

Innovation in public service systems

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Abstract:

In this chapter we deal with service innovation in the public sector. We outline the characteristics of service innovation and what makes the conditions different in the public sector compared with market-based service sectors. We use the concept of innovation capabilities as the core concept for comparing private and public service innovation. Service innovation within public service systems requires some of the same innovation capabilities as in market-based service sectors, but because public service systems are integrated in political systems, other, partly overlapping, innovation capabilities are required. The political system's lead, or authorization, in terms of service innovation processes is a particularity. Involvement of employees and their bricolage is an important capability, which we find in both private and public services, as is innovative co-production with users. Yet, in the public sector, these particular capabilities are related to the fact that 'users', who also have roles as citizens, and employees are perhaps more idealistic in certain situations. The capability of externalizing some services to external partners and create networks among public and private actors is important for innovation in public services, and it involves such elements as being able to specify the services, coordinate public and private interests, create trust among public and private partners, and justify externalization and collaboration vis-à-vis citizens.

Keywords: Service innovation, public sector, public service innovation, innovation capability

1. Introduction

In this chapter we deal with service innovation in the public sector. Drawing on the scientific literature (see Gallouj and Djellal, 2010 for an overview) we outline the characteristics of service innovation, which has usually been studied within market-based service sectors. The chapter highlights what determines service innovation, how service innovations are made and what is unique to innovation in service sectors compared with innovation in manufacturing sectors. Drawing on further studies of public innovation and public service delivery, we outline and discuss what may be particular to innovation in public service systems, i.e. what makes conditions in the public sector differ from those in market-based service sectors (see Windrum & Koch, 2008 for an overview). We use the concept of innovation capabilities as the core concept for comparing private and public service innovation. Innovation capability is an organization's ability and competence to initiate and carry out innovation processes (an adaptation of David Teece's concept of dynamic capabilities; Teece & Pisano 1994; Teece 2014; see also Barreto, 2010; Sicotte, Drouin & Delerue, 2014). More specifically, innovation capabilities are the processes of an organization which use its resources (Eisenhardt & Martin 2000) to initiate and carry out innovations. Similarly to Eisenhardt and Martin (2000), we hold that although capabilities may be idiosyncratic in their detail and may emerge in different ways, there are common features across organizations associated with effective innovation capabilities (Eisenhardt & Martin, 2000). A high innovation capability requires several types of resources (cf. the resource-based view of the firm; Wernerfelt, 1984; Barney, 1991) such as competencies (Hamel & Prahalad, 1994), capital, technology, knowledge base

and so forth and the management capacity to handle the resources. We describe the core capabilities that are crucial for developing service innovations and those specifically required for developing innovations in public service systems.

The chapter is structured as follows: First we present and define service innovation as a generic phenomenon and discuss the public sector as a service system. Next, we present and discuss innovation capabilities in service sectors and discuss the particular innovation capabilities in the public sector. Finally we present our conclusions.

2. Service innovation and the public sector

2.1 Service innovation

Service innovations have particular characteristics. It has been discussed whether and how service innovation is different from manufacturing innovation (Howells, 2010). Much of the theory and empirical knowledge about manufacturing innovation can be applied to services, but service innovation also has its own characteristics. These particular characteristics have been investigated and reported in overview articles (van den Aa & Elfring 2002; Rubalcaba et al, 2012) and in several anthologies (Boden & Miles, 2000; Miles & Metcalf, 2000; Andersen et al, 2000; Tidd & Hull, 2003; Gallouj & Djellal, 2010; Sundbo & Toivonen, 2011).

Service innovations are generally of the same type as those mentioned in general innovation theory, which is based on manufacturing studies: new products (in services: service products), new processes (in services: new production and delivery processes), new organizational forms, new market behaviour, and, we may add, new strategies or business models. The particularities for service innovation lies in the integration of these innovation forms, how much the innovations (e.g. a new service product or a new procedure) are repeated (or reproduced) and the way in which new services are developed (Sundbo, 1997; Gallouj & Weinstein, 1997; Gallouj & Djellal, 2010). Service innovations are often integrated; since services traditionally cannot be stored, but must be produced at the moment of consumption, the product, the production and the delivery procedure are integrated. With IT knowledge services can increasingly be stored and the users can practise self-service. Services have traditionally been tailor-made and thus a new solution for one client has not been repeated for other clients. The innovation has not been reproduced so its effect has been very slight. However, services can also be standardized, mass produced and distributed, in which case the innovations are reproduced. Finally, innovation processes – the ways in which new services are developed – are complex in services. Service innovation is often an unsystematic process, based on practical ideas supplied by customers or employees. Service innovations are rarely R&D based and have traditionally not been technological; the latter situation has changed, however, as IT in particular has become the basis for services (especially knowledge services). However, most service innovation processes are based on the efforts of many actors. They are largely based on users (or customers) (Sundbo & Toivonen, 2011; Edvardsson, Kristensson & Magnusson, 2012); either they use knowledge about the users and the market or users are directly involved in innovation activities. Managers and employees are involved as intrapreneurs (cf. Pinchot, 1985), and employees' encounters with customers are often the basis for innovation ideas (Sørensen, Sundbo & Mattsson, 2013; Sundbo et al, 2015).

Innovation processes, and therefore also the necessary effective capabilities, are generally of a similar kind to knowledge services (such as education, consultancy, administrative services and engineering services) and manual services (such as cleaning, catering and transport). Knowledge services have become more IT-based and thus slightly more technological. This has made industrialization of knowledge services possible, and has led to many rationalization process innovations.

2.2 The public sector and services

The public sector has been studied mostly as a political system. However, the public sector also provides services to citizens and consequently it can be considered as containing service systems. For example, the public sector provides educational services, health services, protection services (police and defence), transport services and so forth. According to some political theorists, many of these services might as well be produced by private organizations. According to others, most market-based services could be produced by public organizations. This serves to illustrate that the service perspective and service innovation are relevant topics for discussion and research in a public context.

Delivery of services as understood within the market-based service sector is not the only task, or role, of the public sector. However, it is one which has attracted increasing awareness. The recent discussion about cost reduction and tax reductions has emphasized the public sector's role as a service provider. In line with the ideas of new public management and new public governance (e.g. Osborne, 2010) politicians and public administration increasingly emphasize that service delivery processes could be more efficient and user-friendly. This highlights the role of service innovations, particularly process innovations. Also, citizens' satisfaction with public services, and the growing demand for quality, has attracted political attention. The ability to deal with quality issues as well as so-called 'wicked problems' (to which it is difficult to find simple solutions, such as crime or terrorism) are defined by politicians as central to voters' assessment of governments' and political parties' performances. Service product, organizational and systems or 'business model' innovations are therefore important in the public sector.

Research has not yet focused very much on public service innovation (the few examples include Windrum & Koch, 2008, Hartley, 2005, Sørensen & Torfing, 2011, Gallouj, Rubalcaba & Windrum, 2013 and Fuglsang, Rønning & Enquist, 2014). However, this is a growing research field and many similarities have been found between service innovation in the market-based sector and that in the public sector, and also some elements unique to the public sector.

3. Innovation capabilities in services

Drawing on research on service innovation we identify six main innovation capabilities, i.e. abilities to use resources to generate innovations that show commonalities across firms. These six capabilities derive from our interpretation and summary of many empirical results and theoretical suggestions and models. We summarize detailed empirical results by these main capabilities, which we present in the following paragraphs in random order. The capabilities are based on our interpretation of what research so far tells us about what is important for service firms.

1. Design and R&D

Service innovations can be designed (Tax & Stuart, 1997; Edvardsson et al, 2000; Lenfle and Midler, 2010; Kimbell, 2011). Research has shown that service innovations are not research-based and service firms do not have R&D departments to the same extent as high-tech manufacturers (Sundbo 1997; Drejer, 2004; Howells, 2010). However, service innovation is becoming much more systematic and thus follows the rules of science. Further research about service products and activities, particularly within management, marketing, IT and software, psychology and sociology has been carried out and formed the basis for service innovations (Evangelista, 2006; Miles, 2007; Hipp, 2008; Camacho and Rodriguez, 2010). Taking advantage of the opportunities that science can provide requires that the service firm, or public organization, has the ability to do so. It requires an absorptive capacity constituted by the organization's ability to find, understand and use external knowledge (Cohen & Levinthal, 1990). The service organization should also have the internal ability to design and develop new services and service delivery systems. This demands professional developers, possibly R&D or innovation departments; the latter are departments tasked to ensure that innovation processes are carried out, either bottom-up as employee intrapreneurship (cf. Pinchot, 1985) or top-down as organized innovation projects (Sundbo, 1997; Sørensen et al, 2013). Methods of systematic service design have also been developed and can be important in terms of innovation ability (Cooper & Edgett, 1999; Edvardsson et al, 2000).

2. Technology – particularly IT

Even though service innovations are not as technology-based as manufacturing ones (Sundbo, 1997; Drejer, 2004), service innovations are sometimes determined by technological development that provides possibilities for new services or new ways of delivering services (Sundbo, 1996b; Evangelista, 2000; Djellal, 2002; Hipp, 2008). The ability to adapt new technology to services and perhaps develop new service technology is therefore an important ability in terms of service innovation. Sometimes, service firms themselves develop new technology; for example, cleaning companies produce and sell cleaning machines and chemicals and develop new machines and chemicals, or banks develop ATMs or administrative IT software. Technology can be used to develop self-service products that are new and which also have great potential for productivity increase. Self-service systems based on new technology can be seen in supermarkets and banks, for example. IT in particular is important for services (Scupola, 2012; Henten, 2012). This is obvious when we talk about knowledge services, but also in manual services IT can be a basis for innovation; for example, IT systems can be used by burner service firms to monitor oil or gas burners remotely. This can even be automatized. Service firms' technology capability is therefore an important innovation parameter

3. Networking and co-operation

Service firms often innovate in networks with external actors – not only customers (whom we treat as another capability), but also competitors, suppliers, public institutions and authorities and knowledge institutions. The ability to create and participate in such networks and to co-operate with external partners is important for service innovation (Tether, 2002; Tether and Tajar, 2008; Hipp, 2008; Chesbrough, 2011). This co-operation can be effected with different

types of actors; knowledge or technology providers (including researchers), other firms that can provide knowledge or inspiration, even competitors (in developing common innovations), or public institutions or politicians. Some networks become institutionalized innovation systems, but most collaboration is within services carried out in loosely coupled networks (Sundbo & Gallouj, 2000). The latter are not fixed constellations and the co-operation is not strictly regulated (for example, by contracts or institutionalized norms) and can take numerous forms and imply different actors. The ability to navigate in such loosely coupled networks is important for achieving a beneficial innovation process. Often it is individuals, not the firms as such, who participate in such networks; this capability thus often depends on individual managers or employees. Networking may lead to value chain innovation whereby several firms, entrepreneurs or public institutions participate in innovation activities and the service firm profits from ideas and assessments from all the steps in a value chain (Sundbo, 2011); the advantage of value chain innovations is that the market possibilities are comprehensively assessed beforehand and problems in developing new services can be solved quickly by some of the other participants (for example, technology suppliers).

4. Market and customer base

Compared with, high-tech manufacturing firms, service firms tend to be more pull or market oriented with regard to their innovation activities (Sundbo, 1997; Gallouj & Djellal, 2010). Service innovations have developed to a lesser degree from new technology and basic research. Service innovations are based much more on customers' practical problems (Sundbo & Gallouj, 2000). Service firms are very oriented towards the market and what potential customers want. Service is seen as an activity that solves customers' problems in interaction and co-production with the customers, something recently termed as service-dominant logic (Vargo & Lusch, 2008). The ability to 'read' the market and involve users (or customers) in the innovation process is crucial. Much research has been carried out to find the best ways of involving customers in service innovation processes (Edvardsson et al, 2000; Alam & Perry, 2002; Kristensson, Matthing & Johansson, 2008; Sundbo & Toivonen, 2011; Edvardsson, Kristensson & Magnusson, 2012). Involvement of customers (or users) may differ depending on whether the customer is a firm or public institution (business-to-business) or an individual consumer (business-to-consumer). Customers can be just idea providers or they can be actively involved in the innovation process; in some business-to-business cases they can be partners because the service firm develops a service innovation for the customer firm (for example, when a management consultant develops a strategy for a client firm that wants to enter the Chinese market). A crucial factor is the service firm's ability to reproduce this single-client solution and sell it to other clients; only then will the innovation be of greater economic importance to the service firm and only then will it have a stronger social effect as a solution to the problem (in this case, entry to the Chinese market).

5. Employees' intrapreneurship and customer interaction

Employees' ability to act as intrapreneurs is important. Many innovation ideas and initiatives stem from employees encountering customers. Employees' capability of customer understanding and empathy and deriving ideas from customer encounters is important. Since the service innovation process generally is not very systematic and planned, many new solutions are developed by employees in concrete situations where a customer has a problem. Employees' ability to make bricolage (Fuglsang, 2010) is important, which is tailor-made

solutions for individual customers in specific situations by available resources (see also section 4 on public services). Also, the organization's ability to generalize and diffuse the bricolage solutions to the rest of the organization is important. The ability to use employees in innovation processes may be viewed in at least three different ways. 1) It may be the capability of involving employees in innovation processes, i.e. management's efforts to mobilize the knowledge and experience of employees in a careful and relevant way (Sundbo, 2008) as intrapreneurs (Pinchot, 1985). 2) Further, it may be employees' participatory capability and empowerment capability of controlling their own working environment by contributing knowledge about their well-being, skills and customers, so-called employee-based innovation (Høyrup et al, 2012). 3) Finally, it may be the organizational ability to conduct a 'balanced empowerment' system between management control by strategy and employees' empowerment and control of their own work, and hence the capability of working within a dual structure of bottom-up and top-down forms of interaction (Sundbo, 1996a).

6. Balanced innovation management and strategic reflexivity

Service innovation is a complex, laborious, balanced and labile process that can develop in many directions (Sundbo, 2010). Management must therefore engage with and motivate employees' participation as intrapreneurs and bricolage-makers, but must also balance this engagement against use of resources (time and money) (Sundbo, 1996a). The management in service firms must continuously guide the innovation process – without determining it. Managers' ability to do this is important. However, service managers often seek guidelines that can give a direction regarding innovation work and act as a framework for deciding which innovative ideas to accept and which to reject. Service firms often have a strategy for their business, market behaviour and development (Sundbo, 2001; Tidd, Bessant & Pavitt, 1997), or they have a business model (wherein understanding and ideas are primarily emphasized; Teece, 2010). Often, the strategy or business model is used as the framework for innovation. It becomes the inspiration for innovation and the framework for decisions about which innovative ideas to develop. Even when innovative ideas have been selected, debate continues as to whether the innovation will be successful and whether other ideas and bids for innovation should be chosen instead. Service firms rarely follow a technological trajectory that gives guidelines from a technology push or development perspective. This continuous consideration is often made within the framework of the strategy (or business model) and has therefore been termed strategic reflexivity (Sundbo & Fuglsang, 2002; Fuglsang and Sundbo 2005). Managers' ability to follow the innovation's fate on the market and their ability to involve employees in their reflections is an important innovation capability.

4. Innovation capabilities in public services

Drawing on literature dealing with public service delivery and innovation we now describe four capabilities of service innovation that are important to innovation in services in the public sector. They overlap with the capabilities described earlier and may also be relevant to private services, but we stress the public context of these capabilities in the following.

1. Bricolage, using resources at hand in the public sector

Research shows that an innovation process is not always goal-oriented based on an economic calculation. Innovation can start from available means and be understood more as a social

change process. For example, the effectuation model in entrepreneurship research has indicated that experienced entrepreneurs start from the available means, i.e. who they are, what they know and whom they know, with which they can generate varied user-friendly effects, rather than formulating goals based on risk calculation and generating new means to achieve them (Sarasvathy & Dew, 2005). Small business research has further shown that small enterprises often use a strategy of bricolage to remain robust and innovative, i.e. they make do with resources at hand which they recombine for new purposes (Baker & Nelson, 2005). Particularly for small enterprises with resource constraints this can be an effective strategy of business development and a path to innovation (Senyard et al, 2014).

For public services, the bricolage method has been shown to be an important path to innovation thanks to its impact on the well-being of both employees and clients (Fuglsang, 2010; Fuglsang & Sørensen, 2011; Borins, 2001; Di Domenico, Haugh & Tracey, 2010; Andersen, 2008). There are special conditions for bricolage in the public sector because it is a politically driven system and because employees may be more idealistic in terms of their work attitude. Innovations sometimes emerge from daily practices rather than being top-down pre-formed by a policy or strategy, as they are supposed to. The minor changes in services that are created through such bricolage can over time add up to important new innovative solutions or new ways of using resources, thus generating new variations of public services from specific problem-solving events (cf. Lévi-Strauss, 1966). Yet in the public sector, using the capability of bricolage is not unproblematic. For one thing, in some cases, such as medical care, bricolage activity can mean that important rules and protocols are bent and perhaps even ignored in favour of quickly solving problems on the spot with the available means (Timmermans & Berg, 1997). Further, the capability of bricolage can be kept secret and away from managers' attention, because it is seen as partly illegal or as cheating and lacks recognition. Finally, because it is context-dependent, the results of bricolage can be difficult to generalize and transfer to other contexts.

The capability of bricolage has, for example, been shown to be important to home-helpers in elderly care positions who must often solve unexpected problems with the resources available to them (Fuglsang & Sørensen, 2011). They organize small change processes by means of bricolage that allow them to increase the well-being of clients in a human-centred way inspired by their working values. Home-helpers are also shown to diffuse new ideas by discussing them with their colleagues and taking them up with management.

Although there is evidence that bricolage can be a path to innovation in public services, less is known about how such small incremental innovations can be organized in a more systematic way. What we do know is that such activities may be organized more or less spontaneously by individuals confronted with problems, yet they may also be organized at the collective and organizational level. It may be the responsibility of management to make selective choices and direct bricolage in order to make more systematic use of some of the bricolage ideas (cf. Baker & Nelson, 2005). For example, home-helpers' bricolage activity may be performed on the spot by experienced service workers, and examples of bricolage may be further discussed and qualified through discussions with colleagues and management at the organizational level. These emerging ideas may be further accepted in the institutional context and authorized at the political level. Bricoleurs may themselves have the ability to do justification work (Oldenhof, Postma & Putters, 2014) in order to gain further legitimacy for using resources in new ways.

2. Co-producing service innovation in the public sector

Clients of public services are shown to have mixed roles including the following three (Alford & O'Flynn, 2012: pp. 12-13; Langergaard, 2011): as beneficiaries of public services (similar to customers in the private sector), as obligatees (clients under public force and control), and as citizens, i.e. as the collective 'we' linked to wider societal outcomes of service development, such as access to services or equality among service receivers. It follows that public service delivery can be thought of in terms of concrete benefits for the service receiver, as an obligation for an obligatee, such as a prisoner (Alford & O'Flynn, 2012) and as an outcome for society or citizens, such as social security or societal equality. For example, receiving education is a benefit for students, but it may also be thought of as an obligation for citizens, and it provides a societal outcome for citizens by decreasing disparity.

Service research shows that service receivers will always, to a greater or lesser extent, co-produce a service together with the service provider (Pestoff, 2012; Alford, 2009). A student must do her homework, a person allocated to a job-seeking programme must write job applications, a prisoner must enact and perform certain obligations, a receiver of home help must invite a home-helper into his home and perform certain tasks; as citizens we contribute through behaving in an 'adult' way vis-à-vis public services and doing the duties we are supposed to do, such as paying taxes and taking a constructive part in the community. Yet, even if service receivers co-produce services, public sector, for example in the shape of new public management (NPM) has mostly focused the internal management of services, and little has been done to develop services based in user involvement in a more co-creational way.

The capabilities in question for public service providers with regard to innovation mean enabling co-production and using inputs from co-production for innovation and co-creation. Innovative capability can also be the ability to create relevant new forms and mechanisms of co-production at the concrete as well as the organizational level and balance the roles of clients. For example, in the case of crime prevention, citizens can help the police patrolling in local areas (Ostrom, 1996); in the case of children's education, parents can support school activities; in the case of health, citizens can adopt healthy behaviours; and in many social services areas citizens can contribute through mutual aid. Furthermore, apart from such day-to-day co-production and co-creation at the individual level with regard to the service encounter, collective and institutional arrangements of co-production can be provided (Pestoff, 2012). Governments can allow parent groups to create publicly financed schools or kindergartens (Pestoff, 2012: p. 28). Provision of organized systems of co-production that facilitate obligatee and citizen to co-creation of services through individual and collective arrangements can be an important innovative capability of public service providers.

3. Authorizing service innovation and policy innovation

Public sector services are decided and controlled by policy-makers and politicians who also create services through policy innovations. How policy innovations are created and implemented is still under-researched. What we know is that political parties have important roles in conceiving and legitimating new or changing public services (Rhodes & Wanna, 2007). Further, political boards and ministers have leading roles both in creating innovations and in overseeing the innovation process, including the implementation of innovations and

delivery of services. The format of innovation is one of downward decision-making and control and upward accountability. In Western democracies, public innovations involve democratic decision-making procedures and the use of legitimate systems of power (Langergaard, 2011). However, much like in the private sector, service development may in practice often be more network-based (Hartley, 2005; Osborne, 2010), management-driven (Benington, 2011; Moore, 1995) or incremental and employee-driven (Borins, 2001), because ideas for service development can emanate from practice, from perception of problems and opportunities and day-to-day problem-solving, and from collaboration among interdependent actors who share resources (Sørensen & Torfing, 2011). Upward innovation based on strategic initiatives of public employees and managers is not entirely consistent with bureaucratic and political procedures (Rhodes & Wanna, 2007), yet such innovation processes may be legitimate to the extent that professionals in the public sector are assigned some degree of autonomy with which to experiment. Autonomy can be defined as a certain level of freedom granted to employees to make choices or to experiment and create variety (Berg, 2014).

The capability of managing and authorizing employees' autonomy to generate innovation within the public sector may take different forms in different sub-sectors of public services. In some sub-sectors, like public universities and science-driven institutions, employees may have extensive freedom to formulate ideas, identify goals and define strategies and measures for quality developments. Peers on funding bodies and boards lay out the overall strategies of development and allocate resources. However, science is also becoming more strategic and connected to political missions and tasks. At the other end of the scale, professionals in human services often have to make decisions on the spot and act swiftly to solve problems, but the overall service system is created by involving political boards and through political decision-making.

The delegation of initiative and innovation to employees and public managers can be conceptually framed as a government capability of 'restrained power' (cf. Ringen et al, 2011: p. 103). Politicians, political boards and ministers must use their power, i.e. make decisions about important reforms and control their implementation. Yet, policy.makers with formal power, such as ministers, must also be able to refrain from using their power and let others with more direct knowledge and experience make innovations. Without relying on experienced service providers to carry out policies and experiment with solutions in practice, policy actors may create few results in practice, because it is difficult for them to understand the practical context of innovation.

Use of restrained power is, for example, illustrated by the aforementioned case of bricolage in home help (Fuglsang and Sørensen, 2011). Services performed in the homes of the elderly can be difficult to control, because problems that arise can be difficult to foresee. Various attempts have been made to control home-helpers better to ensure that they carry out the assigned task in a relevant way. Smart phones and other electronic devices are used for this purpose. Yet such systems still rely on employees' self-reporting, and it is not entirely possible to control how home-helpers carry out their job. They can 'edit' their time, they can tinker with rules, break with routines, change small aspects of their work practice so that their work activity becomes more relevant and maximize their preferences. Therefore, in order to maximize the value of work with the intended consequences for clients, decision-makers must let employees make some of the decisions concerning innovation and the when and how.

Yet, in the public sector, the capability to ensure political authorization of such practices is critical in order for decision-making to be democratic (Langergaard, 2011) and legitimate. Further, letting employees and management drive changes places the responsibility of innovation directly on public employees and managers, who can risk their career if something goes wrong (Rhodes & Wanna, 2007), rather than on politicians who are members of political parties and participate in political deliberation. Given the above examples, the capability of authorization of innovation can take at least three forms: direct authorization by politicians who take the initiative in terms of policy innovations; retrospective authorization by politicians of new services before they are further diffused; recognition of employees' autonomy and freedom to make choices and experiment with services.

4. Externalizing innovation

Public services may be organized and innovated through various types of public-private innovation networks (Gallouj, Rubalcaba & Windrum, 2013; Alford & O'Flynn, 2012). For one thing, services are always to some extent co-produced and co-created by clients, as already described. Furthermore, aspects or whole services are often 'externalized' (Alford & O'Flynn, 2012) and given to private enterprises or even to volunteers. There are varied rationales for externalizing services. Externalizing services can increase competition, enable economies of scale and scope, increase specialization, create more choices for clients, increase the diffusion of a service innovation or, in the case of volunteers, increase citizen responsibility, increase constituency support, increase co-production and co-creation benefits or create channels of solidarity and mutual aid among citizens.

The capability of externalization includes such abilities of policy-makers and administrators to be able to specify the requested service, being clear about quality demands and being able to understand where there is a potential market for a service. However, in some cases it may be difficult to specify a service, because it can take many forms, it is context bound (for example a museum), and it relies on the combined abilities and enthusiasms of certain policy-makers, administrators, public managers and frontline employees. In some cases, it may be difficult to create a market for a service because the service is difficult to generalize across municipalities with different standards and political views on outsourcing.

Alford and O'Flynn (2012) have investigated different types of public-private relationship, including contracting out, public-private partnership, partnering, and calling on volunteers. Contracting out is a form of outsourcing that implies that government makes a contract with private, public or voluntary organizations to develop and deliver a specific service, such as garbage collection, bus-driving or a residential service for the elderly. This format is used when it is believed that a private organization can perform a service in a better and cheaper way or in order to increase competition and consumer choice. Public-private partnership (PPP) is a different form of outsourcing which is nevertheless difficult to distinguish from contracting out, and the concept has many meanings. It usually means a long-term contract between a government and a private organization concerning the building (and financing), operation, maintenance, and transfer to public sector of a range of technologies and services affiliated with large infrastructure projects. PPP usually involves more complex services than contracting out. However, the concept of PPP has also been used in a looser sense as 'partnering', i.e. collaboration and coordination across organizations, such as collaboration

among public and private schools in a local area, collaboration among schools and kindergartens, or collaboration among a range of organizations involved with prevention of crime and the struggle against terrorism. Finally, volunteers can sometimes be involved in delivering complementary services e.g. the Danish example of taking elderly people on a rickshaw and a corps of volunteers to drive them ('Cycling without age'), or the British example of 'Meals on Wheels' (Alford & O'Flynn, 2012: p. 137) bringing a meal to elderly people and checking their well-being if they live alone.

In a European project, (Gallouj et al., 2013) informal public-private innovation networks in services (ServPPINs) have been investigated as a particular innovation capability. They argue that service partnering or networking activities among public and private partners can often entail innovation. Djellal and Gallouj (2013) distinguish different types of public-private innovation networks in services. 1) *Simple* ServPPINs set up to *adopt a technology*, for example in a hospital where a department can collaborate with private firms about adopting a new medical technology. 2) ServPPINs set up to *produce a technological* innovation. A network of different partners can be set up to develop new technologies that can be used against stroke, for example. 3) *Simple* ServPPINs set up to produce *non-technological* innovations, such as partnerships between different professions and sectors around rehabilitation services. 4) *Complex* ServPPINs set up to provide organizational meta-change, for example by making a shift from treatment to prevention by setting up a variety of new services that make this possible.

Green, Pyka and Schön (2013) argue that partnering activities in ServPPINs can be characterized by a lifecycle taxonomy. First, there is a period before actual collaboration where partnering is prepared and the network for an innovation is formed. This stage is critical to the success of the network. Next, there is a growth stage when more actors participate and the network starts to go into operation. Finally, there is a maturity stage where the network becomes more sustained, or is closed down. Each of these stages may be characterized by two different modes of organizing the network relations: spontaneous or planned. Fuglsang (2013) shows that service partnering can lead to a deepening of trust and collaboration over time between public and private actors who may be sceptical about each other's motives (Rousseau et al, 1998).

Windrum and García-Goñi (2008) applied a characteristics-based model to describe the different elements of a SevPPIN as a multi-agent-framework of policy-makers, service providers and politicians. Providers usually seek to maximize the preference for efficiency, users to maximize their own preferences for good services, and policy-makers to maximize political preferences. Thus, according to the framework, a service cannot function if it merely reflects the efficiency requirements of the provider and policy preferences of the policy makers, it must also fit the competences and preferences of users at a given time, who must be able to maximize their preferences. Windrum and García-Goñi's framework can be used to analyse how technologies and services, such as rehabilitation technologies and services, may be difficult to implement in practice, because they do not sufficiently reflect users' attempt to maximize their preferences in, for example, treatment of illness as patients. Overall, the capability of externalization is important for innovation in public services, and it involves such elements as being able to specify services, coordinate preferences, create trust among public and private partners and justify collaboration.

5. Conclusion

The public sector is a service sector and enshrines service systems as well as other tasks and characteristics. Service innovation within public service systems requires the same innovation capabilities as in market-based service sectors, but because public service systems are integrated in political systems they may tend to stress particular innovation capabilities, some of which nevertheless overlap with innovation capabilities in the private sector. These particular capabilities are related to the fact that 'customers', who also have roles as citizens, and employees are perhaps more idealistic in certain situations. The political system's lead, by creation policy innovations, or authorization, in terms of service innovation processes is a particularity as is the issue of out- and insourcing of services in the public sector and networks with private actors (typically market-based service firms).

These particular capabilities should be taken into consideration when one studies or makes innovations in public service systems. They could well be seen as even more important in the very near future as pressure to rationalize and reduce the cost of public services and increase citizens' satisfaction with such services is likely to increase in all societies.

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