

Implementing public procurement of innovations in an organization: lessons from Norway

Implementing
public
procurement

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Received 11 November 2018
Revised 22 January 2019
18 March 2019
Accepted 27 March 2019

Abstract

Purpose – The purpose of this paper is to explore the drivers, enablers, barriers, key success factors, pitfalls and benefits of implementing public procurement of innovations (PPoI) in an organization.

Design/methodology/approach – The study deployed multiple-case design, whereby six case organizations were selected according to purposeful sampling. Data collection was carried out through in-depth semi-structured one-on-one interviews with key informants. Data analysis involved coding, synthesis, categorization and aggregation.

Findings – The study revealed that implementation of PPoI represents significant change in an organization, and thus, it identifies key enablers and barriers that organizations must overcome. Furthermore, the study revealed that implementation of PPoI is a necessary but not sufficient condition for reaping its benefits. Moreover, the study identified key success factors for achieving the desirable results and potential pitfalls that organizations should avoid to ensure that the execution phase is not hurt.

Social implications – Overall, the findings of the study imply that PPoI and the practices associated with it are valuable to the organizations implementing it and society at large. Thus, time and financial investments and the costs associated with the challenges and barriers of implementing it are justified by the resulting wider benefits and outcomes.

Originality/value – The study contributes by providing useful insights related to implementation of PPoI at an organizational level. Considering that extant literature provides limited insights on this subject, findings of this study should be of interest to researchers, public authorities, procurement practitioners, small- and medium-sized enterprises and other stakeholders. In particular, the study contributes to the body of knowledge on PPoI and offers actionable implications to both practitioners and policymakers.

Keywords Innovation, Public procurement, Public procurement of innovations

Paper type Research paper

Introduction

Demand is a critical driver of innovation among suppliers, and thus, previous studies have recognized that public procurement plays a significant role in promoting innovation (Georgioui *et al.*, 2014; Uyarra and Flanagan, 2010). Indeed, public demand is now widely recognized as an important driver for the development and diffusion of innovations and that it can be used to address grand societal challenges such as global warming and public



health (Edquist and Zabala-Iturriagoitia, 2012). For instance, based on extensive firm-level data collected from 28 member states of the European Union (EU), Switzerland and the USA, Ghisetti (2017) concludes that public procurement plays a significant role in stimulating environmental innovations. More extreme and well-known game-changing innovations spawned by governmental demand are the internet and global positioning systems (Edler and Georghiou, 2007). In the EU, public procurement accounts for 14 per cent of gross domestic product and has the potential to create and stimulate a huge market for innovative products and services (European Union, 2018). Thus, it is not surprising that the Europe 2020 strategy identifies public procurement as one of the market-based instruments for achieving smart, sustainable and inclusive growth (European Commission, 2010).

The link between public procurement and innovation has attracted considerable scholarly attention spanning the development of conceptual frameworks to empirical research that addresses various issues relating to the subject. Extant conceptual frameworks address aspects such as rationales and justifications for public procurement to spur innovation, challenges and potential pitfalls associated with using public procurement as an innovation policy tool (Edler and Georghiou, 2007), innovation impacts of public procurement (Uyarra and Flanagan, 2010) and a taxonomy of public procurement and innovation and their policy implications (Hommen and Rolfstam, 2008). Empirical studies have addressed questions such as suppliers' view of the barriers to innovation through public procurement (Uyarra *et al.*, 2014), the prominence of innovation procurement practices (Rainville, 2016), an illustration of public procurement for innovation (PPFI) (Caloghirou *et al.*, 2016) and the role of networks in promoting small- and medium-sized enterprises (SMEs) innovative performance (Saastamoinen *et al.*, 2018). While existing studies provide useful insights, there is still relatively little empirical evidence, and thus, further empirical studies are required to deepen our understanding of issues around public procurement and innovation.

According to a recent review by Obwegeser and Müller (2018), aspects of public procurement and innovation addressed in the extant literature can be categorized into three themes, namely, PPFI, public procurement of innovations (PPoI) and innovative public procurement. Among the 66 articles reviewed, only eight address issues regarding PPoI. This is surprising given the potential role of public procurement of innovation in fostering market uptake of innovative products and services and in increasing the quality of public services. Moreover, public procurement of innovation supports access to markets for SMEs and help address major societal challenges (European Union, 2018). The benefits of public sector contracting to SMEs lies in its ability to stimulate innovation when buyers insist on technologically-sophisticated products that encourage firms to develop novel service solutions (Georghiou *et al.*, 2014; Flynn and Davis, 2017). Following the enactment of the new EU procurement directive (Directive 2014/24/EU), it is important to gain more insights into the implementation of public procurement of innovative solutions at an organizational level, an aspect that has not been addressed explicitly by extant literature.

In view of the importance of PPoI and the prevailing research gap, this paper seeks to shed light on the dynamics involved in implementing PPoI in an organization. Drawing its empirical evidence from Norway, the paper explores drivers, enablers, barriers, key success factors, pitfalls and benefits of implementing PPoI. Considering that extant literature provides limited insights into these aspects, the findings of this study should be of interest and useful to researchers, public authorities, procurement practitioners, SMEs and other stakeholders involved with public procurement. In particular, the study contributes to the body of knowledge on PPoI and offers actionable implications to both practitioners and policymakers.

In the following section, the article reviews literature that links public procurement and innovations. The subsequent section presents the methodology used in the study, which includes a description of the empirical setting, research strategy and analytical approach, followed by presentation of the results. The discussion places the results in context and provides actionable implications. The closing remarks then outline limitations of the study and avenues for future research.

Literature review

Public procurement and innovation

Innovation refers to the “development or delivery of a new or significantly improved product, process or service, a new marketing method or a new organizational method in business practice” (The Department of Enterprise, Trade and Employment [DETE], 2009, p. 8). It can involve the creation of entirely new knowledge or the diffusion of existing knowledge, and therefore, innovative solutions are either new or better solutions. As such, innovation can also relate to aspects such as improvements in yield, quality and delivery time (Monczka *et al.*, 1993). In many ways, innovation triggers economic growth through improvements in efficiency, productivity and quality (Aschhoff and Sofka, 2009). As such, it is understandable why governments across the world constantly engage in numerous technological developments, strategic developments and entrepreneurial programs that aim at promoting innovations. As Sundbo (1998) notes, the promotion of innovation has increasingly become an important aspect addressed by trade and industry policies. Edler and Georghiou (2007) categorized policy tools for promoting innovation into two groups, namely, supply-side and demand-side approaches. While the supply-side measures provide resources (finance and services) to boost innovations, demand-side measures include all public measures to trigger innovations and/or speed up diffusion of innovations by providing markets for innovations, defining new functional requirement for products and services or better articulating demand. The demand-side policies can be divided further into systemic policies, regulation, public procurement and support for private demand.

However, given its scale and impact, one may argue that public procurement is probably more effective and triggers innovations quicker than the other three mechanisms. As Thai (2004) argues, public procurement has the potential to help countries achieve various goals such as supporting domestic firms, assisting minority and women-owned businesses or environmental protection. This view is echoed by Correia *et al.* (2013), who suggest that public procurement is the most effective financial mechanism that governments can use to drive changes. Such changes include fostering innovation (Karjalainen and Kemppainen, 2008). Sánchez-Carreira *et al.* (2018) note that the role of PPOI to promote regional development may be even more important in peripheral regions given the lack of institutional and technological capabilities experienced in these regions. Overall, it appears that there is a general consensus on the efficacy of public procurement to promote innovation.

Edler and Georghiou (2007) provide three justifications for using public procurement as an engine for driving innovation. Firstly, public procurement constitutes a large proportion of local demand, which is one of the major factors considered in the location decision of multinational enterprises and in the inclination to generate innovations in a given location. This justification is consistent with the diamond model (Porter, 1990), which suggests that among other determinants, local demand is a primary driver of growth, innovation and quality improvement. Secondly, public procurement can prove effective in remedying a range of market and system failures affecting the translation of needs into functioning markets for innovative products. This is important considering the fact that markets for

innovative solutions are, by definition, not established and needs are often novel and not well-defined (Edler and Yeow, 2016). As Geroski (1990) concludes, public procurement policy is the most effective instrument in supporting early stages of the product life-cycle because in this phase technological advances are made while there is no demand. Thirdly, the procurement of innovative solutions offers a strong potential for improving public infrastructure and public services in general. Similarly, Kattel and Lember (2010) note that public procurement can trigger innovation in different ways including the creation of new markets for products that go beyond the state-of-the-art, provision of a testing ground for innovative products, and by providing a “lead market” for new technologies/solutions. The next section of this article reviews literature on key aspects related to PPOI.

Public procurement of innovations

Following Directive 2014/24/EU, Rainville (2016) identifies three ways through which promotion of innovation through public procurement can occur, namely, pre-commercial procurement, innovation partnerships and public procurement of innovation. Pre-commercial procurement occurs when public sector organizations procure research and development services, up to the prototype or first test production stages. It may involve the acquisition of limited prototypes and/or test products developed, but does not involve the acquisition of larger volumes of resulting end-solutions on a commercial scale and must not constitute state aid. As for innovation partnerships, public sector organizations team-up with actors to develop and subsequently purchase innovative solution(s). Conversely, public procurement of innovation, which is the focus of this study, occurs when public sector organizations act as a launch customer for innovative goods, works or services. Thus, rather than being a byproduct of “regular” public procurement, innovation through public procurement of innovation occurs when a procuring entity announces well in advance their intention to buy a significant volume of new or significantly improved goods or services. As such, public procurement of innovation helps to improve the quality of public services.

Implementing public procurement of innovation supports and triggers demand for and adoption of innovation to generate economic benefit for suppliers and supply chains (Edler and Yeow, 2016). Although there is relatively little empirical evidence on the implementation of PPOI practices (Caloghirou *et al.*, 2016), some case studies suggest that in addition to promoting innovation, PPOI provides several other benefits, to suppliers, buying entities and society at large. For instance, Semple (2014) highlights other benefits of PPOI, which for public agencies include cost savings in the short, medium or long-term, higher levels of staff and user satisfaction, positive publicity and reputational gains, and contributions to environmental and social policy targets. For suppliers, the benefits include the opportunity to understand public sector challenges and priorities, exposure to pre-procurement and procurement procedures followed by public authorities and commercial benefits from licensing or joint ventures. The society benefits from PPOI through better public services and infrastructure, creation of skilled jobs and investment, smarter use of taxpayer money, enhanced international competitiveness and opportunity to develop new industries. Such benefits have also been proposed by other scholars (Kattel and Lember, 2010; Lember *et al.*, 2011; Timmermans and Zabala-Iturriagoitia, 2013).

In light of the potential benefits of public procurement of innovation, various measures are taken to support its implementation within organizations. In Europe, such measures include provision of financial support aimed at reducing financial risks involved in public procurement of innovative solutions, provision of guidance to procurement bodies on how to procure innovative solutions, and indirect support in terms of capacity building through training procurement officers (European Commission, 2014a). As part of its efforts to

support PPOI, the European Commission has funded a number of pilot projects involving a number of partners in other member states, with each project pursuing its own approach to market engagement and procurement. One of the major funding programs is Horizon 2020, which provides support for pre-commercial procurements and public procurement of innovative solutions in different fields (European Commission, 2014b). Similarly, some individual member states have also been providing different forms of support to PPOI. For instance, Austria has developed the initiative Public Procurement Promoting Innovation through which various measures are implemented to encourage industry to deliver innovative solutions on the one hand, and to provide public bodies and citizens with advanced and eco-efficient goods/services on the other (OECD, 2017). Overall, it is fair to conclude that potential outcomes of PPOI are quite promising and for that reason, the practice receives substantial institutional support. While some case studies have reported potential benefits of PPOI, little attention has been paid on providing a broader picture of the drivers, enablers, barriers, key success factors, pitfalls and benefits of implementing PPOI. The next section will position the present study in relation to the extant literature.

Positioning the present study

Although research on PPOI is still scant, it is important to recognize extant contributions and position the present study accordingly. Overall, existing literature on public procurement of innovation includes conceptual papers that articulate concepts and frameworks for public procurement of innovation (Rolfstam, 2012a) and empirical studies that investigate the importance of the public sector as the first user of innovations (Dalpé *et al.* (1992), its execution (Edler and Yeow, 2016) and impact (Sánchez-Carreira *et al.*, 2018). Table I provides examples of extant literature on the subject including the objective and insights provided by each paper.

As can be seen from the insights presented in Table I, the dynamics associated with public procurement of innovation seem to involve multiple levels of institutions. According to Rolfstam (2012b), this is because public procurement of innovation is affected by factors within the organization (endogenous factors) and factors outside of the organization (exogenous factors). Exogenous factors can be at the national level (for instance national procurement law), regional economic community level (for instance EU directives on public procurement) or even at the global level (for instance UN model law). Against this backdrop, Rolfstam (2012b) proposes five levels relevant for the analysis of public procurement of innovation. Arranged in a hierarchy, the levels are the procurement division, the public agency (procuring organization), national level, EU level (as representative of a regional community) and the global level. Considering its objective, the present study represents an analysis at an organization level. Figure 1 shows the recommended levels of analysis and the focus of the present study.

Methodology

This section will discuss key methodological choices made and implemented for the present study. Figure 2 summarizes these choices, followed by an elaboration of each.

Research setting

The research setting for the study is Norway with Norwegian municipalities as the actors in focus. This setting was selected primarily because of possibility of accessing rich qualitative data. After the enactment of the new EU procurement directives (Directive 2014/24/EU), Norway has implemented the three new directives from the EU as a part of its commitment to the European Economic Area agreement. The Norwegian Procurement Act of July 16, 2016, which came into effect on January 1, 2017, is of general application but includes

Authors	Objective	Insights/findings
Dalbé <i>et al.</i> (1992)	To evaluate the importance of the Canadian public sector as: the first user of innovations; user of inventions patented by Canadians; and buyer of manufactured products	25 per cent of innovations find their first use in the public sector, as do 13% of patents and 8% of the manufactured production Public demand has significant impact on innovation, whether it applies an explicit procurement policy or not
Rolfstam (2012a)	Articulation of the types of innovation that public procurement can render	Definitions and understandings of different versions of public procurement of innovation Different innovation types that public procurement can render.
Georghiou <i>et al.</i> (2014)	To establish a broad taxonomy of policy instruments for public procurement of innovation that has emerged in OECD countries	Policy measures include the creation of framework conditions, establishing organizational frameworks and developing capabilities, identifying, specifying and signaling needs and incentivizing innovative solutions the barriers encountered by firms correspond to the deficiencies addressed by policies but do not address them sufficiently due to lack of coverage, lack of ownership by purchasers, failure to address the whole cycle of acquisition and to address risk aversion
Amann and Essig (2015)	Examination of complexity, time consumption, and risk as important hindrances for the procurement of innovation	Empirical support for complexity and time consumption as main hindrances There are hindrances for public procurement of innovation across European Union member states
Edler and Yeow (2016)	Conceptualization and analysis of the role of intermediation between supply and demand using the example of public procurement of innovation	The innovative solution bought necessitated strong adaptation processes with considerable learning costs within the buying organization Ways through, which intelligent and tailored intermediation can tackle some of the well-known procedural and capability failures in the process of public procurement of innovation
Sánchez-Carreira <i>et al.</i> (2018)	To assess the potential role of public procurement of innovation to contribute to regional development	Effects on regional development depend on several features, such as the productive structure and the innovation capabilities of the region The coordination of supply and demand-side policies seems crucial for obtaining better results regarding innovation performance and regional development

Table I.
Examples of extant literature on public procurement of innovation

principles applicable to public procurement of innovation. Among other things, the new act aims to increase the efficiency in public spending, facilitating the participation of SMEs, and to enable procurers to make better use of public procurement in support of common societal goals, including environmental, social and labor law provisions. The Procurement Act is accompanied by public procurement regulations for the public sector, the utilities regulation, the defense and security regulations and a regulation on concessions procurement. The act provides the general principles applicable independently of the chosen award procedure while the regulations provide the more detailed rules for each sector.

In addition to the new procurement act and the accompanying regulations, Norway has taken several other measures to promote procurement of innovation. The measures include

capacity building in public sector organizations, provision of incentives and support to suppliers. For instance, in 2017 Innovasjon Norge, the Norwegian Government's most important entity for promoting innovation and development of Norwegian enterprises and industry, introduced the innovation contracts scheme as a strategic support program offered to the industry and the public sector (Innovasjon Norge, 2017).

With respect to the public procurement of innovation, the business community can get support from the innovation contracts scheme to develop and provide new and unique solutions that improve the efficiency and quality of public services. The innovation contracts scheme helps to mitigate financial risks involved in innovation and it may cover up to 45 per cent of the development costs incurred by Norwegian companies. However, as companies can reduce their costs, it is fair to assume that this would also benefit the purchaser by lowering the cost of the product. Besides Innovasjon Norge, The Norwegian Research Council offers support for companies wishing to apply for funds from



Figure 1. Recommended levels for the analysis of PPOI and the focus of the present study

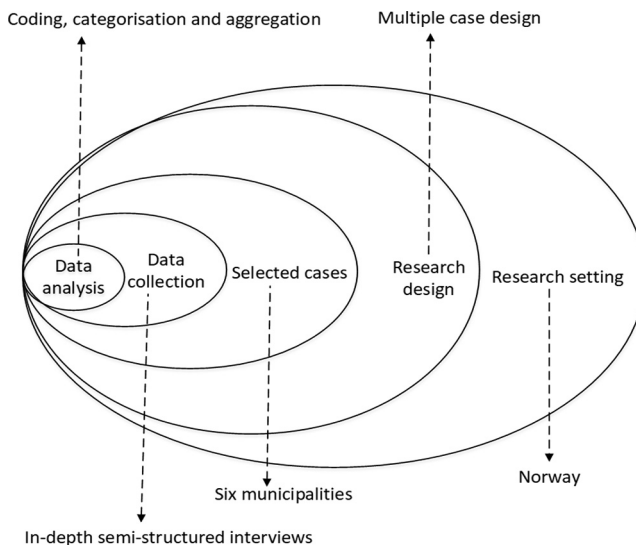


Figure 2. Summary of key methodological choices

Horizon 2020. This support includes project launch support, preparing an EU application, risk relief, and everything from travel support to consortium building.

In addition to the above measures, there have been efforts to strengthen the National Programme for Supplier Development. Established in 2010, this has been supporting public sector organizations and developing the method for innovative procurement. However, following the new EU procurement directives, the program was geared to accelerate innovations and the development of new solutions through the strategic use of public procurement. The program is a joint effort by five important entities representing both the public and private sector. The partners include Agency for Public Management and eGovernment (Difi), Norwegian Association of Local and Regional Authorities (KS), Confederation of Norwegian Enterprise (NHO), Innovasjon Norge (IN) and the Research Council of Norway (FR). With their unique strengths, networks and focus areas, these organizations bring to the table pertinent resources and capabilities necessary for promoting PPOI. Such resources include tools and guidance on public procurement, links to both local and regional authorities, links to the private sector actors, and research-based policy and managerial guidance.

Despite the various measures taken, not all public sector organizations in Norway have executed PPOI. Skogli *et al.* (2017) searched the Norwegian national notification database for public procurement (Doffin) and found that only 1.4 per cent of all acquisitions above the threshold value of NOK1.1m involved PPOI. This suggests that more work needs to be done to ensure large-scale adoption of PPOI practices. In light of this background, the present study sets out to explore drivers, enablers, challenges, key success factors and outcomes of PPOI in Norway. The understanding of these PPOI issues are expected to help resolve the factors mitigating against the successful adoption and implementation of PPOI in the public sector.

Research design

The choice of research design depends on the type of research questions addressed, need for behavioral control, and whether the focus is on contemporary or historical events (Yin, 2014). Due to the exploratory nature, a case design was deemed appropriate as there is no need for behavioral control and the focus is on a contemporary phenomenon. Furthermore, Dubois and Salmi (2016) suggest that case studies are useful in purchasing and supply management especially for investigating contextual issues such as understanding purchasing in various national and institutional settings, studying dynamics, and the exploration of emerging issues. When deploying a case study design an important decision is whether to adopt single or multiple-cases. Adhering to the replication logic, we decided to use multiple-cases as advocated by Eisenhardt (1989). This design permits comparison and solid evaluation of the key aspects under investigation.

Case selection

According to Dubois and Araujo (2007), case selection is the most important methodological decision in case study design. This is because the nature of cases included in a study highly influence the insights revealed. Following Miles and Huberman (1994), the selection of cases for this study began by considering the four-dimensions of sampling parameters, namely, research setting, actors, events and processes. Each of these dimensions was determined based on the research objective, research background and feasibility. We chose to focus on Norwegian municipalities because among public sector organizations, these have received much more attention from the PPOI promotion programs. Main events considered are the

incidents and decisions taken in connection with the implementation of PPOI, while processes considered are the relevant activities and actions.

After defining sampling parameters, six specific cases were selected according to purposeful sampling (Patton, 1990). That is, selecting cases that can unleash in-depth understandings and insights (Dubois and Araujo, 2007). Regarding selection criteria, Flyvbjerg (2006) suggests that researchers can select cases according to “extreme/deviant”, “maximum variation”, “critical” or “paradigmatic” criteria. To ensure variation, the six municipalities included are located in different cities and regions of Norway and have different experience levels of implementing PPOI. Three cases represent organizations experienced with PPOI and the remaining three represent inexperienced organizations (Skogli *et al.*, 2017). The Norwegian national program for supplier development distinguishes experienced from less experienced entities based on the number of PPOI projects carried out and whether or not PPOI is anchored in their strategies. To be regarded as experienced, an entity must have executed three or more PPOI projects and should have a PPOI strategy in place. We contacted them and they confirmed that the grouping for the six cases was accurate. Table II presents the selected cases.

Data collection and analytical approach

To begin with, an interview guide was prepared, starting with simple questions capturing the profile of informants and their organization. These were followed by one set of open questions for the experienced municipalities and another set of open questions for the less experienced.

Subsequently, separate e-mail invitations including information about the study and interview procedures were sent to the selected municipalities. After receiving responses from the chosen cases including names of key informants, we sent a second email with more information and possible dates for the interviews. The data were collected through in-depth semi-structured, one-on-one interviews with key informants. All key informants were individuals that were either responsible for leading procurement of innovation projects or were leading the procurement function. Key questions for the experienced municipalities were focused on reasons for their decision to implement public procurement of innovation, factors that made the implementation process possible, challenges, key success factors, their recommendations for things to avoid, and what benefits they had experienced so far. The key questions for the inexperienced municipalities were centered on the reasons for not implementing public procurement of innovation or for implementation to a limited extent, their intention to implement it in the future, factors that they believe would facilitate full implementation and subsequent success. Each of these key questions were complemented by follow-up questions either to seek clarification to the answers provided or to elicit more information. The duration of the interviews ranged from 30 to 45 min. To minimize errors and biases in the study, and thus, increase reliability (Yin, 2014), data were managed

Case	Location	Experience level	Size of the procurement unit
MUNICIP1	Southwest region	Experienced	10 staff
MUNICIP2	Western region	Experienced	15 staff
MUNICIP3	Central region	Experienced	10 staff
MUNICIP4	Eastern region	Inexperienced	2 staff
MUNICIP5	Western region	Inexperienced	6 staff
MUNICIP6	Eastern region	Inexperienced	4 staff

Table II.
Selected cases

carefully by recording the interviews, preparation of transcripts, notes and documentation of the research process. All six interviews were carried out by SKYPE or telephone in Norwegian, and the sound was recorded by two different data carriers, a laptop and an iPad. Google docs and voice recognition were then used to transcribe the interviews.

Data analysis involved five stages. In the first stage, the six transcripts were uploaded into NVivo 11, a qualitative analysis software package. This way, coding and categorization became systematic and easier to track. In total, the interviews were captured in 15,752 words. In the second stage, the transcripts were examined to identify aspects related to drivers, enablers, barriers, challenges, key success factors and outcomes of implementing PPOI. In the third stage, we coded and categorized the aspects identified accordingly. To ensure reliability of the coding, two of the authors coded the transcripts independently and based on a comparison of the results, slight differences were reconciled. Figure 3 presents initial codes clustered by similarity.

In the final stage, we synthesized the initial codes and aggregated them to develop an organizing framework. Each of the reported factors is an aggregation of the statements made or implied by at least two of the informants included in the study. Thus, factors stated or implied by only one informant were left behind. Looking closely, such factors were mostly

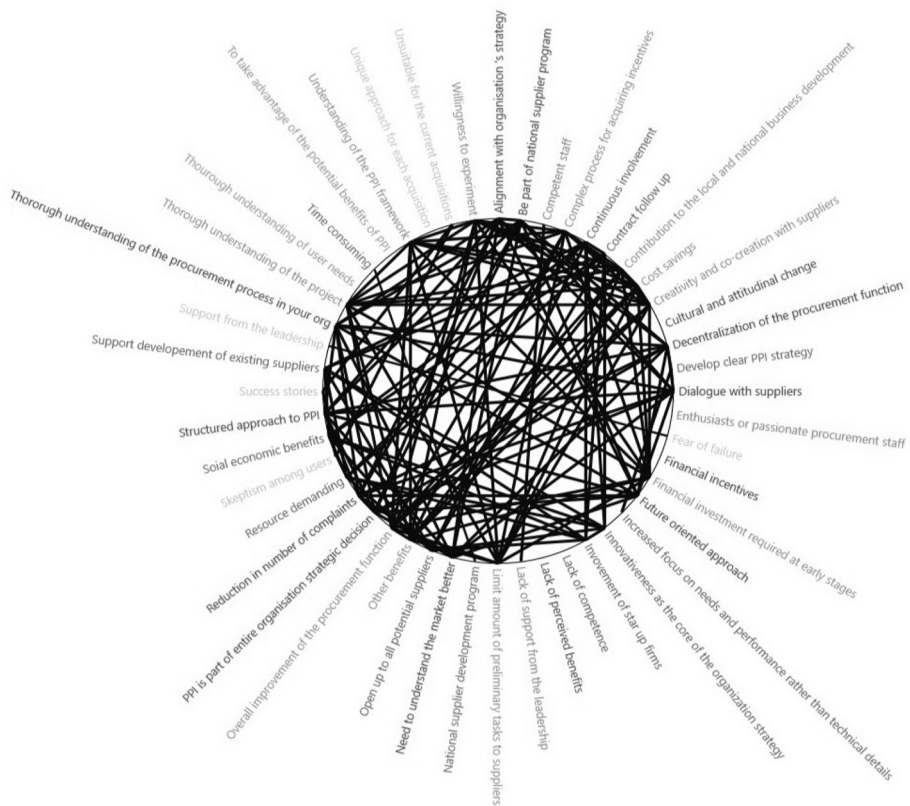


Figure 3.
Initial codes clustered
by similarity

fitting as supplements to the main factors identified, thus, their inclusion would not have added any additional insights.

Findings

Following the analysis of the transcripts, this section presents a framework that organizes the aspects identified (Figure 4). The framework, as signified by the arrows, suggests that for PPOI to happen there must be some drivers, however, the impact of these drivers depends on the existence of enablers on the one hand and absence of barriers on the other. Likewise, whether PPOI bears the desired fruit depends on the existence of particular key success factors and the avoidance of certain pitfalls. The explication of the identified factors follows along with the example quotes. As the interviews were conducted in Norwegian, the quotes were translated into English. All authors are fluent in both languages, two of them being native Norwegian speakers, so the accuracy of the translation was checked by all who then agreed on the final versions.

Drivers of public procurement of innovations implementation

As not all public sector organizations have implemented PPOI in Norway, this study sought to determine the factors that triggered implementation of PPOI at an organizational level. As shown in Figure 4, five main drivers were identified among the case municipalities. As one would expect, the new regulation and the accompanying regulations turned out to be the leading driver for implementing PPOI. As one informant recounted:

Although we started using some procurement of innovations tactics even before the law became effective, it is clear that we engage in procurement of innovations more actively now after the enactment of the law.

Given the emphasis the new procurement law and regulations put on innovation, organizations that have implemented PPOI have interpreted it as being the new standard for achieving effective use of a society's resources.

Equally important are the success stories of PPOI implementation in other organizations. Success stories of PPOI implementation serve as inspiration to the organizations that have

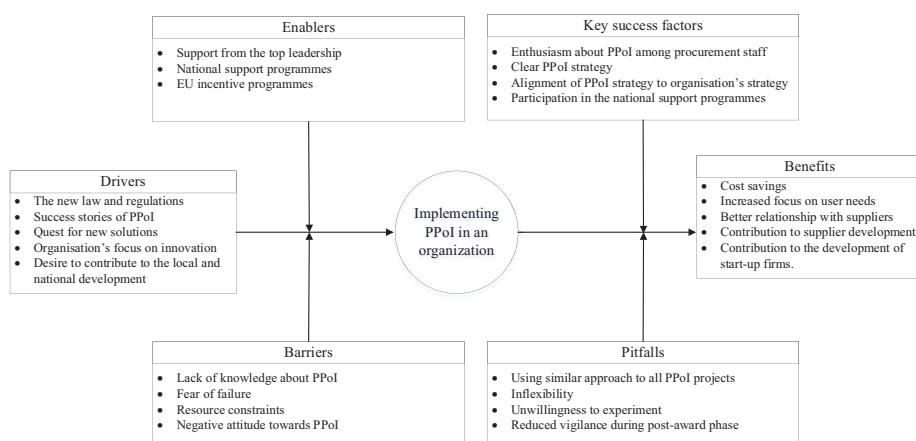


Figure 4.
Framework
organizing drivers,
enablers, barriers,
key success factors,
pitfalls and benefits
of PPOI

not yet embarked on this practice. The following quote from one of the informants summarizes the role of success stories as a trigger for PPOI:

When you see all the success stories that have been, when they have done things and thought out of the box. And that you can get start-ups involved, I think that's really something we want.

Clearly, such stories encourage public procurement managers and their organizations to adopt PPOI with expectations of achieving similar results.

Similarly, the quest for future-oriented solutions is another important driver for some organizations to implement PPOI. As another informant noted:

We want to procure future-oriented solutions and not yesterday's solutions or today's solutions that are outdated tomorrow.

For such organizations, obtaining new solutions for the needs of their users was already at the top of their agenda, and thus, PPOI offered the right framework at the right time. The framework appears to them as being very promising in terms of delivering new and future-oriented solutions for their users.

Apart from the above factors, implementation of PPOI can also be triggered by organization's focus on innovation. In some cases, implementing PPOI was an opportunity for the public procurement unit to contribute to the strategic goals of their organization. As one informant related:

There were a number of strategy documents in the municipality that pointed to innovation as a necessity and as something we have to act upon.

This was echoed by another informant:

For us it's not even about the law, we think this [procurement of innovations] is what we should do. It is part of our organization strategy, so there is no other alternative.

For such organizations, becoming innovative was in the first place one of their strategic goals, and thus, implementing PPOI was a natural step toward that end. They considered PPOI practices as being the best and future-oriented approach to public procurement and they would adopt it even in areas where law and/or regulations allow using a regular approach.

Another important driver is the PPOI's potential to contribute to the local and national development. As one informant pointed out:

One big motivation is that we should also contribute to business development, nationally and locally.

As PPOI encourages organizations to seek innovative solutions from a wide range of potential suppliers, including start-ups and student ventures, these organizations were triggered to implement it because it provided the opportunity to contribute to local and national development. The contribution would be in terms of providing market for local businesses, which ultimately would translate into job creation.

Enablers of public procurement of innovations implementation

While the identified drivers play a crucial role in triggering the implementation of PPOI, it became apparent from the interviews that three factors were key to making it a reality. These factors serve as catalysts for the procurement management unit to adopt PPOI. First is the support of the top leadership. From the interviews, it was clear that implementing

PPoI is a fundamental change in an organization that inevitably requires the support and involvement of the top leadership. As one informant noted:

There must be approval from the top, so you actually have the “permission” to fail in case something goes wrong in an innovative public procurement.

Understandably, implementing PPoI is associated with risks, and therefore, one can only pursue it if there is adequate support from the top leadership.

Equally important, are the national and EU programs geared to help public sector organizations implement PPoI. These programs enable implementation of PPoI through provision of financial resources and building requisite capabilities. All informants from the experienced organizations agreed that had it not been for national support programs, some of their PPoI projects would not have become a reality. In particular, the national supplier development program and Horizon (2020) were applauded for enabling implementation of PPoI, as illustrated by the following quote:

Through our participation in the national program for supplier development we developed a methodology.

However, it is also clear that the complex application and reporting procedures associated with these programs are discouraging and this is actually an impediment. As one informant stated:

Incentives are important. Horizon (2020) is a program that’s amazing and that’s full of money. The problem with it is simply the reporting burden that is imposed upon entering into such a project.

Barriers of public procurement of innovations implementation

Despite the positive role played by enablers of PPoI, a number of factors were revealed as barriers that hinder organizations from implementing PPoI. These factors are explained in this section. The first barrier is the lack of adequate knowledge about PPoI. Conceivably, an understanding of a particular practice gives managers courage to implement it and the opposite is true. It was clear from the interviews that there is still inadequate knowledge about PPoI. As one informant related:

Most purchasers do not even understand all the terms used by the supplier development program on innovative procurement. There are extreme amounts of instructions that say you have to do it like this and like that.

Due to lack of adequate insights into how PPoI works, some organizations hesitate to implement PPoI or they implement it to a lesser extent.

The second barrier is the fear of failure. Considering the “newness” of PPoI practices among public purchasers, it turns out that some organizations refrain from implementing it because they are afraid of failure. As one informant put it succinctly:

It may be that you are afraid to carry out these types of processes because you are unfamiliar with them. You are simply afraid to make mistakes.

Previous research in psychology distinguishes two forms in which fear of failure manifests, namely, over striving and self-protection (Martin and Marsh, 2003). Over strivers deal with their fear of failure by hard work and/or success while self-protectors deal with their fear of failure by avoiding the activity in question. According to Covington (1992), self-protectors tend to avoid the implications of failure rather than the failure itself. The type of fear of

failure manifested with respect to PPOI implementation appears to be self-protection because it appears that organizations refrain from PPOI or implement it to a lesser extent to avoid the implications of failure.

The third barrier is resource constraints, particularly time and financial resources. All respondents noted that PPOI is financially demanding and time-consuming, which, in turn, prevents some organizations from implementing it. As one informant noted:

Another obstacle, of course, is the time aspect, opportunity to spend time on this. Because you cannot hide the fact that when you learn the technique and you use it for the first time, it will take quite some time.

This was emphasized by another informant:

It [PPOI] requires investment or financing of development work, in other words resources to work in such a project.

Interestingly, the size of the public procurement management units of the organizations included in this study is relevant as all organizations experienced with PPOI are relatively larger than their inexperienced counterparts in terms of manpower. One can conclude that indeed time (in terms of man-hours) and financial resources can hinder organizations from implementing PPOI.

The fourth barrier that emerged from the interviews is the negative attitude of public purchasers toward PPOI. Negative attitudes among some public purchasers toward PPOI was revealed in this study as one of the factors that hinder PPOI implementation. The following quote illustrates the negative attitude of public purchasers as a barrier:

There is also a problem with attitude and culture included there [...] and lack of willingness to change among the purchasers.

Attitude is a disposition to respond positively or negatively toward any object (Ajzen, 1991). It is now well-known that attitude guides, influences, directs, shapes and predicts actual human behavior (Kraus, 1995). Understandably, organizations will refrain from implementing PPOI if personnel in the public procurement unit perceive it as irrelevant or useless.

Benefits of implementing public procurement of innovations

As noted earlier, it is argued that PPOI provides various favorable outcomes that justify its implementation. This study sought to identify outcomes of PPOI implementation among public organizations. A total of five benefits were identified. The first and foremost benefit is significant cost savings. Respondents noted that engaging in PPOI led to substantial savings, which would not have been achieved had they engaged in the “traditional procurement” approaches. The savings were attained largely through the implementation of innovative solutions. Suggesting cost saving as one of the potential benefits of implementing PPOI, one informant noted:

But regarding the first innovative procurement we carried out, we saved a lot of money on the investment costs. We saved a lot of millions on that one.

Equally important is the reduced number of complaints from users. The respondents also noted that their focus on the user needs has increased tremendously following PPOI implementation, which subsequently has led to fewer complaints from users. For example, one informant noted:

We are now much more aware of our needs. When we had our last tender competition, we did not even have specifications for functional needs, but we had user needs, and needs descriptions and scenarios that the suppliers should respond to.

The reduced number of complaints from users is most likely because of the extensive involvement of users as required by the PPOI framework. Such involvement results in better understanding of user needs, which results in the co-creation of user-centered solutions.

Implementation of PPOI also appears to contribute to an improved relationship with suppliers. According to the respondents, rich interaction and communication with suppliers as required by the PPOI framework has enabled them to have better relations with their suppliers and reduction in supplier complaints. The following comment from one informant exemplifies the impact of PPOI practice on relationships with suppliers:

Another advantage may be that in some competitions, but it is rather limited, we have received less disclosure requirements and complaints regarding who won the contract, due to good and transparent dialogue involved in the process.

Similarly, another informant recounted the following:

I notice that with public procurement of innovations, there are fewer complaints from suppliers who do not win the contract.

From the above quotes, it seems that the dialogue with suppliers involved in PPOI often results in mutual understanding, which, in turn, helps to promote a healthy relationship between the buying organization and the suppliers. Consequently, this reduces complaints from suppliers.

Another benefit of PPOI is the opportunity to contribute to the development of suppliers, and in some cases the suppliers would have been out of business had they not been involved in a PPOI project. Thus, PPOI not only contributes to the development of the capabilities of the suppliers but also to their survival, as illustrated by the following quote:

We have existing suppliers that we see are making huge progress, who probably would not have been in the market today had it not been for procurement [of innovations] made by our municipality.

In the same vein, PPOI has allowed contracting start-up firms that would otherwise have not stood a chance in the traditional procurement approach. Through contracting start-up firms, public organizations benefit in two ways, namely, contribution to the regional and national development and obtaining new solutions. As one informant noted:

We have succeeded in getting relatively new start-ups to get a living base, and actually, become part of the SMB market instead of being simply referred to as a start-up.

Key success factors

This study revealed contingent factors for successful PPOI, which were, thus, identified as key success factors. In other words, these factors are essential for achieving desirable outcomes. Four factors were identified as key to the successful implementation of PPOI in an organization. First is enthusiasm about PPOI among the procurement staff. It was clear from the interviews that given the risks and the novelty of the PPOI tactics, its implementation can only be fruitful if the personnel involved are eager to explore and handle the associated dynamics. As one informant advised:

One more thing, if I should meet a purchasing manager who wants to get started with this. Find a person who at least burns for it. One that can be a process catalyst, who ensures that the process

goes on, and who can also spread a little enthusiasm, someone with credibility in the organization so people pay attention.

Second, an organization needs to develop a clear PPOI strategy. It is important for organizations to have a clear plan of action that outlines goals and concrete activities to be undertaken with regard to PPOI. As one informant noted:

You need to have strategy papers in organizations that commit organizations and require all employees to establish these ambitions we have in the field of innovation.

Plausibly, having a clear PPOI strategy signals the commitment of the organization and provides direction for every functional area within the organization, which makes it easier for the implemented PPOI to win organization-wide support.

Third is the alignment of the PPOI strategy to the organization's strategy. This can be described as fitting or fusing the PPOI strategy to the resources, capabilities and goals of the organization. Aligning the PPOI strategy to the organization's strategy increases the likelihood of developing and implementing PPOI practices that are more relevant to the organization. Alignment can make it easier to win continuous support from top management. As one informant recalled:

I mentioned to you the issue with anchoring, make sure to get it rooted in the organization strategy and in top administrative and political leadership.

Finally, there should be continuous participation in the national support programs. All respondents from organizations experienced with PPOI shared the view that it was critical to continue participating in the events, training programs, workshops and other activities geared toward PPOI capacity building. This can be exemplified by the following comment:

Our participation in the national program for supplier development has been a critical success factor.

The same was emphasized by another informant:

Of course, working together with the national program for supplier development has contributed a lot to our success in this thing.

Participation in such activities is important as they provide an arena for updating knowledge on PPOI and providing assistance in solving unique challenges faced during the PPOI execution phase.

Pitfalls in implementation of public procurement of innovations

Along with the key success factors, pitfalls in implementing PPOI were identified. These factors were likely to prevent organizations from achieving desirable outcomes, and thus, public purchasers need to be aware of them. This study revealed four factors as major pitfalls that can easily trap public purchasers. Firstly, is the use of a similar approach to all PPOI projects. From the interviews with experienced actors, it was clear that it could be tempting to apply the same tactics and procedure to all acquisitions conducted under the PPOI framework. However, every PPOI project tends to be unique and dynamic, and thus, requires a unique approach. Each PPOI projects has its own challenges and potentials, and thus, a "one size fits all" approach is likely to lead to failure. For that reason, it is important to establish the unique requirements of each project and create a customized approach. As one informant advised:

Try to operationalize how to work to get it done. And then I think there are a thousand different ways to make such purchases; don't stick to the same approach.

Another informant reiterated:

It is also important to free yourself from the history, it is important not to base procurement of innovations on old assumptions. If you do that, I think you will soon hit the wall.

Secondly, organizations need to avoid inflexibility during execution of a PPOI. Given the dynamic nature of PPOI, public purchasers need to be aware that even after creating a customized approach for a PPOI project, changes may be required during execution. As one informant recommended:

One of the important things is to find ways of adapting the individual process, not adapting to changes is a sure way to failure.

A rigid PPOI approach, that is, an approach that ignores changes in circumstances, is likely to fail. This means that achieving desirable PPOI outcomes requires continuous assessment of the PPOI process. As such, one has to monitor every stage of the PPOI process and take corrective actions whenever required.

Unwillingness to experiment with new tactics and practices is another pitfall to avoid. Given the novelty of PPOI, the respondents were of the view that at some point one needs to experiment with new tactics and practices, especially in the face of unique circumstances. For example, one informant noted:

To try to play a little, I think that's important. But at least it does not just become a note in a checklist that – "I'm working on innovative public procurement."

Experimenting new tactics and practices seems to be important because sometimes one will not find prescribed solutions to emerging challenges, and thus, creativity and experimentation of tailor-made solutions is critical.

Finally, an organization needs to avoid reduced vigilance in the post-award phase. It might be tempting to believe that thorough pre-award activities in PPOI are sufficient to guarantee desirable outcomes leading to less vigilance during the post-award phase. However, pre-award activities represent just the beginning of the PPOI project lifecycle, and therefore, a comprehensive and efficient post-award administration is critical to achieving desirable outcomes. As one informant cautioned:

You must not forget that once you have signed the contract. Contractual follow-up must be used systematically, if not, then it will be very much controlled by the supplier because it is easy to exploit on both sides.

Discussion

This study is an attempt to advance the body of knowledge on PPOI. We have done so by exploring drivers, enablers, barriers, key success factors, pitfalls and benefits of its implementation at an organizational level. To the best of our knowledge, this is the first study to address all these six aspects together. As discussed below, the findings provide both theoretical, managerial and policy implications useful to researchers, practitioners and policymakers, respectively.

The findings of this study reveal that five factors are the main drivers for the organizations studied to embark on PPOI. Given the nature of the factors identified, the findings suggest that embarking on PPOI requires the presence of both external and internal triggers. While some organizations are triggered by internal factors, such as a focus on

innovation and a desire to contribute to the national development, others may be triggered by external factors such as enactment of laws and regulations. This finding is consistent with [Rolfstam's \(2012b\)](#) view regarding the effects of endogenous and exogenous institutions on the practice of public procurement of innovation. Theoretically, the effect of external and internal factors revealed is in line with the tenets of organizational change theory, which among other aspects, recognizes forces or conditions existing in an organization's external and internal environments as drivers for change ([Armenakis and Bedeian, 1999](#)). Embarking on public procurement of innovation constitutes a shift in an organization from one form of procurement practice to another that requires adoption of new procedures, standards and even tactics. In light of the identified drivers, we argue that while enacting laws that compel public organizations to engage in PPOI is important, it is also critical to engender internal drive through acceleration of organizations' understanding of PPOI. This is because apart from the new law and regulations, internal drivers such as organizational focus on innovation, quest for new solutions, and the desire to contribute to the local and national development are clearly a result of internal recognition of the need for PPOI.

As with any organizational change initiative, PPOI implementation requires enablers. This study identified three enablers, namely, support from the top leadership, national support programs and EU incentive programs. As for the drivers, these enablers can be distinguished into external and internal. The findings suggest that triggering an organization into embarking on PPOI is one thing, but maintaining the momentum is another. Enablers need to be in place to increase the intensity of the triggers that will eventually turn the decision to implement PPOI into reality. Otherwise, public procurement personnel spearheading PPOI implementation can easily lose interest and succumb to the challenges. Both internal and external enablers are important for the implementation of PPOI. However, our findings regarding the role of financial incentives suggest that for these programs to bear the intended fruit, there should be fewer bureaucratic procedures. Complicated processes can be discouraging and eventually may scare away some organizations.

There are also various barriers to the implementation of PPOI. This study has found five barriers, namely, fear of failure, lack of knowledge about PPOI, lack of support from the top leadership, time and financial constraints and negative attitudes toward PPOI. Previous studies suggest that knowledge about a task can potentially increase confidence and self-efficacy of task performers ([Forbes and Kara, 2010](#)), thus, it is understandable that inadequate knowledge about PPOI triggers fear among public purchasers, which, in turn, inhibits them from implementing PPOI. As such, while enthusiasm about PPOI may trigger motivation among procurement staff and make them willing to embark upon the practice, it is also important for organizations to invest more in training regarding the relevant frameworks and best practices. Training on PPOI will enable public purchasers to make informed decisions and act accordingly. Our finding regarding time and financial constraints as a barrier to the implementation of PPOI is partly consistent with [Amann and Essig \(2015\)](#), who found empirical support for complexity and time consumption as the main hindrances for public procurement of innovation. Their study was based on a large-scale survey, and the consistence of our finding to theirs suggests that time constraints are, perhaps, a "universal" barrier to the implementation of PPOI. Although our study identified time and financial constraints only as a barrier to the implementation of PPOI, the findings of [Edler and Yeow \(2016\)](#) suggest that even after successful procurement of an innovative solution, high costs may be involved in the adaptation processes, which may involve considerable learning costs. Regarding lack of support from leadership and negative

attitudes toward PPOI, it is fair to argue that more effort is required to raise awareness and to instill positive attitudes toward PPOI. This should be carried out across, the entire organization. Even a lack of support from the top, could be partly mitigated through further dissemination of knowledge regarding PPOI.

Regarding the benefits of PPOI, this study found five benefits enjoyed by the case organizations. These include cost savings, increased focus on user needs, better relationships with suppliers, contribution to supplier development and contribution to the development of start-up firms. Overall, our findings suggest that PPOI and the practices associated with it are valuable, and therefore, public organizations should pursue it. In other words, time and financial investments and the costs associated with the challenges and barriers to implementing PPOI, can be justified by the resulting benefits and outcomes. Nevertheless, attaining these benefits is not straight forward as a number of factors are essential for successful PPOI. The contingent nature of management practices has long been recognized by scholars. That is, to say the success of management practices usually depends on a number of factors (Luthans and Stewart, 1977; Tosi and Slocum, 1984). Depending on their role, such factors can broadly be categorized into primary variables (elemental building blocks of the organization), secondary variables (interaction of subsets of the primary variables) and tertiary variables (the interaction of secondary system variables). Similar to other management practices introduced in an organization, the success of PPOI requires the presence of certain conditions that allow it to flourish (Rolfstam, 2013). This study found four factors that are key to the success of PPOI, namely, enthusiasm about PPOI among procurement staff, clear PPOI strategy, alignment of PPOI strategy to the organization's strategy, participation in the national and international support programs. These factors appear to complement one another, and therefore, we propose that organizations embarking on PPOI should prioritize them equally. To the authorities and organizations involved in the promotion of PPOI, awareness and consideration of these factors is critical for the success of their intervention. That is, they should direct an equal amount of effort toward both triggering the initiation of PPOI implementation and instilling and maintaining the key success factors. Converse to the key success factors are the pitfalls that organizations should avoid in the execution of PPOI. This study found four main pitfalls, namely, using a similar approach to all PPOI projects, inflexibility, unwillingness to experiment and reduced vigilance during the post-award phase. These factors represent traps that can hurt the PPOI execution phase, and eventually, prevent an organization realizing its full potential. As such, organizations should be mindful about them and strive to avoid them.

Conclusion

This study explored drivers, enablers, barriers, key success factors, pitfalls and benefits of implementing PPOI. The study extends the body of knowledge on an important topic that has recently garnered significant attention among scholars, practitioners and policymakers. Generally, it has revealed that PPOI implementation represents significant change in an organization, and thus, it requires enablers and at the same time, certain barriers must be circumvented. Furthermore, implementation of PPOI is a necessary but not sufficient condition for reaping its benefits. Thus, certain factors must be in place and the pitfalls should be avoided to ensure that PPOI delivers desirable results.

While these insights are useful, it is important to point out some limitations in this study that provide an avenue for future research. Firstly, the study is based on a limited number of case studies selected in one country. This makes the findings of the study

ungeneralizable as the experiences of the case organizations may be different from organizations in other countries. Consequently, future research may attempt to draw empirical evidence from various settings to ensure robustness of the findings. Secondly, the various factors identified by the present study are not quantified, and therefore, it is difficult to conclude their relative importance. Future studies may attempt to quantify these factors to shed light on their relative importance. For instance, future studies may attempt to quantify in monetary terms the benefits gained by organizations that implement public procurement of innovation practices. Such assessment may include measurement of the effects of PPOI that emerge over time as a result of multi-causal effects (Rolfstam, 2015b). Thirdly, the scope of the study is limited to the identification of drivers, enablers, barriers, key success factors, pitfalls and benefits of PPOI, future studies may attempt to test empirically potential relationships between these factors. Finally, as the study suggests that effective post-award contract management is one of the critical success factors, future studies may consider delving deeper to provide more insights into this aspect. For instance, as we know that governance mechanisms and negotiation strategies tend to evolve (Ness, 2009), and that this can occur even in fixed-duration exchange relationships involving a public agency and a private contractor (Ness and Haugland, 2005), investigation of the governance mechanisms and negotiation strategies used in successful public procurement of innovation projects and their evolution is an interesting avenue. Finally, this study revealed that attitude and enthusiasm among procurement personnel play key roles in the implementation and success of PPOI. This suggests that the five levels of analysis identified by Rolfstam (2012b) can be extended to include one more level of analysis below the procurement division level, namely, public procurement personnel. Future studies could investigate various attitudinal and behavioral factors related to public procurement personnel's effective engagement with PPOI activities, which can potentially shed more light on the success and failure of the practice.

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