

CAN THE PUBLIC SECTOR AND VENDORS DIGITALLY TRANSFORM? A CASE FROM INNOVATIVE PUBLIC PROCUREMENT

Research in Progress

Abstract

Recent research emphasizes the distinctive characteristic of innovation in public sector as opposed to that in the private sector. Several researchers point to the need for open and networked innovation for public sector to succeed in addressing societal challenges. Innovation networks are specifically important in digital transformation where the generative nature of the digital requires a high level of messiness and continued informal exchange of knowledge among the innovation actors. On the other hand, the public sector is subject to strict regulations related to fairness in procurement of new, innovative products and services. This creates a challenge for digital transformation in the public sector. The public sector needs to balance between digital transformation's need for informal processes and simultaneously adherence to formal procurement processes regulated by laws. Our goal in this paper is to empirically illustrate how this balancing act develops in typical procurement processes. We report research in progress from an empirical case study from the Norwegian public sector. Our findings show how project managers and procurers in public sector must change their roles, how there is a change from purchasing off-the-shelf solutions to more continuous processes, and how there are significant tensions in the vendor-public sector networks. By using the lenses of open innovation and digital transformation, we identify discrepancies between the literature and the public sector practices.

Keywords: Public sector innovation, open innovation, innovative public procurement, digitalization, digital transformation, empirical case study.

1 Introduction

The public sector has historically played an important role in promoting societal transformations. Many of the innovations we take for granted today, including the Internet, originated from government-funded or government-led initiatives. Innovation in public sector has probably never been needed as much as it does now. Governments need to find solutions to global and pressing societal challenges including climate change, aging populations, radicalism, chronic diseases etc.

Digital technologies play an increasingly important role in innovation and are regarded as a central part of the solutions to our societal challenges. Digitalization of public services has the goal of increasing public value in various forms, including better services, better utilization of public resources, and increased transparency (Twizeyimana & Andersson, 2019). Digitalization in the public sector has at the same time been criticized for lagging compared to digitalization in the society in general (Mergel, 2016). Challenges facing digital transformation in the public sector come from the particular nature of digital transformation (Nambisan et al. 2017; Zammuto, Griffith et al. 2007).

Still, the public sector is expected to innovate not only internally, but rather to take on leading roles in societal transformations. This has led to collaborative innovation models such as networked governance (Hartley, 2005), collaborative innovation (Bommert, 2010), open innovation (Mergel, 2018), and new public governance (Casady, Eriksson, Levitt, & Scott, 2019). The public sector can potentially take this role as it "...provides the financing and material to produce these results" (Moore & Hartley, 2008, p. 6), signified by the significant spending on purchasing goods and services (OECD, 2017). This form of broader societal innovation and transformation coincides with the emerging concept of digital transformation, a broader conceptualization of digitalization which highlights "...the disruptive impacts of digital technologies on individuals, organizations and society" (Vial, 2019, p. 133).

We therefore aim to investigate the relationship between commercial vendors and the public sector in digital transformation in the public sector. Innovation in public sector is often studied as the relationship between citizens and their government, and how citizens –often through citizen organizations and social innovators –can contribute to innovation in public sector, i.e. "citizen-sourcing" of innovation (Loukis et al. 2017). As opposed to citizen-sourcing, collaboration with commercial vendors is subject to strict public procurement laws and regulations (Moe 2014, Nærings- og Fiskeridepartement, 2019). At the same time, public procurement can create considerable demand for societal innovation that can potentially incentivize commercial vendors to innovate (Uyarra, Zabala-Iturriagoitia, Flanagan, & Magro, 2020). Creation of demand is regarded by some as a more efficient innovation strategy than creating supply through sponsoring R&D activities (Edler & Georghiou, 2007; Uyarra et al., 2020). However, there is a dearth of studies investigating digital transformation with an eye to the relationships between the public sector and commercial vendors. We therefore ask the following research question: *What are the conditions for public sector to lead digital transformation?*

In this research in progress paper we present preliminary results from a set of emerging case studies of innovative public procurement of digital products and services in the Norwegian public sector. We have investigated how project managers and procurers in the public sector collaborate with commercial vendors. Public procurement laws and regulations create a mandatory backdrop for this collaboration. We aim to contribute with insight on how public sector innovators handle the tension between the need for dynamic collaboration with commercial vendors, and the need to regulate a market with fair competition for the very same vendors. We want to understand how public sector innovators handle these tensions in the context of public sector digital transformation.

In the rest of this paper we outline the theoretical background focusing on digital transformation in the public sector and the role dynamic networks in procurement. The case and method section introduce innovative public procurements and explain our approach to data collection and analysis. Our findings illustrate how the procurer role is changing, the differences between procuring off-the-shelf and actual innovation, and the tensions in constructing public-vendor networks in procurement. Finally we discuss how the realities of innovative public procurement, albeit having a significant potential, has practical challenges that is not currently addressed by research.

2 Theoretical background

2.1 Innovation, digital transformation and the public sector

Innovation in public sector is known to be different than that in private sector in several ways. In public sector, "innovation is usually not a physical artefact at all, but a change in the relationships between service providers and their users. In such changes judgements have to be made about processes, impacts and outcomes, as well as product" (Hartley, 2005, p. 27). The goal of public innovation is to create "public value," as opposed to "market value." Public value refers to "desirable outcomes relating to the quality of individual and collective life for citizens shaped by the normative consensus of society, policies, and governance" (Chen, Walker, & Sawhney, 2019, p. 3). More specifically, public value can mean improved quality of public services, more effective public administration, transparency and improved trust in government (Twizeyimana & Andersson, 2019). A focus on public value brings with it the demand to attend to multiple stakeholders' needs, and adopt a broader view of innovation as a societal transformation (Bommert, 2010; Moore & Hartley, 2008).

This focus on public value, and the goal of societal transformation, has led to a view of public innovation as a system of innovation consisting of multiple actors, where the government plays a central coordinating role. Several scholars have therefore argued for the importance of open innovation in public sector (Kankanhalli, Zuiderwijk, & Tayi, 2017; Mergel, 2018). Open innovation "was introduced as a new umbrella concept for inviting external, non-professional problem solvers to help government find solutions for problems they weren't able to solve internally or with the help of the standard innovation instruments grants and contracts" (Mergel, 2018, p. 740). The concept of open innovation originates from the private sector (Chesbrough, 2006), while several other concepts have been introduced to define similar systems of innovation in public sector, e.g. networked governance (Hartley, 2005), collaborative innovation (Bommert, 2010), and new public governance (Casady et al., 2019).

Ubiquitous digital technologies, such as software, broadband, mobile devices, and digital platforms, play an ever-increasing role in innovation processes (Yoo, Boland, Lyytinen, & Majchrzak, 2012). Digital innovation is "the use of digital technology during the process of innovating" (Nambisan et al., 2017, p. 223). Digital innovation happens through "the creation of (and consequent change in) market offerings, business processes, or models that result from the use of digital technology" (ibid, p. 244). Digital innovation is thus often defined in terms of market value creation for individual organizations. Recent research however promotes a wider systemic approach that is aligned with the above-mentioned ideas of collaborative and network government: "IS research should go beyond organizational 'encapsulation' by considering the systemic processes composed of intricate relationships at multiple levels of inheritance in society, ultimately producing negotiated and innovative outcomes through the joint work of different groups of stakeholders" (Vega & Chiasson, 2019, p. 244).

But can governments take on a leading role in driving digital transformation? Innovation in public sector is influenced by new public management ideas, where internal management practices are in focus. This has resulted in innovation processes that are closed and inward looking (Chen et al., 2019). Innovation in public sector is often top-down and mandated by the management (Bommert, 2010; Mergel, 2018). Public sector employees, as opposed to the private sector, "are not hired to constantly search for new markets, ideas for new products, or even to actively seek out return customers to ensure the survival of the organization" (Mergel, 2018, p. 728). Public sector digitalization projects are seen to suffer from overambitious mission statements, organizational power and politics, design-reality gap, ineffective project planning and management, and shifting requirements (Anthopoulos, Reddick, Giannakidou, & Mavridis, 2016). The above research suggests that change is needed before a leadership role in digital transformation can be assigned to the public sector. One such change is for public sector innovators to become savvy in leading collaborative digitalization projects with private and commercial vendors.

2.2 Procurement and the need for dynamic networks

Lyytinen and Damsgaard observed early on that innovation driven by digitalization is not individual-based and needs to happen through a social process with alignment of multiple interests, negotiation of standards, and legitimation of acceptable uses. The systems are difficult to control and manage: "...due to their messy institutional character, broad scope and longevity" (Lyytinen & Damsgaard, 2001, p. 175). Digital innovation processes are known to "break down the boundaries between different innovation phases and brings a greater level of unpredictability and overlap in their time horizons" (Nambisan et al., 2017, p. 225). Digitalization also leads to a distribution of the innovation process across "a dynamic and often unexpected collection of actors with diverse goals and motives—often outside the control of the primary innovator" (ibid, p. 225). In service innovation—which is the most common form of innovation in the public sector—the innovating organization not only has to utilize extreme network connectivity, but also be able to search for, collect and absorb outside knowledge (Trantopoulos, von Krogh, Wallin, & Woerter, 2017). Such extreme network connectivity in public sector includes internal actors as well as citizens and commercial vendors.

On one side, collaborative innovation in public sector—digital or not—involves citizens and organizations representing groups of citizens (Bommert, 2010; Hilgers & Ihl, 2010; Loukis et al., 2017). Innovation processes involving citizens are often informal and without legal commitments from the government's side. On the other side, collaboration with vendors is often formalized through legal frameworks such as public-private partnerships (Casady et al., 2019) and public procurement regimes (Moe, Newman, & Sein, 2017).

In our research we look at how public procurement in Norwegian municipalities affects digitalization. Public procurement is officially defined as the "purchase of goods, services and works by governments and state-owned enterprises" (OECD, 2017, p. 174), i.e. it is traditionally seen as the transactional act of buying. OECD members spend an average of 12% of their GDP on public procurement, ranging from 5.1% in Mexico to 20.2% in the Netherlands (ibid). According to recent political mindset, public procurement can create a market demand for innovation if public sector asks for new solutions in a strategic way (Nærings- og Fiskeridepartement, 2019). This creation of demand can potentially be a more efficient innovation strategy than creating supply by sponsoring R&D activities (Edler & Georghiou, 2007). However, procurement processes are often characterized as being rigid and bounded by legal requirements for transparency and fairness, which can hamper the dynamics of open innovation (Mergel, 2018; Uyarra, Edler, Garcia-Estevez, Georghiou, & Yeow, 2014). Moreover, digital transformation needs a more transformational and process-based view of public procurement (Moe, 2014) as opposed to the dominant transactional view. According to Moe, public procurement "includes formulating business requirements, developing requirements specification, and purchasing, which possibly includes tendering and contract signing, receiving and inspecting the product, and dealing with organizational issues such as stakeholder involvement" (2014, p. 1320)

3 Case and Method

3.1 Case Background

The unit under study is innovative public procurement initiatives in the Norwegian public sector (municipalities and counties). Innovative public procurement is a method that is applied in procurement in order to increase the degree of innovation in public procurement. The Norwegian government wants public procurement to be a driving force for innovation and restructuring in the Norwegian economy. The idea is that public purchasers have an opportunity to contribute to new thinking and development in the vendor market by asking for new and better solutions. The innovative procurement process has the following steps. First, needs assessment: Innovative public procurement begins with the recognition of a need. The question one should ask is whether the existing solution covers the need in a satisfactory way or if one should orient themselves more towards tomorrow's solutions? Both needs and solutions are constantly in motion, and the procurement process is the essential time to re-orient to the needs and

available solutions of the users. Second, mapping user needs: In the mapping phase, you are thoroughly into the needs of users. Anyone involved with the use of the product or the delivery of the service is users, not just end users. Third, solutions dialogue: In the dialogue phase, it's about getting the best possible overview of available solutions in dialogue with vendors. Dialogue meetings and one to one meetings with vendors are held. Fourth, documenting requirements: traditionally, one told the vendors what one would have and chose the supplier that could offer the best terms. In an innovative acquisition, one concentrate on conveying the need and handing the solution to the suppliers. That way, one opens up for suppliers with new ideas. Fifth, tender or development: in this phase, if there is a solution in the market, one can choose an offer competition or one of the other procurement procedures. If the solution does not exist one can continue with a development process. Sixth, offers: during this phase, one evaluate the offerings received from different suppliers. Sixth, contract follow-up: follow up of the conditions in the contract in the delivery period is crucial for achieving the innovation objectives of the procurement.

3.2 Research design, data collection and analysis

Our research design for addressing our long-term research topic of collaborative digitalization in public sector is that of a longitudinal case study (Yin, 2014). Our interviewees represent emerging cases that are under construction, which will result in a comparative study of multiple digitalization cases to be presented in future publications. Currently we are in the framing cycle in our case study (Pan & Tan, 2011). Having gained access to several cases, we are collecting our initial data and "constructing and extending our theoretical lenses" (ibid, p. 164). Based on this initial data collection and literature study, we will go through several cycles of new data collection and new theorization (Klein & Myers, 1999).

The data we present in this research in progress paper is primarily based two workshops and eight interviews with procurers and project managers in six Norwegian municipalities and one county administration office that has experience from innovative public procurement (see Table 1 below). Each interview lasted between approximately 60 and 90 minutes. All interviews have been partially transcribed and translated from Norwegian for use in this paper. Additionally, we have analysed documents related to several innovative procurement projects where the interviewees have been involved, and several white papers and reports produced by governmental agencies. We have used thematic analysis (Braun & Clarke, 2006) to code and analyse our data. This analysis has resulted in three themes that are presented in our findings.

Data source	Description	N
2 workshops	Procurers, Project manager	12
Dialogue meeting	Procurers, Project manager, Vendor representatives	6
Interviews	Procurers, project managers, IT-director	8
Total		26

Table 1. Data sources and description.

4 Findings

4.1 Transforming the procurer role

Most of the municipalities we have talked to either have their own procurement department or use the procurement services of their county office. Despite the "procurer" role having been established as a profession a long time ago, this role is being transformed in innovative procurement. Traditionally the role seemed to be connected to the legal aspects of procurement, such as tenders and contracts. One of our interviewees with broad experience as a procurer in both private and public sector said "If I look back at my role as a procurer, it is mainly the same in private and public sector. The only difference is the rigid process in the public sector related to the open process and competition among vendors, and contractual issues." But he also thought that this focus on contractual issues was unfortunate: "[A

procurer] has to have a good understanding of procurement processes and manage to define the procurer role in a broader perspective that we do today. Now many people call themselves procurers. But what they really do is to make sure the competition and contractual processes are done properly and using the right tools, and that laws and regulations are followed. And then, when the contract is signed, they are not anymore involved. It [the role] depends on knowledge and [organizational] culture."

Another procurer we interviewed was also unhappy about how the procurer role was defined. According to him there was too much focus on the formal aspects of the process: "When you involve the procurement department, it is mainly to help you write the documents for the tender and write the contract. Then we are all happy because no one will complain. But nobody asks what the effect of this procurement was [for the organization] ... When people think of procurement, they think very narrow."

For project managers involved in innovation processes, procurer departments seemed to have a marginal role in the innovation itself, as shown in this quote from one manager of an innovation project: "We [in our department] often think strategically through our needs and set up the innovation project first, and then let the procurement department know so that we can fit our project into the regulations and existing laws. Actually, it is not the procurement department we need, it is their lawyers."

4.2 Buying "off-the-shelf" versus continuous transformation

Most of our interviewees were aware of the necessity of incremental and continuous innovation, in particular with respect to digitalization. The lack of commercial off-the-shelf software is described in this quote from the leader for organizational change in a municipality: "More often than not we have problems finding off-the-shelf products in the market. For instance, we wanted a product for implementing our 'digital politicians' vision. We came up with a budget of 1.5 million [NOK]. But when we had the requirements no vendor could deliver the product. At the end we ended up with offers of 6 million. It is very seldom we find the products we like, and existing products are often outdated."

The particularities of the digital can create tensions in the traditional procurement process, which traditionally assumes well-defined requirements at the time of signing a contract: "We see often that people enter a procurement process with the idea of buying an off-the-shelf product. That they can use a waterfall [contract] model, writing detailed requirements, getting a price tag from vendors, this is what you will get, installed by end of October etc. But what we often see is that none of our procurements end up being off-the-shelf. Not even when we think and believe it will. There is always something extra. And you end up with a long development period and smaller deliverables that were not part of the original contract."

This need for continuous change as part of digitalization processes is becoming central to an increasing number of procurements as they include digital parts. Tackling these changes within the existing procurement regime can be challenging, thus leading to changes in digitalization strategies, as stated by an IT director of a large municipality: "We outsourced everything to our partners [vendors]. We got quality in exchange, and were perceived by our partners as professional... But in recent years we see IT being integrated in our services to a much larger degree, e.g. in city planning, healthcare, and education. [The IT department] had to gradually change. We could not trust our vendors anymore, we had to take control. We were not able to, together with our vendors, respond to changes fast enough"

We also observed attempts to change the culture of risk-aversiveness. A project manager of organizational change in a large municipality describes how this can be done: "Audits and innovation are not exactly congruent. Auditing is about following the rules, avoiding shortcuts. And then you have innovation, all about breaking the rules. We have had innovation projects that have failed badly. Then we have had auditors telling us we broke this and that rule. Then there is this balancing spot, between innovation and audit"

Although innovative procurement is regarded by politicians as a strong instrument for demand-side innovation, the conditions for the public sector to play the role of demand-side innovator might not be present, for instance because of lack of resources: "We are asked to develop and safeguard local businesses, and take larger risks [than small companies can take...]. But we don't have the right constraints to take such risks, which are costly. Our constraints currently force us to pay for all the risks we take."

We can pay for it partly, but not all." This lack of resources, combined with the perceived complexity and resource-demanding nature of innovative procurement, and the suspicion of asymmetric benefits for commercial actors, put a high threshold for public sector to initiate innovative procurements.

4.3 Tensions in constructing the public sector and vendor network

Contact with vendors before and during procurement processes seems to be episodic and highly formalized. The tender is the starting point for a potentially broad dialog with several vendors. An important step for innovative procurement projects is the dialogue conferences, which are also announced at Doffin¹ (official tool for publicizing a tender to the market in Norway). All interested vendors can participate. These conferences are in a presentation form rather than being a dialogue. This is because several vendors attend, and they do not want to share business secrets with their competitors. As one procurer says: "The dialog conference is not for having a dialogue. We present our needs and answer questions." However, the dialogue conferences are followed up by one-on-one meetings with vendors who are interested in further involvement in the tender process. These meetings are confidential and are run in closed rooms, and as such offers more valuable dialogue. Dialogue with vendors prior to tender processes is perceived as being demanding by vendors and public sector alike. Tens of vendors can register their interest in one-on-one meetings. Some questions need to be asked and discussed with all vendors. This can be a time-consuming and repetitive task, and of little perceived value when procurers and vendors don't yet know if they are a match for each other.

In addition, municipalities experience that many vendors are positive in the beginning, claiming to have the right solution to the problem, but that they later never send an actual offer. The head of digitalization in one large municipality thought this might be related to the complexity of requirements from the public sector: "We discussed internally in our municipality whether we have too difficult [infrastructural] requirements, and whether these requirements frighten the vendors. We have discussed whether we can loosen some of these requirements. They can be about security. We discussed with our head of IT whether we can remove these requirements [...]. But they are often imposed by laws and are part of national IT architectures [that we have to obey]."

The relationship with the vendors is not perceived as easier during the contract follow up process. Conflicts with vendors have been raised as a major issue that inhibits closer collaborative innovation processes. Considerable resources are spent up front to create processes and contracts that can prevent legal conflicts later, e.g. when a vendor company is not awarded a contract. This is a bigger risk when working with innovation processes, as expressed by a procurer: "In some market segments it is very common that vendors are chasing us. When you do innovative procurement, you must take risks. Following the rules is important. But it does not help you to have businesses packed with lawyers who look for faults. There must be a common understanding among vendors that errors happen. This is in my opinion the biggest damper for the public sector to dare to become more innovative."

Further down the process, when contracts are awarded, there are other types of challenges related to the collaborative processes. For instance, absence of willingness among vendors to do collaborative innovation was raised by the head of IT in a large municipality: "Creating common understanding [with our vendors] about our level of ambition is difficult. You might even think vendors think of us only as a source of income. We always have to press them to come up with new ideas and solutions. It's always us [asking for improvements], even if the vendor is contractually responsible for maintaining and operating the service. We have not managed to create the drive [for improvements] among our vendors, even if we explain our ambitions and intentions to them."

5 Discussion and future work

Digital transformation is a key issue in the public sector (Twizeyimana and Andersson 2019). Collaborative and open innovation is discussed as potential methods to transform the public sector (Bommert

¹ <https://doffin.no/>

2010, Mergel 2018). While networking with citizens is discussed (see e.g. Loukis et al 2017), we know less about how networks with commercial vendors are managed (Moe et al. 2017) – although these are crucial to digital transformation. Driven by our research question - *what are the conditions for public sector to lead digital transformation?* - we have presented findings from an ongoing case study of innovative public procurement in the public sector. Applying a theoretical lens of digitalization (Nambisan et al. 2017) and digital transformation (Vial 2019), the findings exemplify the tensions involved in creating innovation networks and suggest the need for research that focuses on the possibilities and challenges in public sector-vendor networks in digital transformation.

Our findings illustrate discrepancies between what is promoted in the literature as open and collaborative innovation enabled by public sector (Kankanhalli et al. 2017), and the reality in the case of innovative procurements. This discrepancy is important in terms of digital transformation of the public sector, as procurements are potentially a significant driver of innovation (Edler & Georghiou, 2007). As signified by the changing of the procurer role, we see the how there are new requirements put on procurers as public sector innovators. They must be open to intensive dialogue with vendors while at the same time deal with formalized procurement processes that constrains collaboration between the public sector and commercial vendors. Moe et al (2017) describes this as a dialectic process where public entities search for resolutions of this dialectic through selecting an appropriate tendering procedure and learning how to specify requirements through networks of peer public entities. An open question is whether this type of personal heroism is enough to put the public sector in the driver seat for digital transformation.

We find how the public sector essentially is rigged for purchasing off-the-shelf digital solutions. We observe how innovative procurements challenges this rigging and involves more continuous change processes. This involves changing strategies, cultures and practices. Such changes is inline with what the literature of digital innovation and transformation prescribes, i.e. that such processes are messy (Lyytinen and Damsgaard 2001), unpredictable (Nabisan et al 2017), and the joint work of several stakeholders (Vega and Chiasson 2019). However, our findings indicate how this is challenging in practice. The new practices are resource and competence demanding process. Moreover, existing practices and cultures are hard to change. Finally, the public sector innovators must balance the openness and experimental nature of digital transformation towards the possibility of auditing if procurement processes have not been done according to the formalised rules and regulations.

Digital transformation entails networked (Hartley 2005), collaborative (Bommert 2010), and open innovation (Mergel 2018). While such open innovation has been demonstrated towards citizens (Loukis et al. 2017), we find that collaboration occurring in the network of public sector and commercial vendors is challenging. The collaboration is episodic, bureaucratic and formalized. The competitive nature of public procurement creates an environment characterized by a lack of trust. Vendors do not want to share business critical information in dialogue meetings, and there are strict rules for what kind of information can be shared by whom, when and there is a need for full transparency. A history of vendors suing public entities for errors during the procurement process also influences the degree of collaboration. We find that open and networked collaboration with vendors in public procurement processes, however innovative, is perceived to be challenging due to the need for handling specific characteristics of public procurements, such as history and culture, transparency, rule adherence, audits, creating shared understandings and lack of potential to take risks.

In sum, our findings indicate some of the challenges facing open and collaborate innovation required for digital transformation of the public sector. Our findings indicate an apparent mismatch between political expectations to innovative procurement and the reality of doing digital transformation through innovative procurement processes. Also, there seems to be problematic aspects regarding the open innovation literature predominantly originating from the private sector (Mergel 2018). This is unfortunate as the public sector has a great potential both for societal change and driving innovation in the private sector through its significant purchasing power and capability to stimulate demand. There is therefore ample room for future research into how the public sector and commercial vendors can collaborate to achieve digital transformation.

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