



A Brief History of Service Innovation: The evolution of past, present, and future of service innovation

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ABSTRACT

Service innovation emerged more than a decade ago and is considered as the main source of competitive advantage between the market and firms. Due to the growing attention to service innovation in recent years, this study investigates the phenomenon of service innovation in greater depth to understand how service innovation has emerged, evolved, and how it will potentially advance. Considering a systematic investigation, the foundational research areas and historical development of service innovation are explored by conducting a comprehensive performance analysis (qualitative and quantitative) employing 255 articles published in two periods between 1970 and 2021. The results revealed four distinguishable clusters with each showing different characteristics of the service innovation domain including: resource focus, process focus, solution focus, and actors' focus. In particular, we analyse which research streams are related to service innovation and compare these themes over time. The findings show that the major themes in the first period (1992–2014) included innovation, customer, service, and product, while the second period (2014–2021) encompassed service, customer, value, and information as the main themes. This paper supports the assertion that service innovation has an interdisciplinary theoretical foundation and that the structure of the foundation of service innovation research changed significantly over time.

1. Introduction

The burgeoning acceleration of technological advancement has shifted the service innovation domain drastically. Service innovation is regarded as the key cause of growth and differentiation. Hence in the previous decades, it has become the increasing focus of a large body of research (Witell et al., 2016), and it was recognized as a high priority for service researchers (Gustafsson et al., 2020; Ostrom et al., 2015). Thus, innovation has become a multifaceted and rich field of knowledge.

Previous literature on the development and future of service innovation has characterized service innovation as an evolving, fragmented research domain (Gustafsson et al., 2020). A number of scholarly works have attempted to provide an overview of the service innovation domain (e.g., Carlborg et al. 2014; Snyder et al. 2016; Witell et al. 2016). To begin with, Aas and Pedersen (2010) recognized five key classifications of possible firm-level impacts in service innovation that involve (1) relationship effects, (2) business process effects, (3) competitiveness effects, (4) capability effects, and (5) financial performance effects; however, they did not illustrate the causal relationships among these

effects. Looking at the evolution of service innovation, Carlborg et al. (2014) conducted a systematic review of 128 articles that were published during 1986 and 2010 and clarified three evolutionary phases for service innovation - maturity, multidimensional, and formation phases. On the other hand, they emphasised the need for continuous research and adaptation, particularly when technologies and market needs evolve rapidly.

Randhawa and Scerri (2015) distinguished characteristics and dimensions of service innovation. Furthermore, Witell et al. (2016) carried out a systematic literature review to summarise the key characteristics of service innovation from different perspectives including assimilation, demarcation, and synthesis. However, the only contribution this made to the literature was to identify the characteristics in the definitions. A further factor that triggered greater focus on service innovation was the societal challenges associated with sustainability. According to Calabrese et al. (2018), through addressing the emerging field of sustainability-oriented service innovation, as well as providing insights into the ways in which service innovation can contribute to sustainability goals, there is already hope for the future of sustainability. Furthermore, they

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explained the three main streams of research in sustainability-oriented service innovation in a theoretical context; these are product-service systems, service innovation, and sustainability-oriented innovation. Additionally, as interest in service innovation has grown, Singh et al. (2020) applied the TCCM (theory, context, characteristics, methodology) framework to explore understudied topics in the research domain of service innovation.

While each paper and study has its own individual contributions, each faces a number of limitations. Looking at a recent literature review on service innovation, we identify some of these limitations including the selection of database (Lee et al., 2019; Salam et al., 2021; Singh et al., 2020; Witell et al., 2016); focusing only on the typology of innovation (Klarin, 2019); existing of diverse conceptual categories that demonstrate the need to integrate service innovation domain (Peixoto et al., 2022; Shin and Perdue, 2022); how employees' knowledge sharing and training could lead to creating ideas for new services (Kit-sios and Kamariotou 2019); literature failure to demonstrate different innovation types in industrialised and developing countries (Klarin, 2019), and the need to development and design new models in service innovation (Calabrese et al., 2018).

With these considerations in mind, the overarching research field in service innovation is still lacking (Belanche et al., 2020; Kim and Chung, 2017; Singh et al., 2020), and needs more studies to fill these gaps. In accordance with Lim (2022), this research is motivated by signposting the necessity, importance, relevance, and urgency criteria for study. Hence, this paper responds to some of these limitations by (1) considering different sources of articles and search strings (necessity), (2) investigating more deeply the phenomenon of service innovation to understand how it has emerged, evolved, and how it will potentially advance which will help to integrate more service innovation literature (importance and relevance), (3) unlike prior studies, not relying solely on personal conjecture and collections of articles (importance) and (4) since service innovation has grown significantly over the past few decades, as well as, limited research has been conducted on the trends and evolution of this domain, it is vital to identify the most attractive opportunities in service innovation (urgency). To investigate the foundation, current, and future evaluations of the service innovation domain, the focus is on data in the form of published research. Towards that direction, we employ bibliometric reviews as automated or semi-automated tools, which is prone to bias. Additionally, systematic literature reviews (SLRs) provide state-of-the-art insights about a focus phenomenon, whereas there can be no new insights gained from systematic literature reviews in a domain with existing systematic literature reviews (Paul et al., 2021).

In general, the most fundamental approach to evaluate any given research domain is to categorize previous research in a qualitative author-driven arrangement (Chabowski and Samiee, 2020). Despite this, our systematic approach to evaluation differs from previous research on service innovation. Furthermore, we examine citations and co-citations as part of a rigorous methodological approach (Chabowski et al., 2018) to investigate the historical foundation and current network of researchers who have contributed to the development of service innovation. As references are considered a good proxy for the stream of studies that influence an article, co-citation analysis can offer valuable insights into the historical foundation of service innovation. Text mining was also used to analyse the lexicon of service innovation to understand how it has formed a joint action (Berger, 2014). We applied text mining to complement our co-citation analysis so as to identify links, structures, and relationships among constructs by studying the co-occurrences of words in a text (Fairclough, 2003).

While service innovation has grown significantly over the past few decades, only limited research has been conducted on how it has developed and evolved in the preceding decades, particularly as its theoretical base has changed significantly. This scholarly work aims to explore the past, present, and possible future of the service innovation domain to evaluate the future contributions and the current progress in

this growing area. Our study was prompted by a desire to understand how service innovation has emerged, evolved, and how it can potentially advance. These prominent questions prompted this study: (i) What are the main research areas that have made a contribution to the development of service innovation? (ii) How has the conceptual structure of service innovation evolved and emerged? (iii) What are the central themes and concepts in the evolution of service innovation in different time periods? (iv) What is the future of service innovation?

In addressing these questions, we incorporate relevant insights from a variety of research domains, which we use to make four significant contributions to service innovation. *First*, using an objective, systematic methodology, we map service innovation research across and beyond service disciplines, which enables us to streamline the fragmentation and diversity of this literature stream. *Second*, our study creates a visual representation of the theoretical basis and evaluation of service innovation through the combination of several methodologies. Through linking identified methodologies and theories from various disciplines, this study identified related theoretical foundations, methodological toolkits, and research gaps. *Third*, we propose to future scholars a future agenda for integrating concepts and theories from service innovation and any other relevant disciplines to enhance research into service innovation. This study emphasizes the importance of studying service innovation in a systematic and multidisciplinary way in order to integrate the current understanding of this controversial research topic. *Last*, we use methods from bibliometric studies such as co-citation and text mining to improve traditional literature reviews, which have biases associated with them. Instead of relying on personal speculation and recollection, the co-citation method collects information from scholarly articles and provides a systematic assessment of literature's current status, origin, and evaluation. Furthermore, previous research shows that the text mining method assists researchers in eliminating bias in text dictionary development, concept correlation, text coding, and concept mapping phases (Liesch et al., 2011; Stead et al., 2022).

Following is an overview of the service innovation domain and the various theoretical perspectives that have predominantly appeared in the literature. It is then discussed in greater depth. Afterwards, our quantitative and scientific findings are presented. We conclude our article by proposing future suggestions for service scholars in their service innovation attempts and implementation activities.

2. Evolution of service innovation

Since its beginning, the service innovation research domain has benefited from the variety of theoretical roots for its evolution. To begin with, based on Wernerfelt (1984), the Resource-based view (RBV) asserts that a company's base must be its resources if it is to gain a sustainable competitive advantage. The evaluation of the RBV resulted in the emergence of dynamic capabilities approach to address the shortcomings of the RBV. Looking at its evolution, the dynamic capabilities extension of the RBV argues that firms can gain a competitive advantage if they are able to supply a timely, accurate, and strategic response to market needs (Helfat and Peteraf, 2003). Consequently, absorptive capacity can facilitate the process of generating innovative service offerings (innovative capabilities) by enabling knowledge exchange and combining it with new actors' resources (adaptive capabilities) (Ritala and Hurlmelinna-Laukkanen, 2013).

Another trigger for the increased attention paid to service innovation is market-oriented. Market orientation involves features which are desirable for accommodating future customer needs by offering innovative value offerings. According to the market orientation theory, businesses need to position their products and services so that consumers realize the value they provide, and trust that they need them. In fact, market orientation as a business concept establishes its priorities as customer-oriented, competitor-oriented, and inter-functional-oriented (Chikerema and Makanyeza, 2021; Kotler and Keller, 2006). A study on the performance of small and medium enterprises' (SMEs')

Table 1
Recent literature review on service innovation.

Reference(s)	Title	Description	Sample Size and analysis	Findings	Limitations and future suggestions
Peixoto et al. (2022)	Factors that influence service innovation: a systematic approach and a categorization proposal.	Enhancing the academic debate about service innovation.	The coding scheme was used to analyze 99 relevant empirical papers from Scopus over a period of 2006 to 2020.	In service innovation, there is a lack of conceptual consolidation. Even among different service segments, there is no evidence of differentiation among innovation factors between service and manufacturing empirical papers.	Discovering the high quantity of diverse conceptual categories that demonstrate service innovation is still far from a conceptual integration. The need for a more consolidated service innovation conceptual framework creates the opportunity for future work. Future research may incorporate the processes of innovation creation, diffusion, and evaluation into the study of hospitality and tourism service innovation.
Shin and Perdue (2022)	Hospitality and tourism service innovation: A bibliometric review and future research agenda.	Analyzing the knowledge development of service innovation.	Co-citation analyses were conducted on 788 articles on service management innovation and 175 articles on hospitality and tourism management innovation from WOS.	In contrast to service management research which focused increasingly on service-dominant logic (SDL) and dynamic capabilities, the hospitality and tourism management domain focused more on innovation performance and measurement. Hence, collaborative innovation and knowledge sharing are key themes of hospitality and tourism management. Service management research emphasizes open innovation and value co-creation. Publications on service innovation are dominated by the United States and the United Kingdom. Additionally, the keywords “services,” “service innovation,” “innovation,” “open innovation,” “value co-creation,” “service design,” “business model innovation,” and “new service development” were found to be prominently featured. Implementation of innovation is influenced by a number of factors including individual factors and organizational factors.	This study is limited by the journals selected that only index in Scopus database which propose that future researchers consider comparing different databases.
Salam et al. (2021)	Service innovation research: A comprehensive bibliometric analysis based on the Scopus database (1970–2020)	Determining the evolution of research production in the field of “Service Innovation.”	3,915 publications from the Scopus database over a period of 1970 to 2020 were selected and had been analyzed through co-authorship and co-occurrence.		
Singh et al. (2020)	Service innovation implementation: a systematic review and research agenda.	Finding main factors affecting the implementation of innovations.	The TCCM framework was used to analyze 89 papers published over a 39-year period (1981–2019) from WOS and Scopus.		The research is limited by the sources of articles and the search string, which only searches for articles with the words ‘change implementation’, ‘innovation implementation’, or ‘implementing innovation’ in the title. In the future, research might be expanded to include a cross-border perspective. Researchers should investigate how IT usage can improve knowledge sharing and training so that employees can work in a more flexible environment and create ideas for new services. Considering only academic journal articles is the limitation of this study. Future research should examine the relative impact of technology in content (e.g., family travel and meetings, leisure travel, business travel) and different contexts (e.g., resort and casino, hotel, and restaurant). Furthermore, future research can analyze service innovation in regard to customer value co-creation process and consequences.
Kitsios and Kamariotou (2019)	Service innovation process digitization: areas for exploitation and exploration.	Examining the role of technology in the process of new service development (NSD).	Analysis of 144 papers was conducted by using Webster and Watson’s (2002) three-phased literature review method.	The benefits of IT are often overlooked by managers, despite the fact that IT is crucial to the success of new services.	
Lee et al. (2019)	Integrating technology to service innovation: Key issues and future research directions in hospitality and tourism.	The concept of service innovation resulting from emerging technologies.	An analysis of 31 selected papers was conducted using content analysis using keywords searches in selected databases (e.g., ABI/INFORM complete, EBSCOHost, hospitality and tourism complete, Scopus, Web of Science, and Google Scholar).	Through the use of emerging technologies, this article highlights the multifaceted aspects of service innovation. Also, it explains how the experience economy involving sensory, affective, intellectual, and behavioral experiences could be practicable to the tourism and hospitality industry.	
Klarin (2019)	Mapping product and service innovation: A bibliometric analysis and a typology	Consolidating holistically product and service innovation types into one overarching typology.	Systematically maps three decades of product and service innovation by text mining and co-citation analysis of 1,400 articles from WOS, also by case study analysis demonstrate how identified innovation types fit	Identifying prominent product/ service innovation types including radical, incremental, imitative, value, reverse, and disruptive. Also, discovering innovation types that have overlaps or are considered unique in the prior literature. Furthermore, identifying that reverse innovation in relation	This paper has a major limitation in that it fails to depict innovation holistically for both industrialized and emerging nations. Additionally, this study ignored the variety of ways in which organizations deliver their products and services through innovation.

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Table 1 (continued)

Reference(s)	Title	Description	Sample Size and analysis	Findings	Limitations and future suggestions
Calabrese et al. (2018)	Sustainability-oriented service innovation: An emerging research field.	Addressing the emerging field of sustainability-oriented service innovation.	into the cost vs market novelty matrix. 208 articles from the Scopus database over a period of 2004 to 2015 were selected and had been analyzed through Descriptive analysis and Thematic analysis.	to low-cost innovations deserves a spot of its own. Offering insight into how service innovation can contribute to sustainability goals was already in place. They also identified the following three main research streams in sustainability-oriented service innovation: service innovation, product-service systems, and sustainability-oriented innovation.	It is suggested that future research consider of development and design of new models, which can support companies in their Sustainability-oriented service innovation actions.
Witell et al. (2016)	Defining service innovation: A review and synthesis.	Identifying the characteristics in the service innovation definitions.	Text mining was used to analyze 84 papers that appearing in academic journals between 1979 and 2014 from Scopus.	This paper presents 84 definitions of service innovation, including assimilation, demarcation, and synthesis, along with findings of key characteristics of service innovation.	At the data collection stage, this study only considers papers with the "service innovation" keyword in the topic. Further research could extend the search domain and consider different terms to help advance understanding of service innovation.
Snyder et al. (2016)	Identifying categories of service innovation: A review and synthesis of the literature.	Examining the definition and application of service innovation in research.	A review of 255 Scopus articles including "Service/es innovation", "Innovation in service/es" before spring 2014.	Based on the results, four categories of service innovation are recognized: (1) degree of change, (2) type of change, (3) newness, and (4) means of provision.	Customer value and financial performance are two things that were neglected in service innovation categorizations. This study offers future studies to consider them in the service innovation context.
Carlborg et al. (2014)	The evolution of service innovation research: a critical review and synthesis.	Analyzing the progression of service innovation research.	Analysis of 128 articles published between 1986 and 2010.	In the process of innovation, identified three phases: formation, maturity, and multidimensionality.	The authors emphasize the importance of continuous research and new approaches in dynamic environments, where technology and market needs change rapidly.

performance found that a proactive and responsive market direction has different effects on product or service development capabilities that, in turn positively influences firms' performance as well as the creation of distinguished benefits (Bodlaj and Čater, 2022). Thus, successful service innovation is the result of monitoring the rapidly changing environment to increase the rate of firm innovation.

Moreover, the dominance of the Knowledge-based view (KBV) and Service-dominant logic as two of the other main theories in service innovation has attracted more attention from scholars. The KBV is an extension of the RBV, in which knowledge is deemed the most important strategic resource for a firm (Grant, 1996). In this regard, Chopra et al. (2021) extended "the theory of knowledge management for sustainability" to three levels: individual, firm, and country levels. The *individual* level is a prerequisite for the firm level and encapsulates knowledge, information, and data. The *firm* level includes the activities of knowledge creation, knowledge acquisition, knowledge application, knowledge sharing, and knowledge transfer among teams and departments in the firm, which results in a sustainability-oriented value of products or services in different economic, social, and environmental aspects at the *country* level. In addition, aligning knowledge management with soft total quality management increases the organization's performance in enhancing the quality of goods and services (Ong and Tan, 2022). On the other hand, Service-dominant logic suggests that the service exchange is the core reason for any transaction. An important aspect of service-dominant logic is its comprehensive approach to understanding value co-creation. The framework emphasizes that consumer-firm exchanges are vital to the value proposition (Tran et al., 2021).

Given the growing interest in the topic, various studies also have recognized and identified different aspects that are critical to service innovation. In this respect, Heymann (2019) attested that customer values have changed in the contemporary marketplace. In an evolving service economy, consumers are continually reassessing their

expectations due to the emergence of social media. Therefore, it must be noted that, in recent times, the vital role of innovation has been rapidly growing in different contexts. According to Schultz (2019), the effective management of innovation leads to the introduction of novel products or services. On the other hand, social issues involving empowerment, diversity, and inclusivity in the workplace may affect new concepts of service innovation (Arora and Patro, 2021).

Subsequently, in connection with the perception of the service innovation concepts and their implementation, several studies have been conducted in the field of service innovation and tried to identify the key factors and main streams by applying different perspectives like new service development (NSD), service innovation implementation, sustainability-oriented service innovation, characteristics, the role of social media and information technology in service innovation, digitization, and service innovation, (Aas et al., 2010; Calabrese et al., 2018; Carlborg et al., 2014; Kitsios and Kamariotou, 2019; Lee et al., 2019; Pandeya and Rupnawar, 2020; Peixoto et al., 2022; Randhawa and Scerri, 2015; Singh et al., 2020; Witell et al., 2016). Each has considered the effect of some influential factors on service innovation as shown in Table 1.

3. Methodology

Although there are various approaches for offering an integrative view of a research service domain, applying quantitative and qualitative (bibliometric and text mining) methods is a unique and novel approach in the service innovation literature. Prior literature reviews have considerably enriched our knowledge of the service innovation literature (Aas and Pedersen, 2010; Randhawa and Scerri, 2015; Snyder et al., 2016). The types of peer-reviewed articles provide insights into the many trends in service innovation. Such reviews have adopted certain selection criteria for article stream inclusion.

In this article we adopted bibliometrics to (1) find a comprehensive

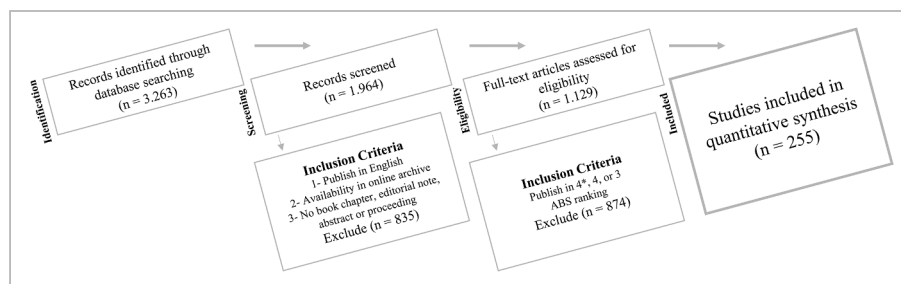


Fig. 1. Process of the article selection using the PRISMA protocol.

overview, (2) discover research gaps that need attention, (3) provide novel and interesting ideas for future scholars, and (4) articulate the researchers' contributions to the research field (Donthu et al., 2021). Researchers implement bibliometrics along with other frequently used tools to undertake alternative systematic literature reviews. On the one hand, a *meta-analysis* investigates the overall direction and strength of relationships or the across-study variance in the effects-size estimates and the factors contributing to this variance (Donthu et al., 2021; Lim et al., 2021; Paul et al., 2021). Moreover, a systematic literature review (e.g., theory-based reviews) uses systematic procedures to collect, arrange, and assess the existing literature (Lim et al., 2022b) which is often carried out manually (Mukherjee et al., 2022) by researchers. As opposed to the systematic literature reviews, which may be more subjective and less comprehensive in their coverage, bibliometric reviews benefit from the use of quantitative and statistical measures (e.g., citations) (Lim et al., 2022a). Moreover, bibliometric analysis is a method exemplifying big data analytics and machine learning that can be used to review the literature. In fact, the bibliometric review has harnessed the benefits of (i) the machine learning of the bibliographic data of scholarly research from technologically-empowered scientific databases, and (ii) big data analytics involving various science mapping techniques. (Kraus et al., 2022). As a result, bibliometric studies tend to be more objective and extensive than other kinds of reviews (Mukherjee et al., 2022) and, importantly, can be helpful in highlighting the emerging trends in a research domain (Paul et al., 2022).

We applied both co-citation and text mining tools to conduct a holistic and integrative review of the service innovation domain, which makes the results more accurate and freer from the bias that is common in many reviews of the literature (Podsakoff et al., 2005). Initially, citation and co-citation analysis was used to investigate the historical foundation of the service innovation domain and to see how service-dominant logic is incorporated into different research streams. Afterwards, text mining was applied to identify the central themes and concepts in service innovation domain research. Additionally, text mining allowed researchers to identify the differences between different periods of the development of service innovation. Further to this, in this research, text mining and co-citation methods are used to enhance the theoretical and conceptual understanding of the service innovation domain. This approach offers two key advantages. According to Antons and Breidbach (2018), researchers are able to objectively and systematically review a substantial corpus of heterogeneous literature that would be impossible for a single researcher to read and interpret manually. Additionally, traditional literature reviews are less subject to researcher bias (Wilden et al., 2017).

3.1. Data

To begin our historical evaluation of service innovation, initially, the articles related to service innovation were identified. This scholarly work was intended to be as inclusive as possible, so we followed the recommendations of previous researchers (Chabowski et al., 2018, Foroudi et al., 2020) and used only one keyword. In this regard, like previous researchers (e.g., Antons and Breidbach, 2018; Snyder et al.

2016; Witell et al., 2016) in the service innovation domain, we searched for all articles that compose “innovation* in service*” or “service* innovation*” in the Web of Science (WoS) database. Afterward, these keywords were searched for in the keywords, title, and abstract of all available articles in WoS between 1970 and late 2021. Based on previous researchers' recommendations (Leonidou et al., 2010; Samiee et al., 2015; Schildt et al., 2006), WoS was chosen, as it is considered the foremost accurate and comprehensive source for bibliometric studies (Akarsu et al., 2021; Chabowski et al., 2013; 2018; Stea et al., 2022). In particular, this platform was used as a multidisciplinary research platform that enabled simultaneous searches across citation databases and indices from a large variety of academic fields. The web-based system also provides users with access to research tools such as citation analysis, citation alerts, and keyword searches (Leydesdorff, et al., 2013), in addition to personalized features (such as saved searches). Furthermore, Balstad and Berg (2020) found that WoS offers comprehensive data comparable to data available from Scopus and Google Scholar in the management domain. Last but not least, unlike other databases, Web of Science's search results are not limited by institutional subscriptions (Antons and Breidbach, 2018).

According to previous research (e.g., Foroudi et al., 2021; Samiee and Chabowski, 2021), all editorial notes, book chapters, and less relevant texts that have not undergone peer revision were removed. In addition, to include articles, we made sure that 1) articles represent a full article and are not called for paper or proceedings, 2) include at least one keyword in the abstract, title, and keywords section, 3) are available in either online archive or database, and 4) last are published in English. Further to this, to make our analysis inclusive, we limited our research to only the 3- and 4-star journals (ABS list 2020) within the Business and Management domain of service innovation since the ABS list is regarded as more comprehensive in comparison to other journal ranking lists (Haddoud et al., 2021) and is considered the “benchmark database of international standards” (Belitski et al., 2021, p. 1197). This process generated 255 focal articles (see Fig. 1).

3.2. (Co-)citation analysis

The fundamental assumption of citation analysis is that the citation in a research domain can provide an overview of the relationship between the citing articles and the cited articles (Chabowski et al., 2018), which can offer a trail of the overview as a tool for visualizing the development of a service domain (Di Stefano et al., 2010). In the science community, co-citation is when two documents are referenced in a third scholarly work. The number of co-citations reflects the proximity of two documents.

As the proposed sample comprised 255 focal articles with more than 5,000 references, including all the references in the analysis would have been impossible. Following Zupic and Čater (2015) recommendation, a threshold was set for selecting the appropriate number of citations. Importantly, no pre-defined threshold level exists in the scientific literature; hence, for the purpose of our assessment, we determined various high and low thresholds from prior studies (e.g., Chabowski et al. 2013; Devinney and Hohberger 2017). With this in mind, after

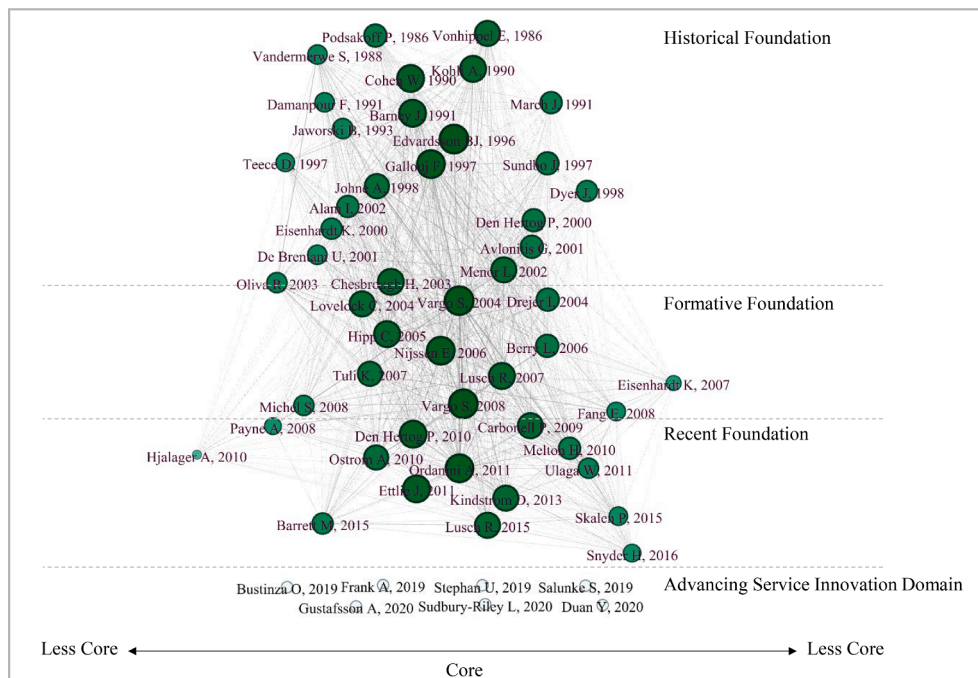


Fig. 2. The historical development of the service innovation domain.

examining several network analyses, we considered all the articles with the minimum 14 citations for the historical analysis (n = 56) in the current analysis. Importantly, based on previous researchers' recommendations (e.g., Chabowski et al. 2013), all the methodological articles were removed.

In our second analysis, Louvain's method was applied to identify the cluster of closely linked articles (Blondel et al., 2008). Having a small resolution can result in smaller communities, whereas a larger coefficient can result in larger and less meaningful clusters. In order to improve the number of resolutions for clusters, a different resolution parameter was applied. The clusters were examined and judged in terms of modularity, and clusters with modularity higher than 0.4 were considered satisfactory (Blondel et al., 2008). First, researchers have to export the article records in full, and record the cited references in a plain text file. In the next stage, researchers have to use BibExcel software to clean up their data and make them ready for co-citation analysis. As such, in BibExcel, researchers can find the most cited works in the domain, based upon which they can create their co-citation frequencies which can be used for mapping. Then, by using the Pijack tool, researchers can draw their co-citation map in a research domain.

3.3. Text mining

By converting a textual core (e.g., book chapters, articles) into structured data, text mining can be used to describe a corpus using the identified concepts and themes, allowing researchers to gain an integrated understanding of a domain (Mikroyannidis and Theodoulidis, 2010). Previous researchers have used text mining when undertaking literature reviews (Randhawa et al., 2016; Wilden et al., 2016). Leximancer carries both semantic (relational) and thematic (conceptual) analysis of the data (Rooney, 2005), which allows researchers to investigate the common text elements (concepts) and themes (group of related concepts). Leximancer analyzes text using a latent Dirichlet allocation (LDA) approach that includes two stages of nonlinear machine learning. It also uses clustering patterns, which identify and support any hidden overlap between the clusters.

While in the LDA method, researchers determine the number of concepts and themes before conducting the main analysis. In

Leximancer, the machine learning process chooses the most appropriate number of themes depending on each identified concept. Additionally, as there is no focus on the relationship between themes and concepts, LDA analysis ignores the word order in a document. However, according to our research question, we are not interested in the relationship between documents but instead are searching for the relationships among concepts and themes. Subsequently, the proximity decides which concepts can be identified in a particular text domain. With this in mind, using Leximancer as a tool for text mining is considered the most suitable approach for conducting this analysis.

To establish meaningful co-occurrences, we removed all important metadata from the focal articles (e.g., journal, publisher, year of publication, author names, acknowledgements, and reference lists) in accordance with previous studies (e.g., Netzer et al., 2012). As such, while Leximancer utilizes a machine learning algorithm, text mining still needs to be cleaned manually before seed words can be grouped into concepts. Then, terms such as "method", "research", or "study" which are general research terms were excluded as they do not convey any particular meaning. Furthermore, we combined the plural and singular versions of the seed words such as 'products' and 'product' into one concept. In the next stage, information was extracted from the data. It should be noted that the Leximancer approach does not need a manually created dictionary; instead, it automates its text mining process. As Smith and Humphreys (2006) stated, it goes beyond "keyword searching by discovering and extracting thesaurus-based concepts from the text data, with no requirement for a prior dictionary, although one can be used if desired" (p. 262). Leximancer uses a Bayesian algorithm to learn patterns from words and sentences. Through this, Leximancer removes the human bias from the analysis stages (developing dictionary, concept correlation, coding process, and mapping stages). While Leximancer applies a mostly non-supervised machine learning process, human input plays a critical role in many stages of the analysis, including the thesaurus creation, classification, mapping, and interpretation stages. This stage revealed a high level of reliability and validity in the results.

4. Findings

To answer the research questions, this section is divided into three

Table 2
Summary of dominant theories in service innovation domain.

Evolution period	Theory	Definition	Scope	Limitations	Examples
Historical foundation	Resource-based theory	Firms gain a competitive advantage from unique, valuable, and scarce resources.	Service innovation is facilitated by integrating and assimilating internal and external resources.	The RBV is inherently static and cannot address a dynamic issue like open innovation.	Gallego-Álvarez et al. (2011); Malhotra et al. (2013); Sundbo (1996)
Formative foundation	Dynamic capabilities	Dynamic capability extends the resource-based view and suggests that firms' innovation processes and firms' routines demonstrate internal competence for addressing a change in the firm environment.	Its focus is on the firm's ability to purposefully adapt to its resources.	First, there are no limits to the number of organizations that can have similar or identical dynamic capabilities. Second, the success of generating a dynamic capability is based on the fact that a capability never changes.	Agarwal and Selen (2009); Liao et al. (2009); Lütjten et al. (2019)
	Absorptive capacity	A company's ability to absorb new information is its ability to recognize its value and importance and assimilate it.	Its primary focus is on the capacity of a firm to integrate, assimilate, and use resources.	Absorptive capacity is limited to the rate of technological information and knowledge that a firm can implement.	Arbussa and Coenders (2007); Christofi et al. (2019); Kindström et al. (2014); Riiala and Hurrnellima-Laukkanen (2013)
	Knowledge-based view	The most important resource for firms is knowledge. It is the responsibility of companies to integrate, assimilate, and implement knowledge into their activities.	It is important to adapt and learn from the external environment. Firms must constantly strive to learn from their external environment.	It is difficult and expensive for organizations to generate knowledge for innovative service offerings.	Kessler (2003); Martín-de Castro (2015); Mina et al. (2014)
	Service-dominant logics	Value is created across multiple actors in an ecosystem according to the service dominant logic.	By using behavioral and economic frameworks to discuss the co-creation of value between multiple actors, this paper aims to discuss the issue of value co-creation.	Resources are not stable over time and can be changed by the firm's innovation activities.	Lusch and Nambisan (2015); Ordanini and Parasuraman (2011); Skålén et al. (2015)

sections: (1) performance analysis of the service innovation field (including citations, publications, top journals, top articles, top authors, top countries, and top institutions), (2) moving into its science mapping (themes and topics), and then (3) the trajectory over time (thematic and topical evolution). In this study, performance analyses were first analyzed, following which co-citation analysis was applied to determine the historical evaluation of the service innovation domain. Co-citation analysis is a quantitative method that is appropriate for identifying the historical development of any given service domain. The subsequent stage applied text mining analysis, which can help the researchers to examine the study streams associated with service innovation. In sum, the outcome of this study can shed light on how service innovation emerged and then evolved, and on what the future potential of the service innovation domain is.

4.1. Discussion of performance analysis

In this part, by citation analysis, this research sheds light on a specific corpus of items including publications, citations, top articles, top journals, top authors, top countries, and top institutions. Citation analysis allows researchers to identify the proper journals and the level of activities in a particular field, discover the research performance of researchers, and recognize country or institution performance (Akbari et al., 2022). Following Chandra et al. (2022), Kumar et al. (2022), Lim et al. (2021), and Mukherjee et al. (2022), data for this study were extracted from Web of Science, a prominent citation database. All figures and tables related to this section are presented in Appendices 3 to 6.

In terms of citations, we evaluated 19,995 citations from 255 service innovation-related articles. Notably, we observe the most publications – 43– in 2018. Also, the maximum number of citations – 9,549 (approximately 50% of the citation share) – were made between 2019 and 2021.

According to the assessment of the 10 most cited articles in service innovation, *Progress and Change in Service Science* (Ostrom et al., 2010) ranked first in the collection with 850 citations and an average citation rate of 65.38 citations per year. Lusch and Nambisan (2015) are the second most-cited authors on *Service innovation: a service-dominant logic perspective* accounting for 699 citations and 87.38 average citations per year. The third most cited research by Maglio and Spohrer (2008), *Fundamentals of service science*, has 611 citations and 40.73 average citations per year.

Regarding journal analysis, the results indicate that the *Journal of Business Research* in the field of marketing and the *International Journal of Contemporary Hospitality Management* in the field of tourism are the most productive journals for publishing service innovation research with 36 and 28 publications, respectively. Also, the third place belongs to the *Journal of Service Research* in the marketing category with 24 publications. Moreover, journals that have been deemed most useful in the area of service innovation have a “4*,” “4,” or “3” rating by the Chartered Association of Business Schools, and are ranked “A*” or “A” by the Australian Business Deans Council.

In terms of the most prolific authors in service innovation, results demonstrate that Parida, V is the most prolific author with five published papers, followed by Wincent, J and Witell, L with four publications, respectively. Furthermore, the most three prominent countries in service innovation are the USA, England, and Sweden with 74, 62, and 27 publications, respectively.

4.2. The historical development of the service innovation domain

Based on the references of the main papers, we investigated the co-citation network to achieve the research objectives. The articles were then sorted chronologically and classified into three categories: *historical* foundation, *formative* foundation, and *recent* foundation (Fig. 2). This categorization illustrates the evolution of the service innovation domain and affords a better understanding of service innovation trends over time. It means that we first discover the underpinning of service

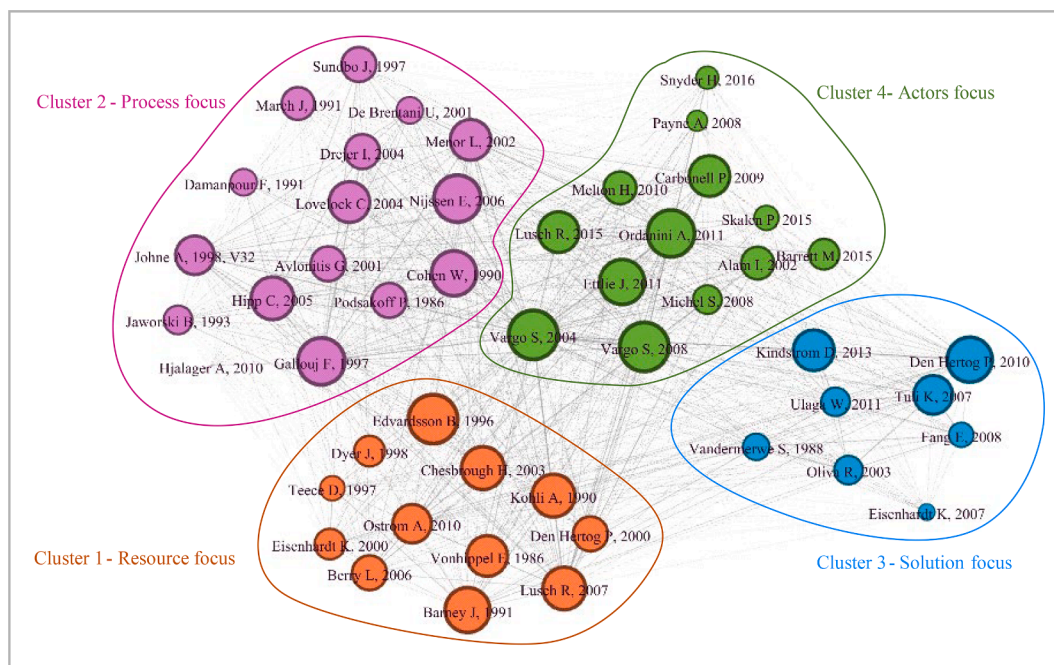


Fig. 3. Dispersion of service innovation.

innovation (historical foundation); the second category explains the evolution and influential factors of the service innovation development (formative foundation). Subsequently, the third part summarizes recent concepts in the research area (recent foundation).

The co-citation analysis identifies the studies that have contributed to and/or have benefited from the emergence of the service innovation literature. Fig. 2 shows that the product concept (e.g., Von Hippel 1986), and resource- and capabilities-based articles (e.g., Barney, 1991; Cohen and Levinthal, 1990; Kohli and Jaworski, 1990) have laid out the theoretical underpinning of service development (Edvardsson and Olsson, 1996) and service innovation (Gallouj and Weinstein, 1997). This prominent theory underpinning the historical foundation of service innovation is explained in greater detail below.

Resource-based view (RBV) – The RBV focuses primarily on the firm-level determinant of performance in comparison to industry-level firm performance (Peng and York, 2001). Particularly, this theory posits that resources are distributed heterogeneously within an organization, and that an organization can achieve competitive advantage by having inimitable, valuable, and scarce resources (Barney, 1991). In this respect, Gueler et al. (2021) extended the RBV to the business ecosystem context and demonstrated a new determination of the value of a resource or a capability. Consequently, when a firm adopts a resource-based approach, resources are complemented with a firm’s activities, systems, and procedures that result in the creation of quality products and services that benefit that ecosystem (Yilmaz et al., 2021).

Furthermore, these fundamental research concepts resulted in the development of the most influential frameworks related to service innovation and service-dominant logics in the next period. In this vein, although service-dominant logic introduced by Vargo and Lusch (2004) clearly provided the necessary theoretical foundation for further development of the service innovation domain, it is important to note that other concepts and theories have contributed to the development of service innovation. For example, Nijssen et al. (2006) showed that the overlap between service and product innovation is also central to service innovation in the formative period. A further contribution of Kindström et al. (2013) involves integrating dynamic capabilities with service-oriented innovation to further develop the domain. To clarify, the influential theories for this period are explained in more detail below.

Dynamic capability – According to Fischer et al. (2010), dynamic

capabilities involving absorptive, adaptive, and innovative capabilities enable organizations to evolve and respond to market requirements. In order to meet this definition, an organization needs to discover new ways to improve, complement, or substitute the components that underpin its products or services (Randhawa et al., 2021). Absorptive capacity is characterized by Cohen and Levinthal (1990) as the ability of a firm to recognize the opportunity in new external information, assimilate it, and exploit it for commercial purposes. Moreover, absorptive capacity is a firm’s process that involves integrating, assimilating, and applying external knowledge to create a dynamic capability (Lam et al., 2017). Viewed through the lens of service innovation, dynamic capabilities are a set of identifiable processes (e.g., new service development) which are determined by market dynamism (Eisenhardt and Martin, 2000). From the dynamic capability perspective, service innovation depends on the path taken, and it is influenced by the learning mechanism, which is configured based on the market orientation. Organizational learning refers to the process of implementing new organizational routines from individual experiences and observations (Sandberg and Abrahamsson, 2022). Then, the dynamic capability can be replicated by others in the market, but it is primarily the set-up of resources that provides a competitive advantage to individual firms (Eisenhardt and Martin, 2000).

Knowledge-based view (KBV) – The KBV is an extension of the RBV, in which knowledge is deemed the most important strategic resource for a firm (Grant, 1996). This theory proposes that firms are institutions that integrate and assimilate knowledge. The key factors that contribute to knowledge being a resource for manufacturing have been discussed by Grant (1996). First, firms are institutions that integrate knowledge. The organization’s managers design the mechanism that is needed for coordinating experience. Meanwhile, the organizations apply and use the capabilities that are focused on the effective activities that help to combine knowledge that, in turn, results in innovation and production. Based on this theory, knowledge can be defined through three categories: *integration capability*, *appropriability*, and *knowledge transferability*. According to Grant (1996), the process of acquiring and storing knowledge can be specialized. Individuals (e.g., employees) create, develop, and store knowledge, and effective knowledge management relies on participating in and transferring knowledge to specialists.

Service-dominant logic – this theory proposes that service innovation

Table 3
Central themes and concepts in evolution of service innovation (1992–2014).

Theme	Concept	Count	Likelihood	References		
Innovation	Innovation	7828	100	Kopot (1997); Laursen and Salter, (2006)		
	Process	2864	37			
	Market	2710	28			
	Knowledge	2096	27			
	Performance	1756	22			
	Firm	1509	19			
	External	1124	14			
	Resources	1014	13			
	Sale	1009	13			
	Customer	Customer	3747		48	Jung et al. (2003)
Value		2033	26			
Needs		1794	23			
Organizational		1452	19			
Role		1202	15			
Marketing		1079	14			
Employee		927	12			
Work		898	11			
Service		Service	4013	51	Lovelock (1994), Hertog (2000)	
		Technology	1892	24		
	Information	1476	19			
	System	1296	17			
	Industry	822	11			
	Developed	732	09			
	Risk	458	6			
	Product	Product	2826	26		Gebauer and Friedli (2005); Lilien and Yoon (1989)
		Business	1829	23		
		Development	1753	22		
Manufacturing		1247	16			
Management	Management	1104	14	Vandermerwe and Rada (1988)		
	Design	1094	14			
	Network	876	11			
Adoption	Adoption	1108	14	Royston et al. (2003)		
	Experience	716	9			
	Company	699	9			
	People	505	6			
Users	Users	917	12	Brown and Osborne (2013)		
	Messaging	647	8			
Social	Social	634	8	Barlow et al. (2006)		
	Consumers	566	7			
Strategy	Strategy	971	12	Miles and Snow (1978)		
Brand	Brand	696	9	Harris and Goode (2004)		

entails the dynamic of actors (e.g., stakeholders, employees) who, interactively, can co-create value in a service ecosystem (Brodie et al., 2011) through resource integration (Vargo et al., 2008). Similarly, Tran et al. (2021) explained that the interactions between the product and the service experience co-created by the consumer and the provider are the ultimate sources of value for consumers. These definitions are aligned with Onofrei et al.'s (2022) description of the value co-creation logic which emphasizes that customers actively contribute to the (co)creation of value through interactions in various phases such as the product/service development stage. Table 2 presents a summary of key theories for development of the service innovation domain.

Last, influenced by the prior (formative) periods, the later period shows that the differences between service versus manufacturing innovation (e.g., Ettlie and Rosenthal, 2011) and the interrelation between service-dominant logic and service innovation (Lusch and Nambisan, 2015; Ordanini and Parasuraman, 2011) have become the topic of scholarly attention.

Due to the diversity of theoretical frameworks that have been developed to study service innovation and to better understand the extended impact of this innovation, it is vital to determine how the service innovation domain has been diffused. To do so, co-citation analysis was conducted on all the references of our main sample. The results revealed four distinguishable clusters with each showing different characteristics of the service innovation domain. In the graph

Table 4
Central themes and concepts in evolution of service innovation (2014–2021).

Theme	Concept	Count	Relevance	References				
Services	Services	14,793	100%	Biemans, Griffin, and Moenaert, 2016; Kroh et al., (2018)				
	Innovation	12,197	82%					
	Process	4290	29%					
	Knowledge	3266	22%					
	Business	2335	16%					
	Capabilities	2344	16%					
	Development	2315	16%					
	Firms	1934	13%					
	Customer	Customer	6770		46%	Eggert et al. (2015); Saridakis et al. (2019)		
		Product	3117		21%			
Market		2495	17%					
Performance		2804	19%					
Innovative		1729	12%					
Competitive		1522	10%					
Strategy		1408	10%					
Success		1395	09%					
Value		Value	5739	39%	Hsieh and Hsieh (2015)			
		Resources	3103	21%				
	Actors	1525	10%					
	Logic	1100	07%					
	Network	1279	09%					
	Information	Information	2121	14%		Bourke et al. (2020)		
		Activities	1887	13%				
		Management	1751	12%				
		Practices	1649	11%				
		Work	1641	11%				
Solution		1184	08%					
Ideas		1192	08%					
Technology		Technology	2405	16%	Nambisan et al. (2017)			
		Social	2322	16%				
		User	2123	14%				
	Public	1596	11%					
	Design	Design	2259	15%		Sudbury-Riley et al. (2020)		
		System	1974	13%				
		Change	1244	08%				
		Digital	1249	08%				
		Adoption	Adoption	1501			10%	Sarmah et al. (2017)
			Behavior	1353			09%	
Barrier			1401	09%				
Hotel			1279	09%				
Brand			719	05%				
Learning			Learning	1032	07%		Memon and Kinder (2017)	
	Company		1063	07%				
	Environmental		986	07%				
	Consumers		808	05%				
	Online		857	06%				
	Employees	Employees	2152	15%	Troilo et al. (2017)			
		Industry	1845	12%				
		Experience	Experience	1658		11%		Hazée et al. (2017)
	Quality		1203	08%				
	Robot		Robot	920	6	Khaksar et al. (2016)		

in Fig. 2, each node shows one individual scholarly work, and the size is based on the number of times it had been cited by other articles. Each cluster is expanded on below:

Cluster 1 focuses on the resource-based approach (Eisenhardt and Martin, 2000; Teece et al., 1997) and also reveals a cross-reference to open innovation (Chesbrough, 2003). The dominant view of service innovation in this cluster shows that the whole is more than the sum of its separate parts (Sheth et al., 1988). This cluster includes articles that consider resources for service innovation that are either controlled or possessed by a firm. Articles in this cluster – we refer to this as the *resource focus* cluster – consider that any given actor's resources in a service ecosystem play a critical role in service innovation.

Cluster 2 is grounded on the notion of innovation process (e.g., Sundbo, 1997), which describes service innovation as an activity rather than an outcome; we refer to this as the *process focus* cluster. From a broad perspective, articles in this cluster have viewed service innovation as a procedure for the delivery and success of an innovative service. The process-based articles predominantly have appeared in the new service development research stream. This view highlights the architectural

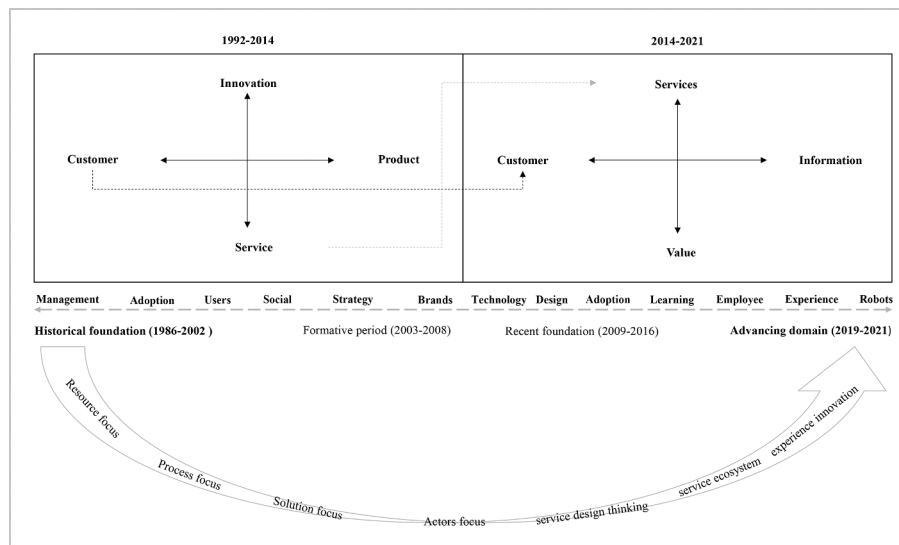


Fig. 4. Extended map of service innovation evolution. **Note:** Means the relationships between concepts in two periods. Demonstrates the historical development of the service innovation domain.

phases of the service innovation order, which is either sequential or linear (Gallouj and Weinstein, 1997).

Cluster 3, that we refer to as the *solution focus* cluster, groups scholarly works that have focused on service solution and servitization (e.g., Oliva and Kallenberg, 2003; Vandermerwe and Rada, 1988). Rooted in product development towards service innovation (e.g., Tuli et al., 2007), articles in cluster 3 suggest that higher service performance is embedded in measurable and innovative service solutions. Importantly, this cluster views service innovation as not being limited only to the traditional service firms but as being *equally* important for the servitization of the manufacturing-based business models. From the cluster’s perspective, servitization is the method of transforming resources (resources) into outputs (service solutions). Output is essentially a matter of quantity, and its success is determined by innovative features.

Cluster 4, which we refer to as the *actors’ focus* cluster, is based on the service-dominant logics. It has fundamental articles by Vargo and Lusch (2004, 2008) on service-dominant logic in addition to the articles that provide insight into service-dominant logic (e.g., Carbonell et al., 2009; Ettl and Rosenthal, 2011; Lusch and Nambisan 2015; Melton and Hartline 2010; Ordanini and Parasuraman, 2011). Due to service-dominant logic, service innovation is primarily driven by value-based considerations (Vargo and Lusch, 2008). From this perspective, value is always beneficial (Vargo and Lusch, 2008) and co-created through experience (Prahalad and Ramaswamy, 2003). This point of view indicates that the technology or innovation process merely serves to deliver the innovative service offering (Christofi et al., 2017) and not to co-create value.

In sum, although it is not surprising that a research domain be informed by a wide range of theoretical frameworks, the co-citation analysis illustrated how the service innovation domain is bridged with other frameworks. In addition, our analysis showed how, over time, service-dominant logic became the dominant theoretical framework in service innovation and had loose connections with other different research streams (e.g., capability-based perspective). In Fig. 3, the innovation of services is shown as dispersed throughout the scientific literature.

4.3. Evaluation of concepts in the service innovation domain

To better understand the evaluation of service innovation, the researchers applied text mining tools to investigate how themes and concepts have changed in the service innovation domain over time.

Specifically, in order to gain a deeper insight into the evolution of the service innovation domain, a textual analysis was conducted for the two main time periods (1992–2012; 2012–2021). As shown in Appendix 1 (1992–2014) and Appendix 2 (2014–2021), the early period of service innovation focused on relatively fewer concepts, given the longer period of time, while the more recent period extended the service innovation domain into broader concepts. Also presented in Table 2, the first period innovation concepts showed more than 50% importance compared with the concept of service in the more recent period, suggesting the evolution of service innovation consolidation in the second period.

In the formative period, the most important topic was innovation. However, further on in the later period, the topic of service became the most important item, although innovation remained the most relevant topic and as in the second important concept. This shows that although innovation studies were still central in the second period, the studies on innovation were more closely associated with the dialogue associated with the service science perspective. It should be noted that while different concepts were carried over from the formative period into the second period, only three themes remained the same in both periods – namely, service, customer, and adoption – showing that the service innovation research domain is predominantly focused on how service firms adopt new resources for offering innovative service offerings.

In contrast, the differences between each period suggest how changes occur in the service innovation domain. In more detail, although the results revealed that service and customers appeared in both periods, their relevance and connectivity differ from each other. The customer theme is a dominant topic in the first period (under more investigation), but in the second period the service theme took center stage. This indicates a shift from understanding customers’ needs as a source of innovation to seeing customers as the main determinant of innovation success. Adoption remained almost the same in terms of importance in both periods (14% in P1, and 10% in P2), thus suggesting that customer innovation adoption is vital to innovation performance (Casidy et al., 2020).

In the early period (Table 2), the major themes included *innovation*, *customer*, *service*, and *product*, reflecting scholarly focus on the source of innovation (i.e. knowledge, resources, external) and products (i.e. product innovation vs service innovation). Importantly, in this period, the concepts of innovation and customer received the highest level of scholarly attention, with process and value as the second most important concepts, respectively. These two concepts highlight the fact that early studies of service innovation are grounded in the management theories

Table 5
Summary of future path/strategic approach in identified clusters.

Cluster	Future path/strategic approach	Themes	Theoretical roots	Exemplars
Cluster 1 – Resource focus	Resource integration	Information, Technology	Knowledge resources; Manufacturing-related resources; Resource-based theory; Business contexts; Emerging business models	Robertson et al. (2021); Schaarschmidt et al. (2018); Wu et al. (2022); Zhou and Li (2012)
Cluster 2 – Process focus	Innovation process/Service design thinking	Services, Design, Learning	Self-adjusting systems; Absorptive capacity; Innovative service encounters	Badir et al. (2019); Foglieni et al. (2018); Hartwig et al. (2021)
Cluster 3 – Solution focus	Service solution	Value, Adoption	Product-service approach; Customer perceived value; Service quality; Measurable scales; Dynamic Capability perspective, Competitive service offering	Cai et al. (2018); Kindström et al. (2013); Primagrazioso and Yuniawan (2022); Raddats et al. (2019)
Cluster 4 – Actors’ focus	Service ecosystem/Experience innovation	Customer, Employee, Experience, Robot	Social-cultural nature of service innovation; Versatile actors in network; Interaction; Micro level; Meso level; Macro level; Service-dominant logic; Social network theory; Social exchange theory; Open innovation; Service robots	Barrett et al. (2015); Becker and Jaakkola (2020); Brodie et al. (2019); Larivière et al. (2017); Meidute-Kavaliauskiene et al. (2021); Mende et al. (2019); Dootson et al. (2022)

(e.g., resource-based theory). Additionally, there is a distinction between service and product in the first period. As part of the theme of product, this period includes concepts such as business, development, and manufacturing. A majority of these concepts are based on a good dominant logic approach toward service innovation. As Fig. 2 suggests, in the formative period, the theme of product was more innovation-friendly. However, the increased importance of service in the second period and its subsequent move from the third concept to the first concept, and the reduction of product from a theme to a concept suggest that recent studies are more aligned with the lexicon of the service-dominant logic approach toward innovation studies.

In the second period, new themes emerged including value, information, technology, design, learning, employees, experience, and robot. Some of the emergent concepts used to be themes in the formative period and became more dominant as the innovation domain continued to evolve over the years (Table 3). For instance, experience changed from a *concept* in the formative period to a *theme* in the later period highlighting the role of a customer experience-oriented innovation line of studies (e.g., Keiningham et al., 2020). Table 4

Additionally, several concepts developed into their own themes (technology, information, and design). This development, in addition to the emergence of the theme of ‘robot’ in the second period, shows a shift of attention towards technology and information as major drivers of innovation. Furthermore, the emergence of value and experience in the second period shows that there has been more scholarly attention on fully understanding value (in exchange and use) and innovation across different actors and social structures. The change in themes demonstrates a more dynamic and systematic approach to service innovation within a service ecosystem. It should be noted that the process and knowledge both exist across both periods as a concept in the first theme but have not emerged as a broader theme. The concepts of innovation, process, and knowledge all came under the umbrella theme of *service*, indicating the process by which innovation happens, and *knowledge*, which is directly connected to the source of innovation in the literature.

In general, the text mining carried out in the two different time periods revealed important changes in the main structures of themes and concepts in the service innovation domain. The concepts of resources and network merged with the two new emergent concepts of actors and logic (as for S-D logic) and formed a new theme called *value*. While this transformation happened for the theme of value, other themes, such as brand, vanished over time and instead became a concept. Interestingly, whereas the importance of innovation management (service, product, management, adoption) is essential to the discourse of the formative period in the service innovation domain, the second period has a more integrated approach towards innovation and pays more attention to the drivers of innovation (information, technology, learning). Additionally, while the language describing the system dynamic (e.g., social, brands)

in the first period shows a scholarly attempt to understand how innovation affects the broader social structure, this importance is not reflected in more recent articles.

The results of the historical development of the service innovation domain showed that service innovation can happen across four lenses in the formative period (see Fig. 4). These prominent lenses include resource focus (resource-based theory lens), process focus (absorptive capacity lens), multi-actor focus (service-dominant logic lens), and service solution focus (dynamic capability lens). The *resource* focus entails the configuration of resources to develop a service solution (Sudbury-Riley et al., 2020). As illustrated in Fig. 4, and according to the reported finding, this view towards innovation was quite prevalent in the formative period with themes such as innovation, service, and management. With the growth of the topic, the *process* focus emerged that concentrates more on firms and suggests that actor resources are the main source of innovation. However, the *multi-actor* lens posits that the main focus of service innovation studies should not be the service offering itself; it should also be the multiple actors in a service ecosystem. Accordingly, this view towards service innovation has been relatively dominant in the later periods with themes like technology and information. Finally, the *service solution* focus views the solution (output) as being embedded in valuable and innovative firms’ achievements which the customer can access through value in exchange.

Moreover, concerning the results of the present study, there is some evidence of a strategic view of service innovation in the first period in the themes of strategy and management; in the second period, this has been limited to the themes of design. Hence, there is a pressing need for more strategic theorizing regarding the service innovation domain and the abilities of design thinking. Also, due to the theoretical foundation of service innovation, there has been insufficient focus on the service ecosystem perspective. In line with more recent developments on the service-dominant logic perspective (Ng and Vargo, 2018), the second time period shows that concepts like resources, actors, logic, and networks are relevant. Despite this, there is still a significant opportunity for deeper development and theorizing associated with recent trends like the social-cultural and service ecosystem-driven aspects of service innovation. At the end of this section, Fig. 4 demonstrates the extended map of service innovation evolution.

5. Discussion

The primary driving force for this study was to identify a clear path for developing the service innovation domain (Gustafsson et al., 2020; Ostrom et al., 2015). So, by using an objective and systematic methodology, we mapped service innovation research across and beyond service disciplines, which enabled us to streamline the fragmentation and diversity of the service innovation literature stream. As revealed by co-

citation analysis, it is not surprising that the research domains that have shaped and influenced service innovation scholarship are eclectic in nature although it is not uncommon for researchers to investigate and find responses to their research question(s) outside their immediate body of knowledge. This is aligned with the absorptive capacity perspective (Cohen and Levinthal, 1990), which happens when researchers try to investigate a dynamic and complex research domain. Indeed, the process of conducting research requires scanning and unpicking valuable knowledge and accommodating the research objectives, which is very similar to the process that firms use to try to learn from external resources (e.g., knowledge) as their source of innovation. Service innovation researchers borrowed relevant knowledge from related disciplines in order to extend the service innovation domain. In the case of this domain, what actually makes the firm less integrated is the *extent* to which these external forces (i.e. non-service-related origins) influence the structure of the service innovation domain. As stated by Sammiee and Chabowski (2012), all new information is dependent on existing knowledge in order to be developed. In other words, the development and evolution of service innovation is dependent not only on the core articles of service innovation but also on the researchers that link the service innovation domain with other research streams. Although service innovation at its core is highly related and connected to the strategic studies, resource integration, and system views (Vrontis and Christofi, 2021), the results and the clusters show a lack of integration across these research streams.

Since we sought to understand the service design literature in greater detail, we explored and compared the themes and concepts of the two influential periods through text mining. According to the results of the text-mining map from 1992 to 2014, service innovation progresses through themes that emphasize innovation, customer, service, and product. These themes supplement other themes such as social and strategy themes and – at the end of this period – the brand. Moreover, from 2014 to 2021, research commonly dealt with themes like services and customers, inspired by complementary themes involving information, and value. Also, other recent studies have supported themes such as experiences and robots and provide a basis for future research opportunities. With this in mind, perhaps the most significant movement in the recent service studies has been a shift toward the system and social perspective, as can be seen in the emergence of new concepts and themes (e.g., Stephan et al., 2019). This shift in service studies is aligned with the scholarly study by Vargo and Lusch (2017) on the disclosure of service ecosystems and institutions, which reveals a general movement towards the understanding of the service environment. Despite the burgeoning importance of the service ecosystem and the institution approach to the service ecosystem, these two important themes did not appear in our results, which highlights the importance of further and more in-depth research.

Through linking identified methodologies and theories from various disciplines, this study also created a visual representation of the theoretical basis to integrate the literature domain and identified related theoretical foundations and research gaps. The findings (clusters and themes) indicate an important limitation of the service innovation domain in that it is dominated by topics like knowledge or firm performance. Hence, rather than being solely dependent on the service-dominant logic framework, the service innovation domain needs integrating with other theoretical frameworks to develop a strategic approach for service innovation and for advancing the emerging service ecosystem perspective in service studies (Vargo and Lusch, 2017). All our analyses revealed that some investigations have already started that will take into account integrating the service innovation domain with other theoretical approaches. In the following section, some of these potential and highly fruitful research paths for advancing the service innovation domain are discussed.

5.1. Moving Forward: Service innovation domain – Future pathways

According to Snyder et al. (2016), the service innovation literature can be categorized into four classifications: (1) innovation level, (2) type of change (product versus process), (3) means of provision, and (4) newness. Contrary to this classification, our aim is to categorize service innovation from its theoretical and epistemological points of view to offer a holistic view of the service innovation domain. Historically, the service innovation is formed through the resource and service solution lenses. While the resource lens highlights the importance of resources for creating service innovation, the service solution lens signifies applying resources to create unique and innovative service solutions for individual customers. Using such historical lenses to view service innovation in terms of input and output was a starting point for viewing service innovation through the lens of process and multiple actors. Recently, these two lenses have received more scholarly attention due to their focus on the role of different actors in a service ecosystem.

While the foci of the resource and service solution lenses are predominantly firm-centric, the innovation process and multiple actor lens magnifies customers and, in general terms, any actors who play a central role in the process of innovation through an interactive and iterative process. Being influenced by service-dominant logics, these two views conclude that the surrounding ecosystem influences and is influenced by the outcome of innovation by focal multiple actors. Importantly, as shown in the texturing results, non-human actors should also be considered in a service innovation process, which highlights the role of the innovation actor in innovation platforms. As part of an innovation ecosystem, these platforms provide actors that innovate with the support they need to integrate their resources (Breidbach et al., 2014). Hence, innovation platforms are not only the facilitator of service innovation but are also instrumental in connecting different actors in a service ecosystem. To clarify further, below, explanations for the suggested future directions are linked with the clusters and themes identified (Table 5).

Resource integration – Scholars started to understand that knowledge resources have a critical importance to service innovation (Zhou and Li, 2012). The text mining results highlighted that service-related resources (e.g., knowledge) are different from manufacturing-related resources (Schaarschmidt et al., 2018). However, despite this recognition between manufacturing-based and service-firm-based resources, which has been highlighted by researchers (e.g., Alqayed et al., 2022; Foroudi et al., 2022; Ruiz-Alba et al., 2022), how different business contexts (e.g., P2P) can organize and manage innovation resources to deliver new service solutions has remained undeveloped. The growth of innovative business models like P2P business models indicates that assumptions about the focus of customer firms and the brand-to-customer relationship, which are based on the business-to-customer relationship, are no longer relevant. Yet with such rapid growth in such innovative business models, the notion of service innovation, which is viewed predominantly through a business-to-customer business context, cannot fully manifest the dynamic relationship of service innovation in another business context, such as a peer-to-peer platform. Thus, any future systematic conceptualisation of service innovation in emerging business models plays an essential role in the advancement of service innovation. Such scholarly investigations can be grounded on the dynamic capability perspective. The main purpose of dynamic capability is to transform the resources into a competitive advantage (Eisenhardt and Martin, 2000). The new resource combination can help firms to seek their primary competitive advantage strategy for offering new organizational service solutions. Hence, the dynamic capability perspective can provide a solid foundation for enquiries in other business contexts.

Innovation process – Because service ecosystems are self-adjusting systems of multiple connected actors based on an institution, many studies have explored service innovation as a process (e.g., Badir et al., 2019; Foglieni et al., 2018; Kurtmollaiev et al., 2018; Mahavarpour et al., 2022). Hence, this view results in seeing service innovation as an

Table 6
Future research questions.

Themes	Research Questions	References
Resource integration	How can different business contexts (e.g., P2P) organize and manage innovation resources to deliver new service solutions? How can an emerging business model play a role in the development of service innovation?	Opazo-Basáez et al. (2021); Schaefer et al. (2022)
Innovation process	What are critical and complex aspects of the actor's engagement in the innovation process?	Leonidou et al. (2020)
Service solution	What are the factors that influence the perceived quality of a service solution from the customer's perspective? What is the effect of the resources on the quality of the service solution? How can develop measurable scales on the quality of the service solution? How can firms leverage multiple actor resources for creating competitive service solutions across various stages of service innovation?	Mai and Ketron (2022); Wen and Chen (2022)
Service design thinking	What is the future of service design from dynamic capabilities or from market orientation as a new theoretical perspective for developing the service design domain?	Chen et al. (2018); Willmott et al. (2022)
Service ecosystem	How can relational and structural actor embeddedness influence service innovation and its outcome in a service ecosystem? How does innovation take place in conflicting service ecosystem? What is the role of service innovation at a much broader sociotechnical level, like the macro level? What is the nature of each actor in service innovation ecosystem by considering organizational theories (i.e. social exchange theory, institutional theory)?	Liu et al. (2020); Riel et al. (2021)
Experience innovation	How ready is the customer to accept service innovation? What are the factors that influence service innovation performance with regard to diffusion theory? How can robot commands be improved through social network analysis? What is the impact of emerging digital technologies, such as artificial intelligence and augmented/virtual reality on service innovation?	Sørensen, and Jensen (2019); Khaled (2021); Wu et al. (2022); Zhong et al. (2020)

improvement in the service offering from a small improvement to a completely innovative value proposition. Viewing service innovation through the process lens emphasizes the beneficial value for different actors. As a result, from this perspective, actor participation in the innovation process is essential (Lusch and Nambisan, 2015). Although researchers have emphasized the role of multiple actors in the innovation process, understanding each actor's engagement in the innovation process is complex and requires further scholarly attention (Leonidou et al., 2020). Importantly, research has predominantly been on the

actors' engagement in the innovation process with similar interests and beliefs in a service ecosystem; hence, future scholars are recommended to look into the conflicting service ecosystems and see how innovation takes place within them. Considering the importance of employee training in servicing (Bluestone et al., 2013; Jafar, Zubair and Khan, 2021; Thaler et al., 2017), it is also important to investigate the impact of innovative training processes on employee and firm performance. In this regard Mahmood, Ostrovskiy and Capar (2023) revealed a significant effect of orientation training on long-term employee performance, especially product or service innovation.

Service solutions –In the area of service solutions, we are witnessing many manufacturing companies shifting towards a product-service approach. In such an emerging approach, the product solution is offered along with a service solution (e.g., remote maintenance control) to enhance the customer's experience of the product (Cai et al., 2018) and to improve the product performance (Kopelman, 2022; Ostrom et al., 2010). Developing such an integrated product-service solution is often more complicated than just manufacturing the product or designing services, although it might not be seen so by managers (Raddats et al., 2019). As can be seen from the text mining results, a research stream has emerged that helps manufacturers to fully grasp what it really takes to develop such product-service solutions. For instance, Tuli et al. (2007) drew on qualitative analysis to identify the difference between customer and supplier perspectives on service solutions. While firms tend to have a product-oriented view of the customer solution, the customers concentrated on the relational process aspect of the solution. Service-dominant logic (Vargo and Lusch, 2016) emphasizes that a firm's activity should be seen through two lenses – the *process* and the *resources*.

Coordinating a service ecosystem activity across this solution funnel should be studied in more depth in the following future path. In particular, how combining these process and resources in a service ecosystem could result in a higher perceived value in a service ecosystem is still underdeveloped. Scholarly works on this research topic have focused mainly on service quality for understanding customer perceived value (Fang et al., 2008; Kindström et al., 2013). However, a service solution is more than just a product or just a service; instead, it is the integration of both product *and* service, which solves a business problem. In light of this, future scholars should examine the factors that affect the customer's perception of the quality of a service solution. Other lines of study can focus on the effect of the resources on the quality of the service solution. Importantly, future scholars can focus on developing measurable scales for service solution quality. Further investigation can examine how firms can leverage multiple actor resources for creating competitive service solutions across various stages of service innovation.

Service ecosystem – Furthermore, in the service innovation literature, the term 'service ecosystem' indicates the collective, reciprocal, and social nature of service innovation beyond any dyadic interaction (Brodie et al., 2019) and versatile actors in network beyond just customers. There is an interplay between different levels of aggregation, such as the micro level (customers and employees), the meso level (individuals and social communities), and the macro level (platforms, policy makers, and collectives), and the success of service innovation depends on the involvement of different actors. As a result, different theoretical levels no longer focus on service innovation from an organizational level, but instead are dispersed in a network with broader boundaries and barriers.

Having such a view and being limited just to service-dominant logic as a theoretical foundation can no longer fully explain the innovation behaviour of different actors (Wilden et al., 2017). Hence, we introduce social network theory (Burt, 2001) to overcome such a limitation. From the social network theory perspective, any given social structure comprises different actors (organizations or individuals), social interaction, and the dyadic tie between multiple actors. Social network theory suggests how individuals, organizations, and different social groups interact

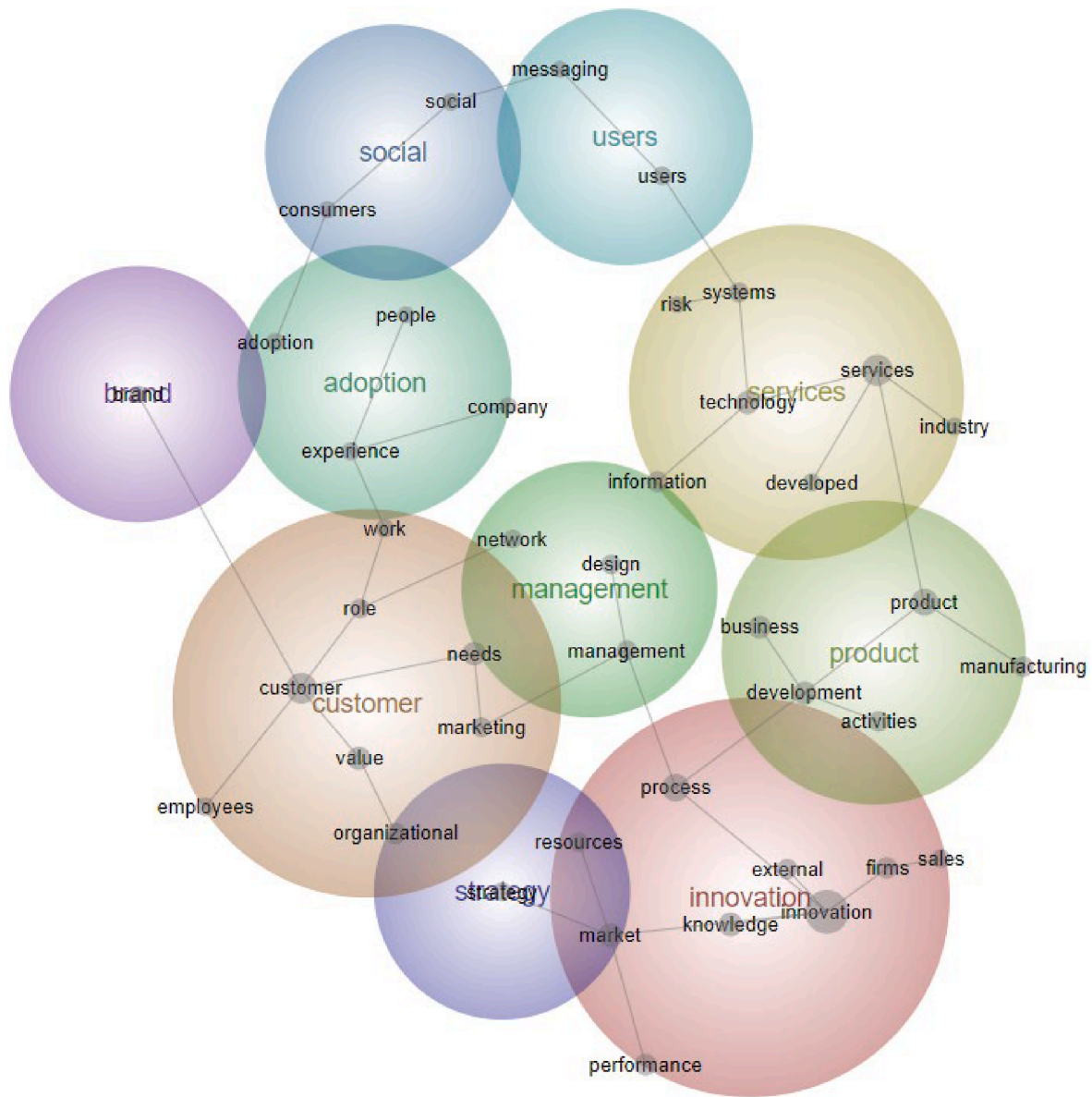


Fig. A1. key themes and concepts in service innovation literature (1992–2014).

with others in such a network. Actors interact based on their social relationship and, hence, service innovation is the result if network actors obtain resources from another actor. Such a view suggests that service innovation happens when an actor integrates their resources in a service ecosystem.

An actor-to-actor view of service innovation recognizes that all the actors, regardless of their immediate roles, are resource integrators in a service ecosystem (Jaakkola and Alexander, 2014). For instance, when collective actors (e.g., government) support innovation, they are in a sense manifesting as a macro-level innovation actor. Studies in this area have broadened the definition of service innovation, and growing attention has been paid to this view in recent years. Cadwallader et al. (2010) discussed the role of employees’ participation in service innovation for the successful implementation of service innovation. Salunke et al. (2019) along with Biemans and Griffin (2018) provided a deep theoretical conceptual analysis of service innovation in the business-to-business context. Last, Mende et al. (2019) argued that service robots should also take into account non-human actors (e.g., service robots) to fully understand service innovation in a service ecosystem.

Service innovation happens between different levels, with each level

(micro, meso, macro) being more complex than the previous level. Our text mining analysis showed that, historically, service innovation has been studied from micro- and meso-theoretical bases. While the micro level can refer to the service encounters with the firms, the meso level is focused on the firm level (Baron et al., 2018). As found in the text mining analysis, the major view of service innovation in recent years has been mainly based on investigation of multiple actors (e.g., employees, and technologies) in value co-creation in the micro- and meso-levels and has neglected the role of service innovation for a much broader socio-technical level – that is, the macro level. The scholarly work of Vargo and Lusch (2011) has provided a theoretical lens for service researchers to investigate service innovation on a broader scope. Moreover, the theme of technology, which poses concepts such as ‘social’ and ‘public’, illustrates that the service innovation and service ecosystem perspectives can be applied in conceptualizing service innovation from a macro perspective.

Historically, service innovation has been primarily driven by capability and absorptive capacity studies, so actor resources have become the primary basis for innovation. Furthermore, the recent shift in emphasis from service-dominant logic to the service ecosystem

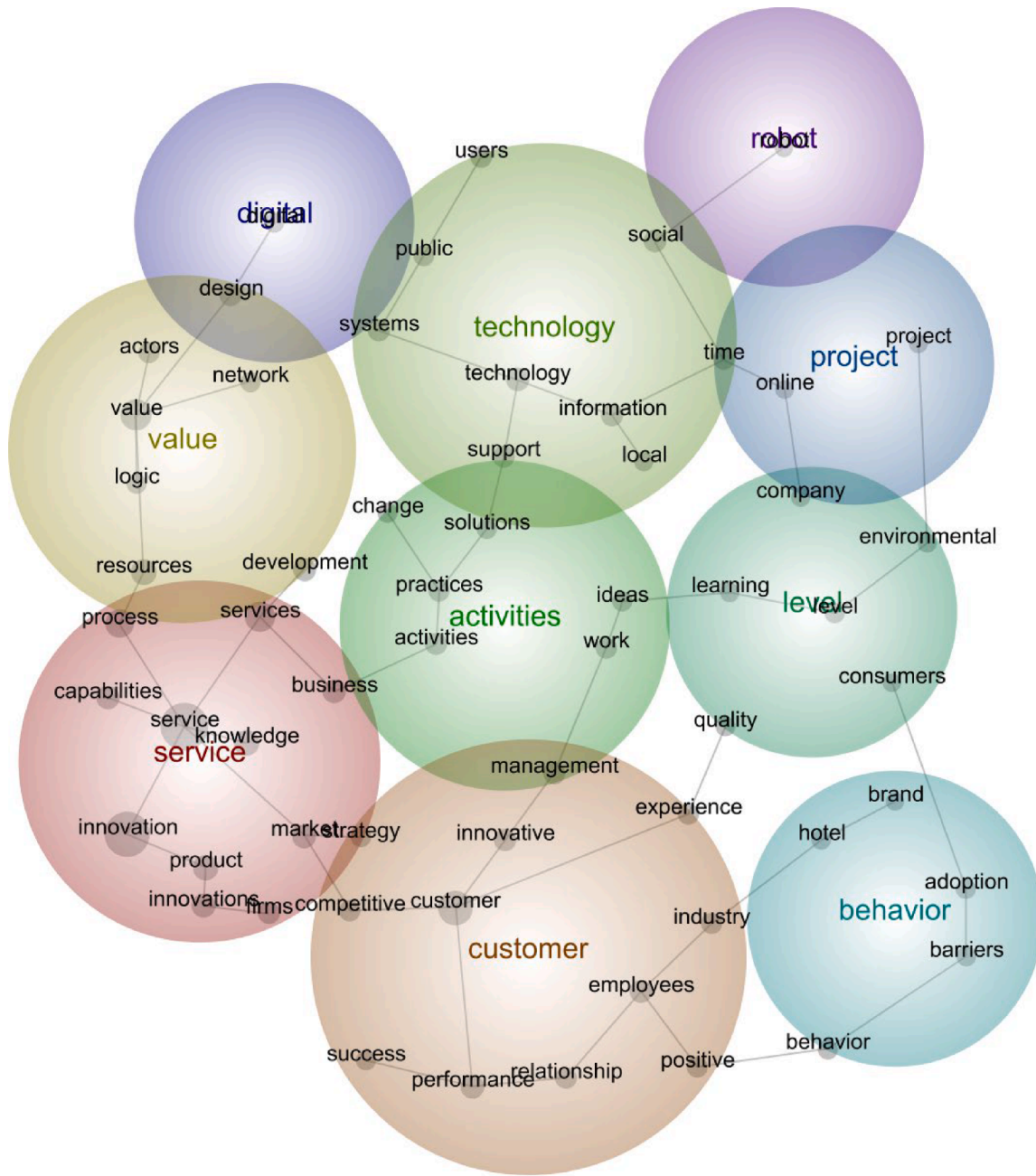


Fig. A2. Key themes and concepts in service innovation literature (2014–2021).

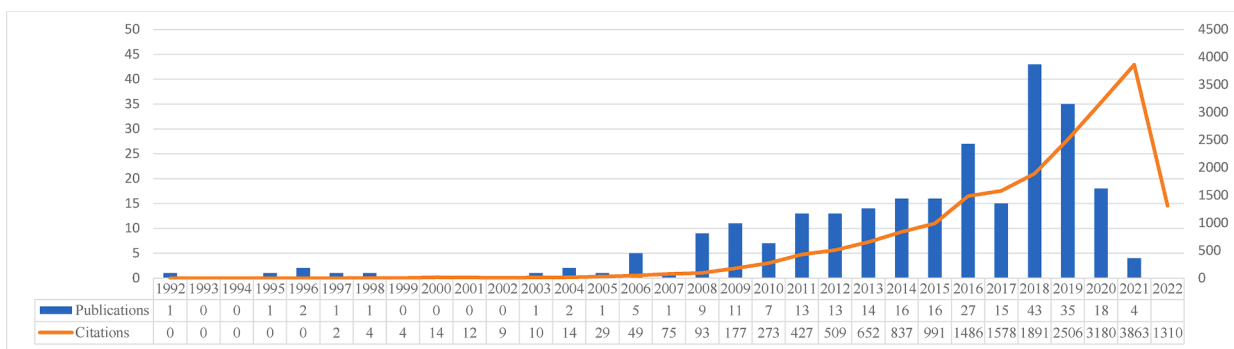


Fig. A3. Publications and citations per year on service innovation.

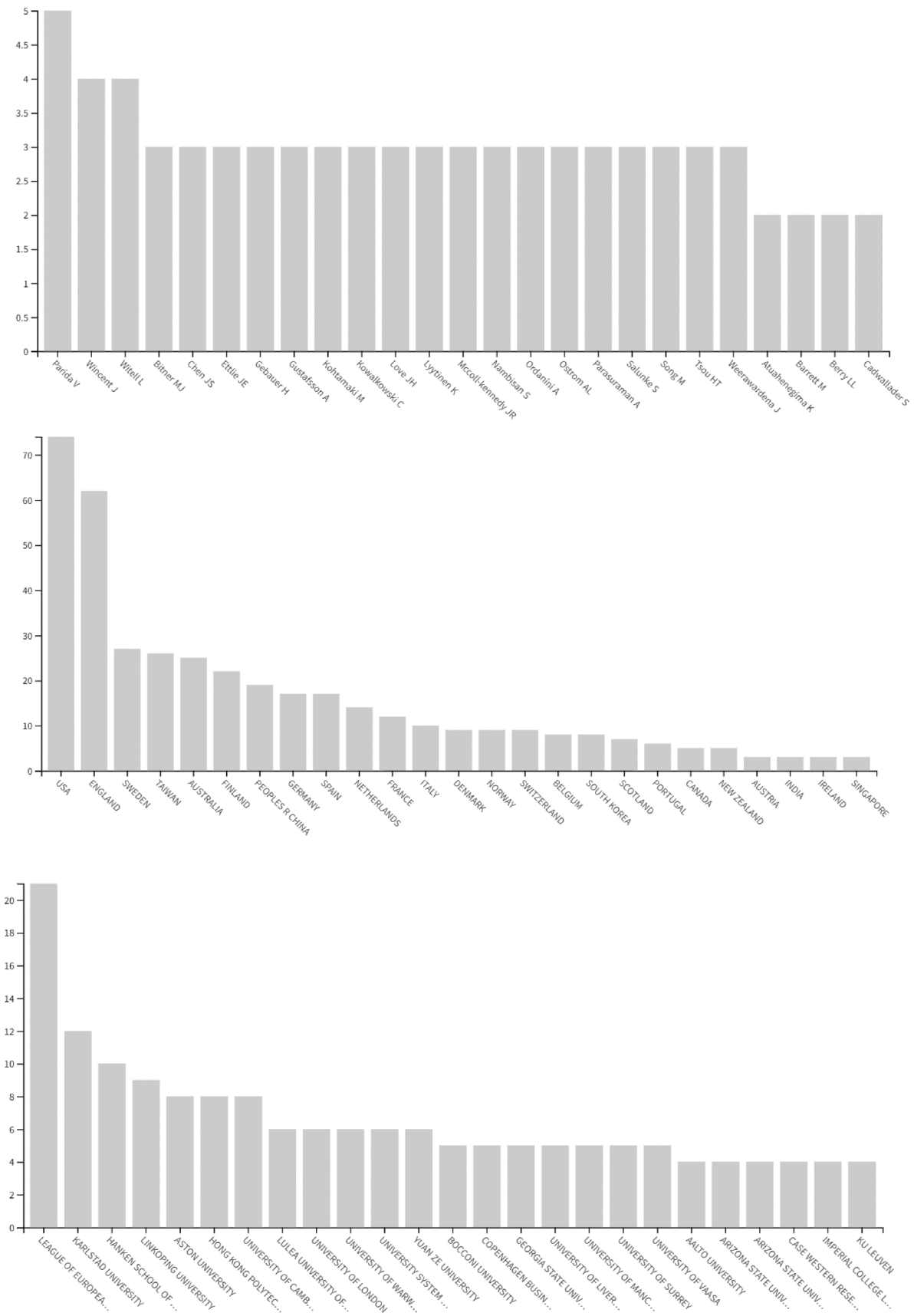


Fig. A4. Most prolific authors, country, and institutions for service innovation research.

Table A1
Top cited original articles on service innovation.

Rank	Year	Title	Author(s)	Journal	Total citations	Average citations per year
1	2010	Moving forward and making a difference: research priorities for the science of service	Ostrom et al.	Journal of Service Research	850	65.38
2	2015	Service innovation: a service-dominant logic perspective	Lusch and Nambisan	MIS Quarterly	699	87.38
3	2008	Fundamentals of service science	Maglio et al.	Journal of the Academy of Marketing Science	611	40.73
4	2017	Digital Innovation Management: Reinventing innovation management research in a digital world	Nambisan et al.	MIS Quarterly	553	92.17
5	2007	Information technology and the changing fabric of organization	Zambuto et al.	Organization Science	503	31.44
6	2008	Service blueprinting: A practical technique for service innovation	Bitner et al.	California Management Review	460	30.67
7	1996	Market orientation and innovation	Atuahene-Gima	Journal of Business Research	428	15.85
8	2004	Identifying innovation in surveys of services: a Schumpeterian perspective	Drejer	Research Policy	411	21.63
9	2013	Servitization: Disentangling the impact of service business model innovation on manufacturing firm performance	Kastalli, and Van Looy	Journal of Operations Management	371	37.1
10	2015	Service innovation in the digital age	Barrett et al.	MIS Quarterly	359	44.88

Table A2
Most prolific journals for service innovation research.

Rank	Journal title	Subject Area	Total publication	Total citation	ABS rating (2021)	ABDC rank (2019)	Scopus CiteSc (2020)
1	Journal of Business Research	Marketing	36	2270	3	A	9.2
2	International Journal of Contemporary Hospitality Management	Tourism	28	1026	3	A	9.3
3	Journal of Service Research	Marketing	24	2656	4	A*	14.1
4	Industrial Marketing Management	Marketing	21	972	3	A*	8.8
5	Journal of Product Innovation Management	Innovation	20	1326	4	A*	10.6
6	Technovation	Innovation	17	1373	3	A	10.4
7	Research Policy	Economics	16	1924	4*	A*	11.4
8	MIS Quarterly	Management Information Systems, Knowledge Management	11	2156	4*	A*	14.7
9	Technological Forecasting and Social Change	Innovation	11	463	3	A	12.1
10	Public Management Review	Public Sector Management	8	259	4	A	6.4

illuminates the importance of understanding how institutions can influence service innovation in a service ecosystem. Within a service ecosystem, an independent actor can lead to service innovation (Taillard et al., 2016). In alignment with previous researchers (e.g., Laud et al., 2015), future scholars can apply organizational theories (e.g., social exchange theory, institution theory) to further the understanding of the nature of each actor in service innovation in a service ecosystem.

Similar to the dominant theoretical foundation in service innovation, social exchange theory highlights the importance of resources for particular aims (Lin, 2001). From a social exchange theory perspective, connectedness can influence one actor’s opportunity to integrate resources into service innovation (Baron et al., 2018). Grounded in the sociology discourse, social exchange theory claims that service ecosystem actors – both relational and structural – can create or limit individual or collective actors’ opportunities for service innovation (Akaka et al., 2012). While service-dominant logic examines the roles of actors in resource integration, social capital analysis analyzes the role of structural and relational embeddedness of actors in service innovation. With this in mind, future studies are needed to understand the importance of how relational and structural actor embeddedness can influence service innovation and its outcome in a service ecosystem. This can provide opportunities for various context levels (micro, meso, and macro) and between different service ecosystems (Vrontis et al., 2021). In addition to social exchange theory, institutional theory, stakeholder theory, and dynamic capability theory can be beneficial for investigating service innovation at a broader service ecosystem level. Institutional theory can enrich our understanding over the role of the service

ecosystem in adopting and implementing innovative service offerings. Stakeholder theory addresses the social contract between the service ecosystem and the broader social structure (Parris et al., 2016). Importantly, stakeholder theory considers how different actors in a service ecosystem can affect or be influenced by firm innovation (Leonidou et al., 2020).

5.2. Strategic approach towards service innovation

Most studies on service innovation discuss the sources of innovation as well as the resources (such as employees, and customers) of actors. This is apparent in our results because of the themes in both periods (e.g., management, information, adoption, and learning) in addition to the closeness of service-dominant logic (actors’ focus) (cluster 4) to innovation management (cluster 3). Importantly, the service-dominant logic cluster appeared closer to those articles with open innovation in the resource-based cluster (cluster 1).

Open innovation studies showed a stronger connection with the dynamic capability approach articles compared to the service-dominant logic perspective. While service-dominant logic stresses the integration and application of actor resources, dynamic capability emphasizes implementing value-driven strategies to provide a competitive service offering. Therefore, corporations need to move away from their inherited boundaries and internal and external knowledge in order to offer innovative services. In this regard, we believe that open innovation is a fruitful area for further study. Open innovation, which entails using external and internal resources for innovation, can integrate service-

dominant logic with capability-based-view articles, which can result in proposing a strategic framework for the service innovation domain. Such research can provide a better understanding of firm conditions for integrating resources and of strategic perspectives for service innovation.

Although some studies link service innovation and service-dominant logic (Ordanini and Parasuraman, 2011, Lusch and Nambisan, 2015), none has linked open innovation to service-dominant logic. The text mining analysis revealed that the importance of the dynamic capability focus has decreased its importance in the recent years of service innovation studies. Therefore, accordingly, we suggest that integrating open innovation with a service-dominant logic perspective can provide a strategic perspective on the service innovation domain. Integrating open innovation with such a process can help researchers gain a deeper understanding of service innovation and better understand how each actor in a service ecosystem can contribute to the creation of innovative services.

Customer experience innovation - As found in the results, the notion of open innovation led to recent studies on service innovation being more linked with the customer centric perspective. Aligned with this emerging trend, customer experience has become one of the main foci of service innovation studies. From this study's perspective, customer experience is shaped with the customer interaction within the service encounters (Becker and Jaakkola, 2020). In this regard, experience innovation, at the mean on innovative service encounters, can have an impact on customer experience (Larivière et al., 2017; Yuan and Jiang, 2015). However, without the shadow of a doubt, customers will notice any given changes as a form of innovative service alteration. This impact depends on how ready the customer is to accept service innovation: the readier they are, the better the experience they will have. Hence, we assume that future scholars can apply diffusion theory to understand the factors that influence service innovation performance. Diffusion theory (Rogers, 1995) can be applied for understanding the factors that can influence the customer's decision to adopt innovative service offerings.

Based on the results, the recent technological innovation that will shape the future of customer experience would be the advancement of technologies such as robots. As an illustration of this, Dootson et al. (2022) investigated the relationship between service robots and deviant consumer behavior; they demonstrate that when service robots are replaced with human agents, customer perceptions of capable guardianship are enhanced. Thus, the service environment increases, and deviant consumer behavior decreases. Also, as rightfully mentioned by Meidute-Kavaliauskiene et al. (2021), the process of creation and realization of advanced service innovation, such as service robots, must be considered more in various service industries; it is particularly vital for the tourism industry after the global epidemic experience.

As a result of the recent advancement of information technology and the high speed of social media penetration, intelligent robots will soon become an essential element in people's daily lives (Zhong et al., 2020). Subsequently, to attract new customers in the marketplace, it is important to focus on robot customization with a user-friendly interface design. In that direction, the consumer could interact with service robots out of enjoyment, fun, and curiosity and thus appreciate the worth of the new in the new function of service innovations (Morosan and DeFranco, 2019).

In conclusion, dealing with the constantly changing service touchpoints requires customer resources (McColl-Kennedy et al., 2019). Therefore, the burgeoning interest in the influence of service innovation on customer experience has largely dominated articles on the service-dominant logic approach and prompted the emergence of a systematic approach towards service innovation.

The evaluation of innovative service encounters can be anticipated by the extent to which customers have to integrate their resources (Barrett et al., 2015). With this in mind, service design thinking can be helpful in envisaging addressing these human-centric challenges in the service innovation domain. Service design thinking applies a customer-

centric approach to understand the role of customers along with their experience in a service ecosystem.

Importantly, the studies that have focused on the notion of experience design in a service ecosystem can also benefit from the service innovation domain. The results indicated that the main theoretical lenses applicable in the service innovation domain can be applied to the development of related services as well. Studying the notion of service design in the future can take advantage of dynamic capabilities as well as market orientation as a new theoretical perspective to develop this field. Furthermore, having an organizational firm design for innovative performance requires managers to identify the most powerful service of ecosystem actors in a particular institutional setting. Future studies can benefit from the rigorous analysis of service design, service ecosystem, and service innovation. This fruitful line of studies can benefit from being grounded in the dynamic capability.

6. Conclusion and implications

This research provided an integrated and rigorous analysis of the evaluation of service innovation domain across different time periods, and established a foundation framework for advancing the service innovation domain. Applying both qualitative and state-of-the-art quantitative methods, this study revealed the influential theories and main themes of the service innovation domain, revealing where they came from, how they evolved over the years, and where they are possibly heading.

Concerning the results of the present study, service innovation has benefited profoundly from a robust theoretical and diverse heritage. Related to six theoretical perspectives, there are mainly three identifiable trends. *First*, knowledge-based and absorptive capacity emerged with the application of the RBV. *Second*, the application of the RBV in the service domain resulted in the emergence of service-dominant logic as a main theoretical perspective for service innovation. *Third*, the application of dynamic capability is noteworthy in the recent period of service innovation, and it shows an increased application of the knowledge and resource-based approach in the recent development of the service innovation domain.

In the subsequent sections, we offer some theoretical and managerial implications. Through the evolution of the service innovation scope, three common themes involving customer, service, and adoption have been impressive studies in the two main periods under investigation (1992–2012 and 2012–2021). It should be noted that the study identified a significant shift towards a service ecosystem and a strategic framework in the future of service innovation. Additionally, the findings of this study provide theoretical implications and practical guidance for managers in order to better direct innovations in the service domain.

6.1. Theoretical implications

With respect to the theoretical side, our study encourages a better realization of influential theories, important themes, and concepts related to the service innovation sector. *First*, our analysis showed how, over time, service-dominant logic became the dominant theoretical framework in service innovation and had loose connections with other different research streams (e.g., capability-based perspective). These results support preceding literature which suggests that service innovation is associated with RBV (Bhat and Sharma, 2021; Gegužytė and Bagdonienė, 2021; Hsieh and Chou, 2018; Kim et al., 2015; Tsou et al., 2016), service-dominant logic (Bhat and Sharma, 2021; Nittala et al., 2022; Ordanini and Parasuraman, 2011; Skålén et al., 2015), and dynamic capability (Den Hertog et al., 2010; Kim et al., 2015; Xiao et al., 2020).

Second, in spite of the fact that there have been numerous earlier studies examining service innovation in different contexts, comprising new service development (NSD) (Cheng et al., 2012; Myhren et al., 2017), service innovation implementation (Schaarschmidt, 2016; Singh

et al., 2020), sustainability in service innovation (Calabrese et al., 2018; Li et al., 2018), social media and information technology development in service innovation (Pandeya and Rupnawar, 2020; Ryu and Lee, 2018; Wu et al., 2022), digitization and service innovation (Calle et al., 2020; Kitsios and Kamariotou 2019), this is one of the first attempts to integrate key concepts to examine their impact on service innovation.

Third, findings regarded text mining analysis in the two different periods in the identification of three important themes in the service innovation domain confirm Mahmoud et al.'s (2018) findings that demonstrate service innovation must create value for customers to enhance customer satisfaction. Other studies support adoption as a prerequisite to sustainable innovation (e.g., Casidy et al., 2020; Laukkanen, 2016; Martin et al., 2016).

What is more, the results related to emerging new trends such as e-service, robots, and digitization contribute to the current belief held by Kuo et al. (2017) that the fun and curiosity aroused in consumers in their interactions with these tools are influential factors to improve service robots, and the findings of Vakulenko et al. (2019) which explain that technological development and changes in consumer behavior have triggered a fast increase in e-service innovations.

Last, although we offered fruitful insights for service innovation scholars and practitioners, we wish to make clear that we do not have the answer to how service innovation should and can develop over time. We believe that investigating the past and present state of service innovation can help us to stand on the shoulders of giants and see the possible future that our predecessors could not see.

6.2. Managerial implications

Implementing our findings into service innovation can contribute to developing a strategic and systematic view of the service innovation domain. Doing so can ultimately benefit practitioners in service innovation as well as service strategists. In our study, we emphasized particular areas where managerial implications of the strategic service view could be strengthened. Having a comprehensive, firm-focused approach to service innovation can enable managers to benefit from social insights into their collaboration with different actors in a service ecosystem (e.g., employees, and customers). For instance, managers can link dynamic capabilities and open innovation approaches to generate value co-creation activities.

Additionally, it is important to highlight the importance of a service ecosystem, as it can offer valuable insights into the social and multifaceted aspects of the dynamic service innovation process. Confirming to this study, firms that focus their attention on the conventional concepts of service need to change, and consider new concepts, like service design thinking, experience innovation, e-service, and robots, all of which deliver valuable, personalized, and relevant service to consumers.

7. Limitations and future research

Future research should acknowledge the limitations of this study. We discover that future research can be conducted along these axes based on the term 'tri-axial', which includes theory, context, and methodology (Christofi et al., 2021).

Axis 1: Theory - The identified theoretical results distinguished the current limitation of the service innovation domain, which can be used for proposing future potential directions of the service innovation domain. To begin with, the *first* limitation associated with the service innovation is that, although there has been increasing attention paid to the roles of different stakeholders in the service innovation domain (e.g., Jamieson and Martin, 2021; Jonas and Roth, 2017), there has been only limited effort to develop a strategic approach for service innovation both for manufacturing and product companies. However, it is vital that the focal firm explores the influence of different stakeholders on the service innovation behaviour (Lütjen et al., 2019). On the other hand, the change towards more service-centric research has forced the service

innovation domain to be more focused on theorizing the different sources of service innovation and on understanding the phenomenological perspective of different actors' participation in service innovation.

Second, in our discussion, we considered how different theoretical research streams can drive the advance of the service innovation domain. Without a doubt, there are other research streams that can be integrated with service innovation to advance the research domain, which future studies can investigate.

Third, due to the theoretical foundation of service innovation, there has been insufficient focus on the new concepts such as service ecosystem perspective (Wang et al., 2019), service design thinking (Chen et al., 2018), experience innovation (Khaled et al., 2021), and the role of robots in service innovation (Meidute-Kavaliauskiene et al., 2021). In this regard, service ecosystems are self-adjusting systems which combine various actors who are connected through an institution (Chandler et al., 2019). So, it is vital that researchers know more about the influence of service innovation on different actors at different levels (micro, meso, and macro). Furthermore, studies are needed to link service innovation with non-monetary value (social innovation) and to identify under what circumstances they are successful. Hence, much remains to be studied to understand how service innovation happens in a complicated service ecosystem. Table 6 presents more future suggestions in the form of research questions in order to complete the theoretical expansion process in the service innovation literature.

Axis 2: Context - A core role of services is to create value by meeting the needs of individuals within the economic, social, and cultural context of a country. So, service innovation processes depend on the economic, social, and cultural background of a nation (Cho, 2021). Consequently, this review can be empirically examined and compared in different geographical, social, institutional, and economic contexts. Moreover, related to our findings, adaption is one of the most important themes in service innovation streams. So, it is valuable to review and compare the consumer adoption of new trends of service innovation like robots and digitization in different contexts.

More importantly, in this domain, the influence of recent context-oriented trends of a global business on service innovation also needs further exploration. Recently, scholars have identified some of these trends as cultural distance, cross-cultural management, institutional environment, leadership style, and sustainability (Hanaysha et al., 2022; Jensen, 2022; Lim, 2022), which play a key role in explaining service strategy in global business. This insight will direct academic scholars to focus more on theorizing the different aspects of service innovation in the global context. Also, policymakers need to consider the effects of these different aspects on the operationalization of service innovation in the contemporary global marketplace.

Axis 3: Methodology - In this part, the *first* limitation is related to database selection. Since we only used the Web of Science database, we encourage other scholars to use Scopus or Google Scholar or a combination of data from the various databases. *Second*, we only focused on articles in journals with high impact factors. *Third*, our text mining results did not reveal any negative or positive sentiment connected with the identified themes or concepts, which might be beneficial in identifying the multiple research streams that make up the service innovation domain. *Last*, different techniques could be applied to conduct a systematic literature review of a scientific research area; other forms of systematic literature review might reveal different forms of service innovation networks. Therefore, we recommend that future scholars test different systematic methods such as EFA. Also, as mentioned by Lim et al. (2022a), scholars could consider a *meta*-systematic review of existing reviews on the subject or explore particular relationships of interest through *meta*-analytical reviews. Future scholars also could use empirical techniques such as neuroscientific methods like neuro-marketing to investigate the "black box" of the target audience in identification service requirements that would result in the identification of more innovative services.

CRedit authorship contribution statement

Nasrin Mahavarpour: Writing – review & editing. **Reza Marvi:** Writing – original draft, Visualization, Methodology. **Pantea Foroudi:** Supervision, Software, Resources, Project administration.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A

See Fig. A1, Fig. A2, Fig. A3, Fig. A4, Table A1, Table A2

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