

The development of open service innovation at public sector

Abstract

The purpose of this paper is to introduce how open innovation in services is managed and implemented in the context of public sector organisations. Open innovation and service innovation have both attracted substantial research interest, but the implementation of open innovation in services and the public sector has been much less researched. This paper aims to address three knowledge gaps, two in theory and one in practice. First, existing literature introduces several references to open service innovation, but conceptualisation that can identify which areas of the literature are connected to the concept is lacking. Second, little attention has been paid to how the public sector is developing and managing an open service innovation approach. Third, in practice a framework is lacking for the open service innovation process that would provide management with understanding about how to implement it. To fill these knowledge gaps, this paper first considers which areas of the literature are relevant to the open service innovation concept and specific features in public sector innovation to introduce an open service innovation conceptual framework. The research method, a qualitative multiple case study, is then introduced, and the findings are presented from two-year case studies of public organisations in Finland: Tax Administration and Keva, the largest public sector pension payer in Finland. The conceptual framework is reconsidered based on the case-study results. The research findings indicate that open service innovation is complex and unique compared to product based open innovation. Furthermore, public sector organisations have specific features that impact on open service innovation management.

Introduction

Open innovation has received limited research attention in relation to services (Battisti et al., 2015; Randhawa et al., 2016; West & Bogers, 2017). Several scholars have stated that open innovation enhances service innovation by influencing positive performance (Mention, 2011; Mina et al., 2014; Ovuakporie et al., 2021; Paskaleva & Cooper, 2018; Randhawa et al., 2018; Virleée et al., 2015; West & Bogers, 2017). Chesbrough (2010, 17) claims that *'open innovation...accelerate[s] and deepen[s] services innovation, making innovation less costly, less risky and faster'*. Research on open innovation has mostly focused on product-based open innovation which commonly draws upon a wide range of stakeholders while open innovation in services tends to mainly focus on engagement with customers (Feller et al., 2011; Mina et al., 2014).

Services are regarded as highly relevant to today's networked and service-led society (Battisti et al., 2015; Gallouj & Djellal, 2010; The World Bank, 2019). It has been estimated that 70% of the economies of most developed countries are service based (Battisti et al., 2015; Gallouj & Djellal, 2010; The World Bank, 2019). Service innovation is particularly important because service constitutes a significant percentage of employment and income for various organisations in the most developed countries (Battisti et al., 2015). However, in service organisations such an open approach to innovation development has been identified as complex (Ostrom et al., 2015; Randhawa et al., 2018). The problem arises when we cannot rely only on knowledge received from customers or when customers are not always aware of their future needs in services. Therefore, involving a broader range of external stakeholders can provide richer sources of potential innovation.

Public sector innovation is usually related to services (Bommert, 2010; Djellal et al., 2013; Moreira et al., 2020). The number of public organisations reaching out for good ideas and for new ways to deliver public services is growing (Chen et al., 2020; Hartley, 2005). Instead of innovating in isolation, the public sector is attempting to make maximum use of external knowledge sources to add public value as innovation is not always generated internally (Chen et al., 2020; Lee et al., 2012). An increasing number of public organisations are innovating with others (Chen et al., 2020). They use an open innovation approach to recognise and achieve the benefits of collaboration (Mergel, 2015, 2018). However, literature has primarily focused on private sector products and technical innovations (Tuzovic et al., 2018). Public sector innovation is less researched (Al-Mansour, 2021; Bommert, 2010; De Vries et al., 2016; Djellal et al., 2013; Moreira et al., 2020) even though the nature of public

sector innovation is publicness and openness (Albury, 2005; Borins, 2001; Hartley, 2005). Furthermore, innovation in the public sector is a key contributor to national growth and the welfare of individual citizens (Windrum & Koch, 2008).

In the research presented in this paper, a review of the literature and discussions with practitioners revealed that there is currently no framework to support managers in the implementation of open service innovation in the public sector. Three knowledge gaps in the literature were also identified - two in theory and one in practice: the conceptualisation of open service innovation in relation to the current domains of knowledge, the characterisation of the management development challenges of open service innovation in the public sector, and the lack of a framework for the open service innovation process to provide guidance for managers on practical implementation. Therefore, this paper addresses the research gaps in open service innovation in the context of public sector and builds a framework from the current literature.

The proposed framework draws from two case studies, public organisations in Finland which were followed for two years while developing open service innovation. The research results reveal that it is challenging to manage open service innovation and there are some unique features in open service innovation in the public sector. The contribution of this research to innovation management theory is therefore a deeper understanding of the specific challenges and enablers of managing open innovation in service organisations. Furthermore, this research introduces specific features related to the public sector in regard to innovation management. The contribution to open innovation research demonstrates how service organisations differ from more generic open innovation practices. The contribution to practice is a structured approach to help manage the process of open service innovation.

This article begins with a review of relevant literature. Then, the initial conceptual framework for open service innovation is introduced to provide a theoretical understanding of open service innovation's internal process in the public sector. The choice of methodology is explained and the research design is presented including data collection and analysis methods. This is followed by the results of a longitudinal case study which provided rich data that enhanced the initial proposed

framework. Finally, the contribution to theoretical and managerial implications is presented, along with the limitations and suggestions for future research.

Theoretical background

Open Innovation in services

Open innovation is an approach that enhances an organisation's innovativeness to ensure that valuable ideas can come from inside or outside the organisation, and also that they can go to market from inside or outside the organisation (Chesbrough, 2003). Open innovation is a widespread phenomenon, influences many industries (Oliver Gassmann et al., 2010) and is adopted by different sizes of organisations in various fields (Mortara & Minshall, 2011). However, there is little research on the extent of the use of open approaches to innovation across service sectors (Randhawa et al., 2018; West & Bogers, 2017) because research on open innovation tends to focus on product-based innovation (Battisti *et al.*, 2015; West & Bogers, 2017) resulting in less awareness of open innovation approaches used in services. Previous literature acknowledges the importance of understanding the interaction between the various actors in the service sector, but open innovation in services has not received adequate attention from scholars (Randhawa et al., 2018; Virleé et al., 2015), even though in service organisations the openness of the innovation process has been identified as one of the key success factors (Ostrom et al., 2015).

The concept 'open service innovation' was first introduced by Chesbrough (2010) to describe a situation in which customers or users may need to participate in the innovation process. The main idea in open service innovation is that organisations receive information from customers through co-creation. Chesbrough (2010) introduced a useful basis for the concept of open service innovation, explaining, for instance, the importance of having a blueprint. He also identified that customer centricity is missing from Porter's value chain. Chesbrough (2010) explained that open service innovation offers greater opportunities for value creation. Overall, product-based open innovation commonly draws upon a wide range of stakeholders, while open innovation in services tends to mainly focus on engagement with customers to create value (Feller et al., 2011; Mina et al., 2014).

The research agenda needs to broaden in order to address issues about how to manage customers' and other stakeholders' collaboration throughout the service innovation process (Ostrom et al., 2015). The

challenge for service researchers is to move away from traditional disciplines and to conduct research involving multidisciplinary partnerships (Ostrom et al., 2015), throughout the innovation process, enabling and securing external and internal learning and the combination of different skills, as well as customer knowledge (Edvardsson et al., 2013). In this regard, open innovation is promising, as it focuses on a broader perspective of innovation using internal and external knowledge of an organisation (Chesbrough, 2006).

Open innovation with stakeholder collaboration

Stakeholder collaboration in open innovation can be defined as interactions among individuals or organisations affected and impacted by their collaboration on innovations (Grama-Vigouroux et al., 2020). Organisations engage with stakeholders to reach across boundaries to access necessary information (Gould, 2012) and to benefit from the knowledge of external and internal partners (Chesbrough & Crowther, 2006; Gassmann et al., 2010). Open innovation is collaborative in nature, and has a positive impact on value creation and value capture for an organisation and its stakeholders (Grama-Vigouroux et al., 2020).

Stakeholder collaboration can be internal or external (Grama-Vigouroux et al., 2020). The role of external sources of knowledge from internal or external stakeholders is highlighted in the literature on open innovation (Chesbrough, 2003). Internal stakeholders manage internal organisational functions such as marketing, HR, IT and management. The term internal stakeholders refers, for instance, to an organisation's personnel in different departments, teams or labs. External stakeholders provide organisations with access to a wide range of external resources, including information, insights and ideas (Iglesias et al., 2013; Markovic & Bagherzadeh, 2018). External stakeholders could be universities, other organisations, consultants, competitors, R&D partners, start-ups or customers, whereby external knowledge flows into the organisation (Huizingh, 2011). The collaboration between internal and external stakeholders represents a key resource in innovation value creation (Austin & Seitanidi, 2012). Laursen and Salter (2006) state that searching widely and deeply across several stakeholders can provide ideas and resources to harvest and exploit innovation opportunities.

Service innovation with customer collaboration

Service innovation is defined by Toivonen and Tuominen (2009, 893) as follows: ‘A *service innovation is a new service or such a renewal of an existing service which is put into practice and which provides benefit to the organisation that has developed it; the benefit usually derives from the added value that the renewal provides the customers.*’ For the purpose of this paper, we use this definition, as it introduces a practical perspective by adding that service innovation is the whole process of service development (Zeithaml, 2009).

The main focus in service research is to emphasis customer-centricity by focusing on customers defining business value (Drucker, 1958). Levitt (1960) describes how organisations aim to focus on fulfilling customer needs rather than selling products. The central argument in customer-centricity is that every decision begins with the customer (Grönroos, 1982). Customers create value for customers and value capture for organisations (Hemel & Rademakers, 2016), and they ensure the financial success of an organisation (Rust et al., 2004). Customer-centricity demands constant attention to customers and their changing needs and to how organisations can improve their decisions and activities to increase value creation for the customer (Hemel & Rademakers, 2016). Initially, organisations need the ability to deeply understand customers’ needs.

In customer-centricity, the role of customer collaboration is central (Falk et al., 2010; Toivonen & Tuominen, 2009). Collaboration with customers enables the transfer of complex unspoken knowledge from customers (Ryzhkova, 2015) and enables organisations to learn with them throughout the process of service development (Falk et al., 2010; Toivonen & Tuominen, 2009). Overall, close collaboration with customers in the service innovation process benefits an organisation (Von Hippel, 1976). Collaboration with customers is often interactive (Aarikka-Stenroos & Jaakkola, 2012), and it needs activities that go beyond listening to or learning from customers (Wouters & Kirchberger, 2015). It has been shown to be beneficial to use various approaches and methods throughout the service innovation process to gain close collaboration with customers (Ryzhkova, 2015).

Co-creation

Co-creation can be considered an evolution of the customisation philosophy by encouraging collaboration among customers and organisations (Heinonen et al., 2010). Co-creation is a

collaborative process of at least two entities (Maglio et al., 2009), where the customer is a value ‘co-creator’ (Lusch & Vargo, 2006). In addition, the concept of open service innovation introduces co-creation as a central method by which organisations can receive information from customers (Chesbrough, 2010). In the innovation literature co-creation is seen as a central aspect in a joint value creation process to foster and facilitate innovation in collaborating with stakeholders (Prahalad & Ramaswamy, 2004) combining knowledge (Kristensson et al., 2008) and becoming innovators (Degnagaard, 2014; Sarker et al., 2012).

Co-creation can also focus on collaboration with other stakeholders (not only customers) and on creating value for them (e.g. universities, suppliers or competitors) (Ind et al., 2017; Markovic & Bagherzadeh, 2018). However, most empirical studies on co-creation have focused on investigating interactions and relationships between organisations and customers (Gyrd-Jones & Kornum, 2013). Several authors have argued that there is a need to involve numerous stakeholders to receive full benefit from co-creation activities, especially in regard to innovation performance (Hakanen & Jaakkola, 2012; Loureiro et al., 2020; Mačiulienė & Skaržauskienė, 2016; Markovic & Bagherzadeh, 2018). For instance, other stakeholders can co-create services or products with customers despite customers not being aware that these products or services might be useful to them. The development of co-creation enables organisations to connect with customers and with other stakeholders to share experiences (Ind et al., 2013). Therefore, organisations should involve all key external stakeholders in their co-creation projects, rather than just customers. This is because many organisational outsiders can provide ideas for the co-creation of products or services (Ind et al., 2013).

Initial open service innovation framework

Despite the fact that practice as well as theory have moved forward since establishing the open service innovation concept, there is limited knowledge about it. The conceptualisation of open service innovation in relation to current domains of knowledge is inadequate. The current literature introduces some references to open service innovation, but conceptualisation is lacking to identify those areas of the literature that are connected to the concept. To fill this knowledge gap, this paper introduces areas of the literature that are part of the open service innovation concept to contribute to the conceptualisation of open service innovation. In this regard Figure 1 synthesises concepts into an initial open service innovation framework to facilitate understanding of the open service innovation process from a theoretical perspective.

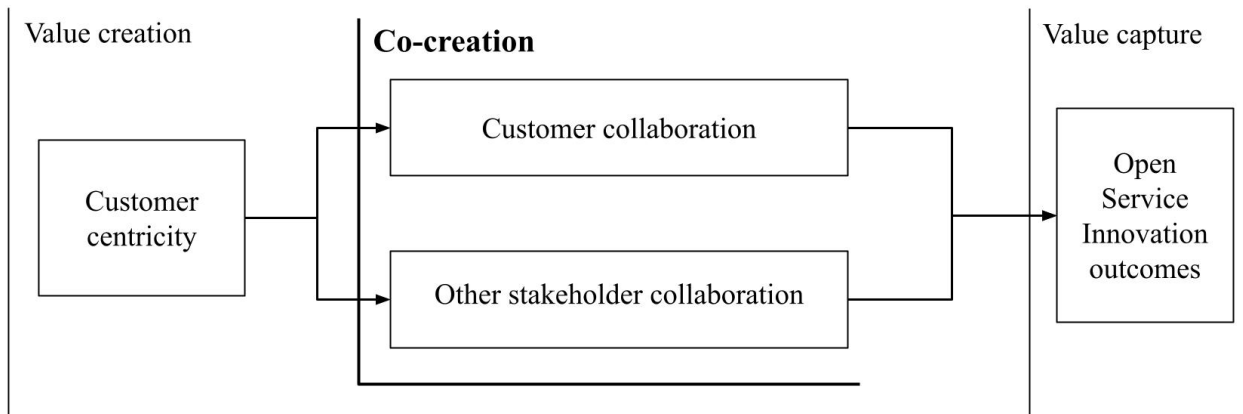


Figure 1 Open service innovation framework based on the literature

(e.g. Chesbrough, 2010; Grönroos, 1982; Vargo and Lusch, 2012; Chesbrough, 2006; 2008; Pisano and Teece, 2007).

The above framework depicts customer-centricity in the organisations, meaning that every decision begins by focusing on customers' needs, as they ultimately decide if innovation is useful or not (Grönroos, 2006). Furthermore, customers should be involved throughout the innovation development process (Grönroos, 1982). In this regard, value creation for customers can be achieved using customer or/and other stakeholder collaboration. This is facilitated using co-creation (Chesbrough, 2010) as it is seen in the literature as an enabler in innovation when working with customers or stakeholders by involving people and combining knowledge (Chesbrough, 2006; Sarker & Sahaym, 2012; Prahalad & Ramaswamy, 2004). Co-creation is an interaction that creates value for customers (Grönroos & Voima, 2013). The final outcome is open service innovation, where value is captured (Pisano & Teece, 2007).

This study focusses on open service innovation in the public sector. Therefore, the following section explains the characteristics of public sector innovation.

Innovation management in the public sector

The public sector consists of organisations that are either in state ownership or under contract to the state (Flynn & Asquer, 2012). These organisations are collectively sustained by members of political

communities and largely funded by taxation (Boyne, 2002; Flynn & Asquer). Public organisations aim to achieve overall efficiency and responsiveness to the needs of the public (Moore & Hartley, 2008). Albury (2005, 51) states that the '*steady flow of innovations is essential to sustain improvement in the delivery of public services*'. The public sector exploits the potential of their organisational settings to achieve widespread improvements in governance, society and service performance, thereby creating value for the public (Moore, 1995).

There are several distinguishing features in the public sector compared to the private sector. Yet it is useful to recall that classifications of public service innovation are largely derived from a private sector perspective (Chen et al., 2020). The public sector serves society as a whole by increasing fairness and justice and offering services for the common good (Buchheim et al., 2020; Moore & Hartley, 2008). Innovation in the public sector can be related to products, processes, institutional architecture, new ways of acting, or the introduction of new methods, tools or organisations adopted by governments to achieve their goals (Țigănașu et al., 2019). However, typically, innovation in the public sector seeks to improve or create new services rather than pursuing change in a physical object (Moore & Hartley, 2008) and it often takes the form of a change in the relationship between service providers and their customers, i.e. citizens (Bommert, 2010; Hartley, 2005). It has been noted that despite public service improvements being a crucial matter for citizens, relatively little research has been conducted on the process of public sector innovation (Kusumasari et al., 2019).

Public sector innovation presents a dilemma for politicians in supporting innovation (Raipa & Giedraityte, 2014). Although they wish to support positive improvements, politicians are also aware of the possibility of a highly visible failure in public services that could attract media interest or inadvertently serve the interests of opposing parties (Hartley, 2005; Raipa & Giedraityte, 2014). They are also aware that innovations have a high risk of failure (Albury, 2005). Therefore, the public sector can be cautious regarding innovation (Borins, 2001) given the inherently risk-averse organisational culture that can typify many public sector organisations (Raipa & Giedraityte, 2014; Torugsa & Arundel, 2017).

Another issue is how to incentivise and encourage innovation in the public sector. Traditionally, public sector employees have not been financially rewarded for innovation. A typical public sector

incentive is a rather small fund intended to support innovation development (Borins, 2001). According to Cankar and Petkovšek (2013) and Raipa and Giedraityte (2014), the barrier in public sector innovation is the lack of funding. Overall, public sector employees do not usually obtain direct financial benefits from higher organisational efficiency (Boyne, 2002). In contrast, private sector employers, particular managers, are likely to financially benefit from higher organisational efficiency (Moore, 2000).

As demonstrated, there are different features in private and public sector innovation, and it cannot be assumed that approaches to managing innovation in the private sector are necessarily readily transferable to the public sector (Al-Mansour, 2021). However, classifications of public innovation are largely derived from a private sector perspective (Chen et al., 2020). This is also seen in open innovation research which tends to be based on the analysis of large private sector organisations (Chesbrough, 2017b) Despite this, the public sector is also using the open innovation approach, and focusing especially on services (Tate et al., 2018; Venturini and Verbano, 2017). Therefore, this study aims to contribute to the literature by providing knowledge from the public sector in open service innovation management.

Research Design and Methodology

Given the complexity and emergent nature of the phenomenon under consideration, various research methods outlined by Yin (2009) were considered. Since this study focused on how organisations are developing open service innovation, the longitudinal case-study method was chosen to provide a comprehensive view over a certain time period. A qualitative multiple case-study approach was chosen to examine how public sector organisations are developing open service innovation. Multiple case design is appropriate when the same phenomenon exists in a variety of situations (Yin, 1982). A qualitative approach allows a deeper understanding of a complex phenomenon or building a theory (Eisenhart, 1989). The aim of the research was to build an open service innovation framework by providing an in-depth description with the possibility of generating a novel theory (Eisenhardt, 1989). This approach enabled theory-building and study of the phenomenon in real-time settings.

Case selection

Prior to data collection, the set of selection criteria is defined for suitable cases (Yin, 2009). The selection of this study followed Pettigrew's (1990) recommendation to select cases that are likely to describe the phenomenon under consideration. Eisenhardt (1989) stresses theoretical sampling and emphasises the need for a selection of cases that are likely to replicate previous cases or extend emerging theory. Pettigrew (1990) describes that, given the limited number of cases which can typically be studied, cases should be chosen in which the phenomenon of interest is transparently observable.

The case selection of public organisations in this study was made using the following three criteria:

- 1) embracing customer-centricity in developing their open service innovation
- 2) based in a country where the service sector is a dominant constituent of the GDP, and the importance of innovation is recognised
- 3) able to provide excellent access to data collection over time to capture data which demonstrates the development of open service innovation.

Based on these three criteria, two well-established public sector service organisations from Finland were selected: Finnish Tax Administration and Keva (the largest public pension provider in Finland).

Case organisations profile

The Finnish Tax Administration employs approximately 5,000 people. Its working idea is to collect the right tax at the right time to enable society to function. Taxation represents the most important source of public income and the revenue is collected to actively maintain and develop public services in Finland. The Tax Administration's task is to ensure that operations are effective, and systems are reliable. The objective is to encourage taxpayers to pay their taxes on their own initiative in real time and to charge any taxes due as soon as income is realised. Tax Administration has strongly developed its services during previous years. Its employees are specialists from many fields. Tax Administration also provides customer service besides personal service by phone, e-files, forms, chat and web pages.

Keva is Finland's largest pension provider and administers the pensions of local government, states, the Evangelical Lutheran Church and Kela employees. Its 530 staff members serve a total of 1.2 million public-sector employees and pensioners, as well as around 2,000 employer customers, that is, local government organisations, state employers and parish unions. Keva is responsible for funding the pensions of local government employees and for investing their pension funds. They place notable emphasis on customer-centricity. The focus is on being a customer-driven and effective pension provider. Pensions are funded with pension contributions collected from employers and employees alike. Their role in society is significant, and its values and mission are stated in its strategy, which aims to ensure the well-being of society. Keva's stated values are customer focus, openness, responsibility and effectiveness.

Data collection and analysis

Data collection took two years using triangulated data to provide a breadth of information (Pettigrew, 1990). The primary data source was interviews alongside observation and documentation provided by the organisations. Each source of data displayed a different aspect of the same phenomena which enabled the development of a holistic perspective of the phenomena under consideration. Table 1 demonstrates the source and type of qualitative data chosen in this study. Each source of data displays a different aspect of the same phenomena. The data was collected until no additional elaboration of emerging themes occurred, or in other words, until theoretical saturation was reached.

Source of data	Type of data
Interviews	Semi-structured individual and group interviews
Observations	Observations at meetings, workshops, training sessions and other non-formal social situations
Documentation	Reports, blogs, PowerPoint presentations, job adverts, social media posts, web pages, minutes of meetings and strategy papers

Table 1 Multiple data sources (Adapted from Yin, 2009).

During data collection, each case organisation was visited about once a month. People who participated in the interviews were the vice presidents, heads of HR, directors and specialists. They were all involved in innovation development, service development or general organisational development work. However, it should be noted that the public administrative job titles did not reflect

the full nature of their professional tasks. The most common job titles were ‘specialist’ or ‘director’, but their roles varied. For instance, a ‘specialist’ in practice could be a service designer, an IT specialist or a stakeholder collaboration facilitator. The interviewees were carefully considered by case organisations in discussion with the researcher to involve critical people involved with open service innovation. All interviews were conducted in Finnish, recorded and then transcribed. Individual interviews lasted between 30 minutes and 1.5 hours, and group interviews between 1 and 2 hours. Altogether, 69 people participated in the data collection. An overview of data collection intensity is shown in Table 2.

Case study	Number of people participating	Hours spent in onsite data collection (hr)	No. of meetings
Tax Administration	51	76	22
Keva	18	67	20

Table 2 Data collection intensity overview.

The data was collected during several meetings among personnel, following Yin' s (2009) recommendation that case studies should be typically based on a variety of data sources of empirical descriptions of a phenomenon. Therefore triangulated data was used to provide a breadth of information (Pettigrew, 1990). Table 3 demonstrates the source and type of qualitative data chosen in this study. Each source of data displays a different aspect of the same phenomena. These multiple sources allowed the development of a holistic picture.

Source of data	Type of data
Interviews	Semi-structured individual and group interviews
Observations	Observations at meetings, workshops, training sessions and other non-formal social situations
Documentation	Reports, blogs, PowerPoint presentations, job adverts, social media posts, web pages, minutes of meetings and strategy papers

Table 3 Multiple data sources (Adapted from Yin, 2009).

Data analysis

Data analysis was an iterative process, followed by an early analysis of cases throughout the data collection process. While data collection is important during early analysis, it aims to recognise biases and provide an accurate research direction, as interim analysis may provide the basis for improved data collection (Eisenhardt, 1989; Miles & Huberman, 2014). The analysis of case study evidence needs a strategy to create the story from the data (Yin, 2009). This strategy helps the researcher to treat the evidence fairly, produce analytical conclusions as well as eliminate manipulation (Yin, 2009). The strategy for this study's data coding was based on a theoretical proposition. Data coding was done in three phases (Richards, 2015): topic coding using theoretical propositions and conceptual framework subjects to categorise data, analytical coding to review the coded data (Miles & Huberman, 2014), and, in the final phase, a cross-case analysis to understand the differences and similarities between the cases.

The first phase of analysing data was *topic coding*, which is intended to generate new ideas and gathers material by subject (Richards, 2015). All the text from one subject guided the initial coding according to the proposed theoretical propositions (Yin, 2009), including open innovation, service innovation, co-creation and other repeating subjects. This dominates the early phase of research because it requires relatively little understanding of the situation. Specific words found in the text or identified in sections from the data related to the subject were gathered together with other repeating subjects. The data was labelled according to its subject using a mechanical word search. As a result, the material from one subject was reviewed according to a conceptual framework element drawn from the literature (figure 1), i.e. customer collaboration, other stakeholder collaboration and co-creation. The aim was to find meaningful data based on the framework as well as allow other repeating subjects to arise. The purpose was to consider the meaning of the context (Richards, 2015; Saunders et al., 2007) and develop the conceptual framework.

The second phase was *analytical coding*. The purpose was to review the data by getting closer to the world of the text and revisiting its context, thereby creating new subjects if needed. A review of the material enabled a critical examination of the subjects and the expansion of subjects as needed. The analytical coding introduced key themes and patterns or relationships, which could lead to the rearrangement of data. This was a critical phase as it led to a broader understanding of the subjects, including similarities and differences. In this second phase of data analysis, subjects were reconsidered and, as a result, new subjects were added to the coding. The purpose of analytical coding

is to gather material in order to review and refine the coded data and to create new subjects (Richards, 2015; Saunders et al., 2007). In analytical coding, a researcher creates subjects for the new ideas and concepts found in the data.

The final step was a *cross-case analysis* to examine themes, differences and similarities across cases (Miles & Huberman, 2014). The comparison between cases highlighted common issues and central themes (Richards, 2015). One objective of studying multiple cases was to increase generalizability. Cross-case analysis allows the observation of processes and outcomes across many cases and thus the development of more refined descriptions and prevailing explanations (Miles & Huberman, 2014). Glaser & Strauss (1970) explain that the fundamental reason for cross-case analysis is to deepen understanding and explanation. The researcher's aim in cross-case data analysis is to identify differences and similarities between the cases and to find reasons for different conditions. This enabled a determination of whether the patterns found matched other cases. The conceptual framework was reconsidered based on the reflections of the cross-case analysis results.

The results were introduced to senior management and key persons related to this study by organising two events in case organisations where between 20 to 150 people participated to openly discuss the research results. These events allowed the researcher to obtain validation of the results.

Results and Discussion

This section describes open service innovation implementation, development and management from the perspective of the two public sector case studies by reflecting on the initial conceptual framework in Figure 1. First, three main themes in open service innovation identified as being central in the case studies are discussed: customer collaboration, other stakeholder collaboration and open organisational culture. Furthermore, other themes that were enablers in the public organisations while developing open service innovation are discussed. Finally, the framework presented earlier is reconsidered in light of the case findings.

Customer-collaboration

The case-study organisations understand the importance of customer-centricity and value creation. The top management has an understanding of the importance of customer collaboration supported by

their strategy. In practice, this can be seen by having personnel who are responsible for developing a customer collaboration approach. However, it should be noted that in these public sector organisations official job titles do not often tell what is behind a work task. Job titles are often specialist, but their role is to actively identify customer needs in order to provide quality in service delivery and design. The research data illustrates that personnel find that it would be useful if job titles reflected the actual content of the work. Furthermore, personnel expressed a preference for one internal unit for customer-centricity. Currently there is not such a central function; however, at the end of the data gathering process, Tax Administration decided to establish such a unit.

Service design skills are currently represented by external consultancies which help to gain understanding and information from customers to meet the organisations' current and future demands. Furthermore, these public organisations provide training for personnel on customer centricity. They encourage personnel to take part in training programmes, for instance to learn service design and use these skills in their work. During data collection they offered several training programmes for personnel and it was observed to be useful especially when people beforehand were given internal briefings on how the knowledge gained fitted into the organisations' current development plans. The internal and external communication about the importance for customers is highlighted for instance in blogs written by personnel and stories on organisational web page in one case organisation.

Customer-collaboration is an area where the case-study organisations explained that they could still improve. In an ideal case, when developing services from the beginning, they should involve customers throughout the innovation process. In real life, this does not always happen. Still services are often developed from the organisations' internal perspective and not from a customer perspective. The organisations need to have a more systematic process for engaging with their customers in order to make it part of their daily work, as customer-centricity is important. One manager explained: *'We should work together with our customers throughout when developing services...we need to engage with them in different parts of service development stages, but we don't have any systematic process to engage with our customers'*.

Other stakeholder collaboration

While customers were understood to be the most valuable future partners, working with other stakeholders was also seen as valuable among personnel and it was noted in their strategy. The

organisations' aim was to develop services by placing customers at the center and in parallel interacting with several other stakeholders. This would help case-organisations to develop services from various viewpoints by offering customers services where they can express themselves as customers as they are not always aware of services that are available or could be beneficial for them. However, it is a challenge to focus on the needs of both customers and other stakeholders simultaneously. In an ideal setting, organisations want to create ecosystems that include various stakeholders that would benefit customers.

Overall, case organisations are active in collaborating with stakeholders, and they find it beneficial. In this they seek a systematic process regarding how to openly develop new services with different stakeholders in order to make it a regular and constant part of their development work. In this regard, it is necessary to re-design internal processes. The challenge here is that the focus is on everyday work and not on innovation and there is not enough time for stakeholder collaboration. Case-study participants stated that structured management, systematic processes and transparency would be helpful: *'Systematic, transparency or organised management would be needed...this would help us to have transparency...in this way we would know what is happening and where...at least this would help so that we don't do the same things twice in different locations.'*

For instance, there might be the same development work happening inside an organisation with a certain outsider partner, but it is not known by others if the open service innovation process is transparent or managed. One challenge is how to share information so that it is transparent and open to all. The organisations reflected that it would be helpful to systematise cooperation with customers and other stakeholders. According to one interviewee: *'We have cooperation and so on but it would be nice to have one picture or stakeholder environment view where we are currently co-creating in order to see what is currently happening with whom and what is not.'* As this was identified as challenging, both public sector organisations started mostly focusing how to systematise other stakeholder collaboration. Keva appointed one person to be responsible for open innovation and later a person responsible for ecosystems. Tax Administration also had people responsible for other stakeholder collaboration and it was encouraged to be top management. However, their official job titles did not reflect their work context related to other stakeholder collaboration. As mentioned earlier this is very common in public organisations as official job titles are very rarely changed. In the future the personnel wish to have an innovation unit to centrally manage other stakeholder collaboration.

The similarity between public sector organisations is that they must comply with public cooperation laws and treat all collaborators equally. During the early phase of data gathering, Keva found that compliance to be a challenge to its traditional business agility. On the other hand, Tax Administration created an internal process for coordinating with other stakeholders to make compliance as easy as possible and they did not find it challenging to co-operate with others.

The way other stakeholder collaboration is implemented varies among the case organisations. Tax Administration identified the importance of stakeholder cooperation earlier than Keva and engaged in several supporting activities. First, they actively meet with several national and international stakeholders who take part in seminars and other events. Some staff is assigned to bring outside knowledge to their organisation and to actively engage with others outside their organisation. Tax Administration personnel also have the opportunity to exchange staff with other public organisations in Finland. They are collaborating with higher education institutions with whom they have created internal processes on how to interact. Furthermore, they are collaborating with start-ups, for instance taking part in hackathons. Tax Administration values research knowledge and uses it as part of the decision-making process. This was also observed in Keva. Tax Administration has a long history of continuous development and therefore looks favourably on outside knowledge. It should be noted that even though Keva did not have so many functions for stakeholder collaboration, they were planning to facilitate this collaboration even more in the future.

Open organisational culture

Openness in organisational culture was highlighted in all the interviews as a central theme in open service innovation. An organisation's culture can be defined as 'the collective programming of the mind which distinguishes the members of one organization from other' (Hofstede, 1991; 262). It is characteristic of the organisation, not the individuals within it, but it is measured by the individuals' verbal and non-verbal behaviour (Hofstede, 1998). Throughout the data gathering process, open organisational culture was mentioned as an essential element in customer collaboration and in other stakeholder collaboration.

One of the changes that the organisations have made to enhance open culture is renovating or building new workspaces for employees in order to create open co-working spaces. The case-study organisations decided that there is no need to have offices or rooms where people have their own

personal desk. There should be free seating with separate silent spaces and meeting rooms that can be booked when needed. This is seen as an important enabler of the openness of organisational culture as one specialist states: *'Our physical working spaces are currently under construction as this will support working culture to be more open.'* There is no need to have individual offices for staff members, as free seating with separate silent spaces supports an open innovation culture. The aim is to reorganise offices so that people can easily work with and through others. Customers and stakeholders can be close to organisations by locating cafeterias in the same building that are open for all as Keva ensured.

The case-study organisations are aware that cultural change happens slowly, but there need to be several projects to support an open organisational culture in order to enhance openness, both internally and externally. In this regard, the support of the management is seen as an enabler. One organisation mentioned that the management had begun to support multidisciplinary work when they identified that an open organisational culture is a challenge: *'We have been visiting in our several offices in different locations in order to enhance multidisciplinary working and see how we could cooperate in order to create open organisational culture.'* Interviewees mentioned that an innovation culture should be part of the whole organisation and not just for some people: *'When creating an open organisational culture the whole staff should be involved.'* The organisations are actively developing openness in their work culture: *'We are developing an open innovation culture where our aim is that all who are working with us are part of it and the aim is that all employers have an open innovation attitude'.*

Open organisational culture enablers are similar in both public organisations but it should be noted that Tax Administration did execute enablers before the data collection compared to Keva who made changes during the data collection. This affected the fact that customer centricity, customer collaboration as well as other stakeholder collaboration at the beginning of data collection was more developed in Tax Administration compared to Keva.

Open service innovation successful enablers

As explained, customer centricity, customer collaboration, other stakeholder collaboration and openness in organisational culture were the main features in open service innovation. Throughout the

data collection their importance was highlighted together with a systematic and transparent process being a successful enabler. However, there were also other features which arose from that data which were seen as successful enablers in open service innovation development, implementation and management: top management support, strategy, training and workshops, co-creation, research organisation collaboration as well as data utilisation. In the following sections, these are explained in more detail.

Top management support

To be successful, support and recognition of open service innovation development by top management is essential. Management also participated in some workshops or training sessions. Management support for open service innovation was focused primarily on customer-centricity. A common obstacle was that some managers resisted organisational change. Personnel felt that some long-standing managers wished to continue in their current positions and, therefore, opposed any new development that would threaten their job security. This resistance was a common theme in both case study organisations.

Strategy

Instead of strategy focusing on open innovation as a primary area of emphasis, the original strategy focus in all cases was customer-centricity. Despite the fact that open innovation was highlighted in the organisations' strategy, how that strategy was carried out varied among the organisations. More specifically, it appeared that some managers focused on the importance of open innovation more than others. During data gathering, the organisations renewed their strategy and added new elements to support open innovation. However, customer-centricity was still the main focus of the renewed strategy. Common to all the case study organisations was that enabling open service innovation provided an overall direction to personnel and encouraged their work on open service innovation.

Training and workshops

Training and workshops were helpful in developing open service innovation. It was particularly useful when, before the workshops or training, an internal briefing was held on how open service innovation fitted into the organisation's current development plans. Another successful element of training was attendance of the same employee at multiple events, which enabled participants to gain a better understanding by adding knowledge to previously learned information and consistently

applying it to their work. When employees did not receive an internal briefing on how a training event applied to current internal development, the training was of little use.

Co-creation

Co-creation is used in both case-study organisations and it is seen as valuable, especially with customers and internally. The organisations explained that co-creation should always be part of the work when developing innovations for customers. However, in reality co-creation is not always involved with the open service innovation process as one of the managers explained: *'In reality if we think co-creation I can say that of course we test our service innovations with customers but not at the beginning of service development or throughout the service development, as it should be.'* Sometimes co-creation is used as a method by which to test new services with customers. Nevertheless, this is recognised in customer-centric organisations as a valuable method in terms of working closely with customers. Furthermore, co-creation is used internally among personnel.

Working with other stakeholders was described more as cooperation through meetings or emails, even though ideally co-creation in some cases would be beneficial. The reason is that when genuinely co-creating with stakeholders it is time consuming and it is not always needed when interacting with stakeholders. For instance, the public sector might buy a specific product or service from stakeholders without any co-creation. Overall, case study results revealed that co-creation is not always used in open service innovation.

Research organisations

The importance of working with research organisations was more in the public sector's interest compared to start ups or other organisations because there is no need to tender out as when working with private organisations. During the process of developing open service innovation activities, the public sector started to highlight the importance of cooperation with research organisations. Some employers highlighted the importance of working with research organisations, especially at the end of the data collection, stating, for instance: *'We should work more with universities in several ways...as research projects or dissertations, and we should also remember that we wish to attract students to work in our organisation in the future'*. At a later point in the data gathering the

organisations started to become more interested and highlighted the value they could gain from increasing cooperation with research organisations.

Data utilisation

The case-study organisations find that data can be useful with a customer-centric view when developing innovations. Therefore, they seek how to use the data that they currently have and to combine this data with their stakeholders' data. Ideally, the result of this cooperation is to offer services to customers by finding their hidden needs through combining different data sets. This is already being done in one of the case-study organisations, but they wish to develop it further. The current problem is that there is much done with the data but in isolation by the service development team. In Keva the challenge is that the data is not in a condition in which it can be used directly. However, they plan to change this in the future. Overall, one of the key issues in both case studies is to see the value of data when current or new services are developed.

Open service innovation framework integrated with case-study results

In light of the case-study research results, the framework drawn from the literature was reconsidered. One of the changes to the framework was to emphasise that open organisational culture is one of the main features in public sector organisations in order to successfully implement open service innovation with customers and other stakeholders. Furthermore, the results showed that co-creation is not constantly part of the process of collaborating with customers and other stakeholders. Co-creation is not always necessary, because when an organisation works with customers or other stakeholders, the nature of the work is often cooperation. Therefore, in the following framework, Figure 2, co-creation can be seen as one enabler. The findings also depicted several other enablers when public organisations develop an open service innovation process which are summarised in Figure 2.

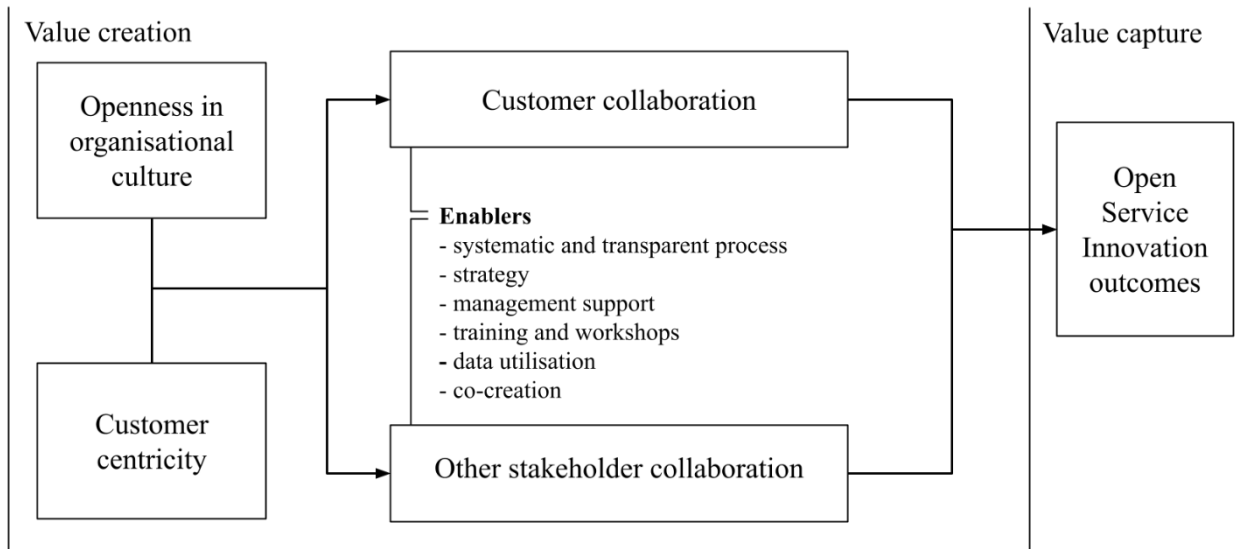


Figure 2. Open service innovation framework enhanced by case-study results.

Figure 2 illustrates how public organisations focus on customer-centricity in open service innovation by aiming to create value for customers. In this regard openness in organisational culture is needed to achieve collaboration with customers and other stakeholders. The overall aim is to capture value by delivering an open service innovation outcome. In this process several enablers were identified by the case-study findings, illustrated in Figure 2, which positively enhance open service innovation implementation in practice.

Theoretical Implication

This study examined open service innovation development, implementation and management in the public sector, which was identified as a gap in theoretical knowledge. Therefore, this study contributes to open innovation literature where services are less researched (Randhawa et al., 2018; Virleé et al., 2015) as well as the public sector (Lee et al., 2012; Mergel, 2015; Tate et al., 2018). This study contributes to the current literature on open innovation, service innovation as well as innovation in the public sector. Furthermore, in practice it offers public sector organisations knowledge of how to develop approaches, manage and apply enablers to achieve successful open service innovation. The open service innovation framework illustrates how different concepts are dependent on each other.

This study identifies openness in organisational culture as an essential element in customer and other stakeholder collaboration. Open organisational culture was developed through similar actions in the case studies: facilitating the premise to support multidisciplinary work, focusing internal projects on enabling openness, and having management examples and recognition of the importance of organisational culture.

The results clarify the role of co-creation when using an open-innovation approach in the public sector. Co-creation is mainly used internally with customers and, sometimes, with other stakeholders. This study reveals that co-creation enables open service innovation but is not an essential element. In contrast, service marketing literature views the co-creation evolution of the customisation philosophy through the lens of customer and organisational integration (Heinonen et al., 2010). Our findings contradict the service marketing theory concerning the role of co-creation, as the results indicate that co-creation is not essential to collaborate with customers or other stakeholders and not always used; it is only one enabler in collaboration.

The public sector cases identified several enablers toward successful open service innovation. A systematic and transparent process was one such enabler, as it can provide transparency when collaborating with several partners. Also, top management support and identification of open service innovation in strategy was seen as necessary. Case organisations also provided training and workshops for personnel, which was especially helpful when there was an internal briefing beforehand about how the training fitted into their organisation's development plans. Moreover, one of the key issues in both case studies was to see the value of data when current or new services are developed.

In addition, this study advances knowledge regarding public organisations' roles in open innovation. This study recognises the public sector's aim to develop services by mainly focusing on customer collaboration and secondly other stakeholder collaboration. Research results reveal that creating an internal organisational process about how to work with different stakeholders is beneficial. Furthermore, the public sector is also developing services using the open innovation approach. Overall, this study provides an understanding of public organisations and how they implement and develop open service innovation in comparison to existing research which has mostly provided useful

information on products and technical innovations for the private sector rather than services in the public sector (Tuzovic et al., 2018).

Managerial Implication

The contribution to practice in this study is a structured approach to managing the process of open service innovation. The research findings are relevant for management in public organisations (and other organisations) focusing on developing their internal open innovation processes by focusing on services. The insights are useful in understanding what kinds of practical actions enable open service innovation. Furthermore, the research sheds light on how to manage services focusing on using the open innovation approach.

The open service innovation framework is required to support managers in the implementation and development of open service innovation, and thus in discovering its enablers. Our findings demonstrate the essential elements of open service innovation implementation which are summarised in Figure 2. This may prove useful to organisations when developing open innovation services. Overall, this research provides information as to how the open service innovation process was developed over time.

Limitation and Future research

This study has integrated open innovation literature with service marketing (Ostrom et al., 2015). In the process, this study has introduced which areas of the literature are relevant to and form part of open service innovation. The research has also presented an initial conceptual framework as well as a modified conceptual framework with rich case study findings from the public sector, and introduced practical perspectives to open service innovation process.

However, this paper is not free from limitations. First, the data was collected in one cultural context only. Therefore, further research is needed to take into consideration other cultural contexts that may affect the open service innovation process. This could be done using a case-study approach or by testing and broadening the results using surveys. Therefore, the next step of this study is to investigate

if the findings are also supported or if they differ in other cultural contexts. Second, future research could also focus on differences and similarities in public and private organisations in open service innovation development. Third, the open service innovation framework presented reveals several areas of literature that are connected to open service innovation and require further investigation.

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