54	Organization	605	13.15	0.33
Previously	4	0.09	0.53	Resource	599	13.02	0.32
Deliver	4	0.09	0.53	Technology	571	12.41	0.31
Idea	3	0.07	0.53	Relationship	560	12.12	0.30
Individual	5	0.11	0.53	Orientation	549	11.75	0.29
Core	2	0.04	0.52	Innovative	537	11.38	0.29

(0.64) and "benefit" (0.63) is put forward. This point also emerges in the in full text; in addition to the centrality of "service" (4.08) and "innovation" (3.81), the terms "firm" (1.43), "new" (1.07), "customer" (0.89), "process" (0.83), "market" (0.76), "knowledge" (0.67), "product" (0.64) and "value" (0.59) were identified as the most central words (See Table 6).

5. Discussion

5.1. A shared view of service innovation as a new service

The view of service innovation as a new service (offering) cuts across the three perspectives of assimilation, demarcation, and synthesis. In the assimilation perspective, "new" and "service" have the highest centrality

measures in the full-text analysis. For demarcation and synthesis "new" and "service" come out as the characteristics most central in the definitions (not the full text analysis). Interestingly, the word "new" was used more than once in each definition, on average. It seems that simply defining service innovation as a "new service" is the most common interpretation, which implies that every firm, to some extent, is innovative and develops service innovations. However, viewing service innovation, as a new service is not without problems, since "new" is a relative concept (Toivonen & Tuominen, 2009). A greater emphasis on newness suggests a radical service innovation and newness can mean new to the firm (Mansury & Love, 2008), new to a market, or new to the world (Mansury & Love, 2008; Toivonen & Tuominen, 2009). The conceptualization of service innovation should extend beyond a new service for a firm and put real meaning behind the characteristic "new." By emphasizing

Table 5
Definitions of service innovation from a synthesis perspective.

Synthesis		
Source	Term	Definition
Gallouj and Weinstein (1997)	Innovation	"Any change affecting one or more terms of one or more vectors of characteristics (of whatever kind—technical, service or competence)" (p. 547)
Van der Aa and Elfring (2002)	Innovation	"It encompasses ideas, practices, or objects which are new to the organization and to the relevant environment, that is to say to the reference groups of the potential innovator." (p. 157)
Michel, Brown, and Gallan (2008)	Service-logic innovation	"Finding new ways of co-solving customer problems." (p. 50)
Berry et al. (2010)	Market-creating Service innovation	"An idea for a performance enhancement that customers perceive as offering a new benefit of sufficient appeal that it dramatically influences their behavior, as well as the behavior of competing companies." (p.156)
Toivonen and Tuominen (2009)	Service innovation	"New service or such a renewal of an existing service which is put into practice and which provides benefit to the organisation that has developed it; the benefit usually derives from the added value that the renewal provides the customers. In addition, to be an innovation the renewal must be new not only to its developer, but in a broader context, and it must involve some element that can be repeated in new situations, i.e. it must show some generalizable feature(s)." (p.893)
Ordanini and Parasuraman (2010)	Service innovation	"Offering not previously available to the firm's customers—either an addition to the current service mix or a change in the service delivery process—that requires modifications in the sets of competences applied by service providers and/or customers"
Love, Roper, and Bryson (2011)	Innovation	"The commercial application of new knowledge." (p. 1438)
Cho, Park, and Kim (2012)	Service innovation	"Introduction of new or significantly improved services and products." (p. 377)
Santamaría, Jesús Nieto, and Miles (2012)	Service innovation	"New services have been introduced into the market, or (ii) existing services have been significantly improved or important changes have been made to their basic characteristics, intangible components or desired purposes. (p.148)"
Skälén et al. (2014)	Service innovation	"The creation of new value propositions by means of developing existing or creating new practices and/or resources, or by means of integrating practices and resources in new ways" (p. 137)

Table 6
Centrality measures within synthesis.

Definition				Full text			
Term	Occurrence	Frequency	Centrality	Term	Occurrence	Frequency	Centrality
Service	35	1	3.23	Service	10,872	221.88	4.08
New	34	0.97	2.78	Innovation	10,109	206.31	3.81
Change	11	0.31	1.4	Firm	3738	76.29	1.43
Customer	13	0.37	1.36	New	2818	57.51	1.07
Product	15	0.43	1.20	Customer	2329	47.53	0.89
Process	12	0.34	1.18	Process	2169	44.27	0.83
Exist	10	0.29	0.99	Market	2004	40.9	0.76
Innovation	12	0.34	0.87	Knowledge	1775	36.22	0.67
Market	9	0.26	0.82	Product	1661	33.9	0.64
More	7	0.2	0.69	Value	1550	31.63	0.59
Value	8	0.23	0.64	Study	1502	30.65	0.58
Benefit	7	0.2	0.63	Management	1489	30.39	0.57
Characteristic	5	0.14	0.59	Business	1486	30.33	0.57
Offer	5	0.14	0.55	Development	1042	21.27	0.40
Firm	6	0.17	0.54	Industry	1025	20.92	0.39
Idea	5	0.14	0.53	Activity	920	18.78	0.36
Perceive	4	0.11	0.53	Manufacture	908	18.53	0.35
Practice	6	0.17	0.52	Technology	874	17.84	0.34
Create	6	0.17	0.51	Organization	854	17.43	0.33
Develop	5	0.14	0.5	Change	851	17.37	0.33
Element	4	0.11	0.49	Effect	857	17.49	0.33
Significantly	5	0.14	0.45	Develop	821	16.76	0.32
Behavior	4	0.11	0.42	Organization	854	17.43	0.33
Performance	4	0.11	0.42	Change	851	17.37	0.33
Improve	5	0.14	0.42	Effect	857	17.49	0.33

newness, researchers and managers can identify which organizational arrangements are necessary in order to develop radical service innovations.

5.2. What characterizes service innovation in assimilation, demarcation, and synthesis research?

This research questions the suggestions posed by prior research that synthesis is replacing assimilation and demarcation in research on service innovation (Carlborg et al., 2014). Based on our systematic review, the prevalence of the synthesis perspective seems to have been overstated; while the synthesis perspective is growing and gaining strength, the number of articles adopting assimilation or demarcation perspectives has neither decreased nor disappeared. As an example,

recent papers have defined service innovation according to the assimilation perspective (e.g., Björk, 2014; Castellacci, 2014; Giannopoulou, Gryszkiewicz, & Barlatier, 2014; Henrike & Schultz, 2014), which suggests that the assimilation perspective might even be regaining its strength. In the following, this research will highlight the differences between the definitions of service innovation in the three perspectives and question and explain why the relevance of the service innovation concept might be lost (See Table 7).

To emphasize the differences in perspectives different labels to specify the concept's conceptual theme can be used. The use of the terms "innovation" for assimilation, "services innovation" for demarcation, and "service innovation" for synthesis is consistent with the origin and key characteristics used in each perspective. Labeling the concept to

Table 7
Overview of how the three perspectives of service innovation define service innovation.

	Assimilation	Demarcation	Synthesis
Description	A perspective of service innovation suggesting that knowledge on product innovation holds for all types of offerings.	A perspective of service innovation suggesting that innovation in service industries is unique and needs to be treated different from other types of offerings.	A perspective of service innovation suggesting that service as a perspective can be used to understand innovation in all types of offerings.
Core concept	Innovation	Services innovation	Service innovation
Key characteristics (Def.)	Product, process, organization, and significantly	Change, customer, offer, and firm	Change, customer, product, process, exist, more, and value
Service innovation as a process or outcome	Outcome	Outcome	Process and outcome
Invention versus innovation	Innovation	Invention	Invention
New for whom	World	Firm	Firm
Exchange value versus use value	Exchange value	Use value	Use value
Core references	Ko and Lu (2010), Pearson (1997)	Hertog, Gallouj and Segers (2011), Agarwal and Selen (2009)	Gallouj and Weinstein (1997), Sundbo (1997), Drejer (2004)

emphasize its characteristics enables researchers to be more stringent in defining and using the service innovation concept and helps make it clearly distinguishable from related concepts (MacKenzie, 2003).

The assimilation perspective involves a technological view of innovation and is driven by the development of new technology that can contribute to the development of significant different offerings (Coombs & Miles, 2000). In line with Schumpeter (1934); Ko and Lu (2010, p. 164) suggested that innovations are “technology-based inventions, driven by the emergence of new markets or new service opportunities.” In other words, the assimilation perspective aligns itself with the Schumpeterian view of innovation, focusing on innovation as an outcome that is new to the world and creates exchange value for the firm. The definitions of innovation signal an internal perspective on innovation, emphasizing key characteristics such as product, process, and organization, and suggesting that an innovation that is technological and significantly different from an existing to a new solution should have economic consequences for the firm. This type of definition can explain the emergence of better online banking or search engines, but it only tells part of the story.

The demarcation perspective works well for understanding innovation in specific industries, such as health care, retailing, and tourism. The key characteristics revealed by the text analysis are change, customer, offer and firm. The firm and customer dichotomy shows a traditional view of the different actors in value creation; namely, that service innovations appear in a business relationship between two actors. Hertog et al. (2011), p. 1436) argued that a service innovation can be described as “a new or considerably changed (new to the firm) product or service ... or introduced a new or considerably changed (new to the firm) process innovation.” In the demarcation perspective, the definition of service innovation starts to break free from a Schumpeterian view of innovation in that it concerns the outcome, but focuses on inventions that are new to the firm. This definition suggests that the change in the offering does not need to be substantially new, introduced in the market, or make a substantial profit in order to be considered a service innovation. In practice, this means that all service firms develop service innovations.

Theories and methods of service innovation in the synthesis perspective depart from a service logic (Michel et al., 2008). In particular, the key characteristics in the definitions of service innovation are viewed as change, customer, product, process, exist, more, and value. This perspective implies a value proposition as a platform for value cocreation in the customer context and that both product and process can be part of the value proposition offered to customers as a service innovation (Skålén et al., 2014). Cullen (2008, p. 255) described service innovation as being “created with a particular value proposition in mind, which enables the user of the service to create value for themselves or their community.” Schumpeter has influenced the synthesis perspective, but in certain aspects its conceptualization of service innovation moves away from the original ideas. While Schumpeter (1934)

argued that the process of developing a new offering should be differentiated from the process of its commercialization and evaluation of the outcome, a synthesis perspective views service innovation as both the development process and its outcome. Skålén et al. (2014 p.137) defined service innovation as “the creation of new value propositions by means of developing existing or creating new practices and/or resources, or by means of integrating practices and resources in new ways.” The interpretation of a service innovation in this sense is that it can be a new development process or its outcome that is new to the firm and creates value in use, but does not have to be introduced on the market. The lack of precision in the service innovation concept makes it ambiguous and does not distinguish it from related concepts such as new service development.

5.3. Implications for research and practice

This systematic review of existing research on service innovation makes a contribution to understanding what a service innovation is. Previous literature reviews on service innovation have performed qualitative (e.g., Carlborg et al., 2014) or descriptive (Biemans et al., 2015; Papastathopoulou & Hultink, 2012) analyses, including literature on NSD. To extend previous research, our study uses network analysis and text mining to achieve a detailed understanding of the key characteristics of service innovation. Specifically, this research contributes by identifying the characteristics in the definitions, and the development of the view of service innovation used in assimilation, demarcation, and synthesis perspectives. Using network analysis and text mining, this systematic review provides several significant contributions to the theoretical understanding of service innovation.

First, much of the research on service innovation has failed to define the focal concept (MacKenzie, 2003). Although there is, to some extent, a shared view of service innovation as a “new service”, this is an insufficient definition suggesting that all firms develop service innovations. Using a theoretical, practical or policy perspective it is not fruitful to claim that all firms are innovators, since it will not help us to understand how innovations can help to build brands, firms or societies. For example, in the assimilation perspective, innovation often means “radical technical innovation”; in the demarcation perspective, it often means “small process adaption” for a firm; in the synthesis perspective, it often refers to skills in new service development. Sharing an overall view of service innovation enables theory building and research to better operationalize service innovation in further empirical studies.

Second, the present study identifies the key characteristics in definitions of service innovation in each perspective. Product and process exist in definitions across all three perspectives, but have proven insufficient for understanding service innovation (Gallouj & Savona, 2008). In addition, the definitions of service innovation in each perspective also emphasize unique key characteristics. Definitions in the

demarcation perspective introduced the firm and customer dichotomy (Oke, 2007; Gebauer et al., 2008), while definitions in the synthesis perspective started to emphasize value (Skålén et al., 2014). Through introducing new key characteristics in the definition of service innovation, service research has contributed with a broadened perspective on what constitutes an innovation.

Third, Schumpeter (1934) was clear in his distinction between the development process, the outcome, and the commercialization of innovation. However, this distinction seems to have been lost in present research following a demarcation or synthesis perspective on service innovation. These two perspectives often include the development process defining the concept of service innovation; and that the commercialization process is ignored through the change of focus from exchange value towards use value. Although, this enables service researchers to identify new traits of service innovation it also hinders further theoretical development since it will not help to explain why some new services become successful and others not.

Different perspectives of service innovation can explain the content and emergence of different types of innovations. Companies simply need to balance their innovation efforts. In this classic dilemma, companies must make trade-offs between exploitation and exploration or incremental and radical innovation if they are to survive, let alone prosper. Service innovation adds a new dimension to the balancing effort (Gebauer et al. 2011), and, as seen above, several perspectives are necessary to understand how to succeed with service innovation.

5.4. Limitations and further research

The present study has certain limitations. As with other literature reviews in marketing and service management, the study only includes studies published in academic journals and have excluded books and other literature that could have been relevant. In addition, the study only included research on service innovation using our selected search terms in the title, abstract, or keywords. In particular, this limitation could affect the sample of articles taking an assimilation perspective. Literature on innovation might employ an assimilation perspective using services as an example of innovation without using the term “service innovation.” Such studies are not included and instead the study focused solely on articles that define the concept of service innovation. As a result, many articles that do not explicitly define service innovation are not included. To advance understanding of service innovation, further research should address these identified shortcomings.

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