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Information System Management in the Norwegian public sector: A case study on Innovative Public Procurement

Master's thesis in Computer Science

Supervisor: Babak Amin Farshchian

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Abstract

As public organizations aim to deliver better services, they are increasingly reliant on solutions provided by a third-party supplier. The innovation of the procurement process has received widespread attention from both politicians and researchers. Despite this increased attention, there is a gap in the literature when it comes to Innovative Public Procurements (IPP) of Information Technology (IT) systems. This study aims to explore the nature of collaboration during IPP of complex IT systems, and how digital tools are used to support collaboration.

This study is designed as an exploratory case study with two units of analysis. The units in question are two ongoing procurement processes in the Norwegian public sector. Data from these two processes was gathered through documents and by interviewing individuals from the participating organizations. The individuals chosen as interview participants were either actively involved in an ongoing IPP or employed in an organization or position that demanded experience with this or any associated processes. These interviews were transcribed and coded before being analyzed through thematic network analysis. This analysis resulted in a set of themes.

The analysis of the chosen data found that while they required more time and resources, the innovative procurement procedures were preferred. Individuals stated that the organizational culture was hard to change, but utilizing IPP yielded better results than traditional methods. The participating organizations exhibited a general willingness for change as they attempted to use IPP with little prior knowledge of the process. Throughout the process, several tools were used, but a gap was identified regarding experience sharing. Participants expressed the need for a shared database or registry where experiences with IPP could be recorded to simplify collaboration between public organizations. Modern office tools were also used to a varying degree throughout the process.

Sammendrag

Ettersom offentlige organisasjoner har som mål å levere bedre tjenester, er de i økende grad avhengige av løsninger som leveres av en tredjepartsleverandør. Innovasjonen i anskaffelsesprosessen har fått bred oppmerksomhet fra både politikere og forskere. Til tross for denne økte oppmerksomheten, er det mangler i litteraturen når det gjelder innovative offentlige anskaffelser (IPP) av IT-systemer. Denne studien tar sikte på å utforske samarbeid under IPP av komplekse IT-systemer, og hvordan digitale verktøy kan brukes til å støtte samarbeid i denne prosessen.

Denne studien er designet som en utforskende casestudie med to analyseenheter. Enhetene det gjelder er to pågående anskaffelsesprosesser i norsk offentlig sektor. Data fra disse to prosessene ble samlet inn gjennom dokumenter og ved å intervjuere personer fra de deltakende organisasjonene. Personene som ble valgt som intervjudeltakere var enten aktivt involvert i en pågående IPP eller ansatt i en organisasjon eller stilling som krevde erfaring med denne eller noen tilknyttede prosesser. Disse intervjuene ble transkribert og kodet før de ble analysert gjennom tematisk nettverksanalyse. Denne analysen resulterte i et sett med temaer.

Analysen av de valgte dataene viste at selv om de krevde mer tid og ressurser, ble de innovative anskaffelsesprosedyrene foretrukket. Enkeltpersoner uttalte at organisasjonskulturen var vanskelig å endre, men å bruke IPP ga bedre resultater enn tradisjonelle metoder. De deltakende organisasjonene viste en generell vilje til endring da de forsøkte å bruke IPP med lite forkunnskaper om prosessen. Gjennom prosessen ble flere verktøy brukt, men det ble identifisert muligheter når det gjelder erfaringsdeling. Deltakerne uttrykte behovet for en delt database eller et register der erfaringer med IPP kunne registreres for å forenkle samarbeidet mellom offentlige organisasjoner. Moderne kontorverktøy ble også brukt i varierende grad gjennom hele prosessen.

Preface

This thesis is a qualitative research study performed at The Norwegian University of Science and Technology (NTNU) throughout the spring of 2020. The study was performed by Andreas F. Eikeland as a master thesis in computer science. Before performing this study, during the fall of 2019, a literature review on public procurement was written. Both this thesis and the literature review has been supervised by Babak A. Farshchian from the Department of Computer Science at NTNU. SINTEF provided some of the data used in this study, and this thesis is part of a collaboration between NTNU and SINTEF.

First and foremost, I would like to extend my sincerest thanks to Babak Farshchian for excellent supervision and follow-up throughout the writing of this thesis. Next, I would like to thank the individuals who took the time to participate in interviews. The time they spent on this is much appreciated, and without them, this work would not have been possible. Finally, I would like to thank my friends and family for the continued support throughout my education.

Andreas F. Eikeland

Trondheim, 10th June 2020

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Acronyms

CD	Competitive Dialogue. 3, 11, 21, 23
DT	Digital Transformation. 21
EC	European Commission. 2, 3, 9, 10, 17, 22, 29, 51
ERP	Enterprise Resource Planning. 3, 4, 13, 20, 21, 23, 34
EU	European Union. 3, 9–11, 19, 51
ICT	Information and Communication Technology. 3, 4, 21, 36, 46
IPP	Innovative Public Procurements. i, 2, 5–7, 9, 12, 13, 15, 16, 19–23, 25, 26, 41, 42, 45–51
IS	Information Systems. 1, 3, 21, 23, 33, 36, 37, 41
IT	Information Technology. i, 1, 3, 5, 7, 9, 13–15, 20–22, 34–36, 41, 45–47
MTIF	Ministry of Trade, Industry and Fisheries. 10, 29
NDA	Norwegian Digitalization Agency. 2, 11
NIPH	Norwegian Institute of Public Health. 4
NPO 1	Norwegian Public Organization 1. 19–23, 28
NPO 2	Norwegian Public Organization 2. 20–23, 28, 29, 34, 36
NPO 3	Norwegian Public Organization 3. 20–23, 28
RQ	Research Questions. 6, 15, 21, 23, 45

1 Introduction

1.1 Motivation

Since agility was defined with the introduction of the Agile Manifesto nearly two decades ago, (Agile Manifesto 2001), the organizational landscape has seen a shift in how innovative solutions are developed. New methods and innovations have allowed organizations to rely on complex Information Systems (IS) for all kinds of business transactions. While it is generally accepted that private sector organizations are good at innovating and adapting to change, the situation is more involved when looking at public organizations (Mergel et al. 2018).

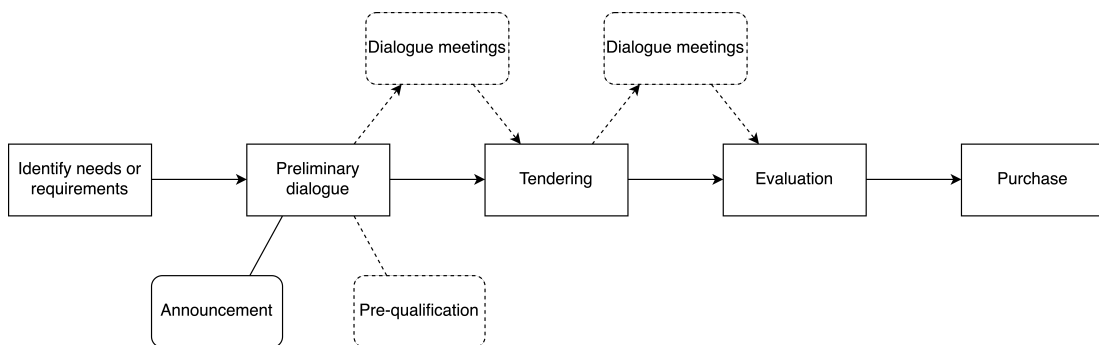
Public organizations are often being attributed to having great potential when it comes to driving innovation (Edquist and Zabala-Iturriagoitia 2012). However, in order to realize this potential, there are complex challenges that need to be overcome. The problems faced by public organizations often have a complex nature due to dealing with complex social interventions that act on complex social systems (Pawson et al. 2005). This complexity can stem from things like various regulations, inspections, and funding reforms out of their control (ibid.). In addition to a challenging problem domain, authors have identified challenges with aging software and traditional development methods internally in public organizations (Mergel 2016).

In order to solve these challenges and develop solutions such as Information Technology (IT) systems, public organizations often need to collaborate with suppliers. This collaboration is commonly done through the act of public procurement. Procurement itself can be boiled down to merely being the act of purchasing a product or service from a chosen supplier. However, some authors have identified a lack of empirical data regarding the procurement of IT systems (Moe 2014). The procurement of IT systems can be highly complex and differ significantly from other kinds of procurement, especially when the procurement is performed using a modern approach.

1.2 Innovative Public Procurements

Innovative Public Procurements (IPP) is a label for certain ways of performing traditional procurements. This process and the different procedures or execution strategies often have varying implementations in different countries. Authors studying these procedures often stress that implementations are country-specific and need to be generalized (Costa et al. 2013; Lenferink et al. 2013; Moe et al. 2017; Prałat 2019). While there are different implementations, the European Commission (EC) has written directives that all member nations must follow to ensure fair and legal competition when procuring. One example is EPCEU (2014b). In addition to this, nations themselves are free to provide additional guidelines for how the procurement should be performed. In Norway, these services are provided by the Norwegian Digitalization Agency (NDA) (Digitaliseringsdirektoratet 2020). A simple illustration of the general procurement process is seen in Figure 1.1, this process will be further elaborated on in Chapter 2 on page 9.

Figure 1.1: Overview of the stages in a general procurement process. These stages can vary for different types of procurement. Optional steps which are not common for all procurement procedures are marked with dashed lines.



A central part of IPP is the amount of innovation that emerges following the process. When discussing innovation, this study will follow Hommen and Rolfstam (2008) and differentiate between product and process innovation. Regarding product innovation Hommen and Rolfstam (ibid.) defines it as “the introduction of a new good ... or a new quality of a good” and process innovation as “the introduction of a new method of production ... [or] a new way of handling a commodity commercially.” Both of these quotes are from Schumpeter (1934). In this case, process innovation could relate to both the method of procurement as well as the resulting solutions. IPP can be used as an innovative method to procure both products and services for public organizations.

1.2.1 Collaboration during Innovative Public Procurements

In the recent directives written by the EC new procurement procedures have been introduced, these new procedures are designed to be more innovative (EPCEU 2014b). In Chapter 2 on page 9, there will be a more in-depth explanation of what exactly makes these new procedures more innovative. However, the most important traits common to these new innovative procurement procedures are increased focus on thorough market dialogue and requirement specification. In these new procedures, it is important to specify the requirements as needs rather than a list of requirements. There is also an increased focus on the dialogue between supplier and procurer.

This innovative approach to procurement was introduced by the EC quite recently, and there has been considerable interest in the performance of these new procedures. For instance, the Competitive Dialogue (CD) procedure has received a fair bit of attention in the Dutch construction industry (Hoezen, Voordijk et al. 2012; Hoezen, Voordijk et al. 2015; Lenferink et al. 2013). These procedures are designed to cover the procurement of different products, but as noted in Eikeland (2019), the literature is sparse.

The different procurement procedures available for public organizations in European Union (EU) countries are presented with regard to dialogue and freedom in requirements specification in Table 1.1 on the next page. A more comprehensive summary of differences between procedures is seen in Table 2.1 on page 17.

1.2.2 Digitalization of Innovative Public Procurements

When public organizations aim to operate more efficiently and transparently, there is great potential in IS. Recent advances in Information and Communication Technology (ICT) have enabled the creation of tools to organize, transmit, store, and act on information in a new and digital way (Svidronova and Mikus 2015). These systems are often associated with increased innovation and the potential to improve the quality of services in organizations (Cardona et al. 2013). This study will look at two applications of ICT. Both are related to supporting the daily operations of organizations. The first topic is the adaptation of standard organization-wide IT systems through public procurement, and the second is as a tool for collaboration during this procurement.

There exist a variety of IT systems currently used in industry today, but one of the most comprehensive and sophisticated are Enterprise Resource Planning (ERP) software. Over the last two decades, an ever-increasing number of organizations have started to rely heavily on such systems, both public, private, commercial, and not for profit organizations. ERP systems are designed to support most transactions within an organization and are often expensive to purchase. In Chapter 2 on page 9, existing research and challenges related to this type of system will be explored. ERP systems will

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Table 1.1: An overview of the dialogue allowed for the different types of procurement. Both the type of dialogue, and at which stage of the procurement the dialogue is allowed is shown.

Procurement Procedure	Procurement stage	Dialogue type
Open tendering	None	None
Restricted tendering	Pre-qualification	Documentation exchange
Tendering with negotiations	Pre-qualification, Tendering	Documentation exchange, Dialogue meetings
Competitive Dialogue	Pre-qualification, Tendering	Documentation exchange, Dialogue meetings
Innovation Partnership	Pre-qualification, Development	Documentation exchange, Dialogue meetings

be used as a central example in this study as the two cases studied are procurements of ERP systems in the public sector.

The facilitation of procurement activities, such as collaboration, using technology, and the internet, is referred to as eProcurement (Davila et al. 2003). This utilization of ICT during the procurement process has been suggested to improve the overall efficiency and transparency (Costa et al. 2013; Ronchi et al. 2010). However, it has been noted by early adopters of eProcurement, that the implementation is resource-intensive (Costa et al. 2013). Costa et al. (ibid.) also suggested that the implementation of eProcurement in the public sector was facilitated by making the implementation mandatory.

Under normal circumstances, the adoption and full utilization of collaboration technologies can be time-consuming, but there are exceptions. As this thesis is being written, the world is experiencing the full effects of the Covid-19 pandemic. This virus is highly infectious and lethal for exposed groups of the population (NIPH 2020). Along with governments around the world, the Norwegian Institute of Public Health (NIPH) are suggesting social distancing and increased hygiene as countermeasures to help combat the spread of the disease (ibid.). Following these measures, more people than ever are working remotely. Microsoft Teams gained 12 million users in a week as employees in many of the world's most prominent organizations were sent home (Opiah

1.3 Thesis Objective and Research Questions

2020). This pandemic has also seen some challenges related to remote work. Zoom has also had a considerable surge in users during this period. However, the company has also received a severe backlash due to privacy concerns (O'Flaherty 2020). The concerns have been addressed, and like Microsoft and Google, Zoom has, for the time being, halted the deployment of new features and are instead dedicating resources to enhancing security (ibid.).

This pandemic has made digital collaboration a more important topic than ever, and how we adapt could influence the industry for years to come. There is not only a considerable uncertainty as to how and when new projects might be launched, but existing business transactions of all kinds are also influenced. Ongoing IPP processes related to this study could be influenced in unpredictable ways.

1.3 Thesis Objective and Research Questions

The broad goal of this project is to contribute to the literature and increase our understanding of IPP of IT systems and other complex solutions. More specifically, this thesis's angle will be related to interaction and collaboration during these projects. The desired result of this increased understanding is to reduce duplicate work and ensure more efficient projects, with desired results.

As mentioned, communication can take different forms; in this study, external and internal communication related to IPP is examined. The internal communication covers the transferral of lessons learned as well as the communication between other public organizations, for instance, between municipalities performing similar projects. As several municipalities throughout Norway have a lot of the same needs and responsibilities, it is almost inevitable that some work will be duplicated. Thus this study will shed light on how the knowledge of these projects is transferred today and explore future opportunities for even better information sharing.

The second type of interaction that can be supported by computer systems is external communication towards suppliers. There are already some tools used for various office activities, but there might be untapped opportunities for the complete digitalization of the procurement process. Several steps are still not covered by traditional tools. The application of various communication tools throughout the procurement process has been theorized to contribute to the creation of rapport between the involved parties (Manso and Nikas 2016). However, further research is needed to determine the role of this potential rapport in the overall procurement.

Finally, this study will aim to explore some empirical data related to the potential conflict of interest that might arise during IPP. On the one hand, the public organization aims to procure the solution that will yield the most value to the public (Soe and

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Drechsler 2018). On the other hand, we have the private suppliers who aim to maximize monetary value throughout this process (Soe and Drechsler 2018). This conflict of interest is likely to manifest as challenges during the process, and how these challenges relate to innovation is very interesting. In this case, both process innovation (IPP) and product innovation are of interest.

To achieve the goals mentioned above and explore these topics, this review will answer the following research questions:

1. What is the nature of collaboration during Innovative Public Procurements of Information Technology in the Norwegian public sector?
 - 1.1. What is the relationship between innovation and collaboration in this case?
 - 1.2. What kind of tools are used during the process?

1.4 Embedded Case Study

The research method chosen for this study is a case study, following design and execution methods from Yin (2013) and Oates (2006). As the study aims to examine a process where the literature is sparse, as noted in Eikeland (2019), the type of the case study will be exploratory. This type of case study is often used to examine real-life situations on topics like this, where there is little literature.

This study is part of a larger project hosted by SINTEF, where the overall theme is digital tools and IPP. This project has granted the author access to interviews performed on this subject. While some interviews were provided, others were executed by the author and analyzed for this study. The interview guide was refined as needed to answer the relevant research questions, the interview process and execution will be elaborated on in Chapter 3 on page 19.

Due to this refined approach, and the fact that not all interviews were performed by the author, this case study will be designed as a multiple-case embedded case study (Yin 2013). When designing case studies, a distinction is made between single- and multiple-case studies (ibid.). In a single-case study, the focus is as expected on one case, and is especially suited for longitudinal or particular studies (ibid.). Contrary to this, a multiple-case study focuses on two or more cases. This approach was chosen because the cases in question are likely to have similar results; Yin (ibid.) refers to this as *literal replication*. Finally, this study will have an embedded approach since the data collected will not be pooled across the two cases. Qualitative data will be gathered on each of the cases in order to answer the Research Questions (RQ).

The case, as well as the SINTEF project, is centered around IPP and the aspects of communication surrounding such processes. To understand this topic and how projects involving IPP are executed in the Norwegian Public sector, some interviews will offer a more extensive and general view of the process. While others will discuss the specific experiences with IPP of IT related to the two cases. These two specific procurements will, therefore, act as cases, the cases will be described in detail in Chapter 3.1 on page 19.

The participating interview subjects broadly define the context of this study. The people interviewed were chosen for their association with public organizations and their experience with IPP and the use of digital collaboration tools. The interview participants belong to one of two categories. They are either employed full-time in a public organization or hired as consultants by a public organization to participate in IPP or a similar project.

In addition to these interviews, documents relating to the embedded cases will also be analyzed and discussed.

1.5 Contributions

This study aims to contribute to our knowledge of several topics. Firstly it will gather some empirical data for how IPP is performed in public organizations today. The study will shed light on both practices and gathered experiences and the attitudes from both suppliers and customers during the process. Secondly, this study will gather data on the information flow and collaboration before, during, and after these projects.

The insights gathered from this study will have implications both for practices and research. These findings will serve as documentation regarding the viability and execution of processes and tools available to public organizations. This kind of experience transfer is essential to streamline processes and ensure that organizations utilize their resources in the best possible way. The data will also be available to researchers and can be generalized together with similar cases from other organizations, and this might eventually lead to more specific guidelines and frameworks.

1.6 Structure of Thesis

In order to understand the challenges present in the topics mentioned and design a comprehensive study, this thesis will follow the structure from Mathiassen (2017). In Chapter 2, the necessary literature and concepts required will be presented. Chapter 3 will present the design of the case study and elaborate on the methods used when

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gathering and analyzing the data. The results will then be presented in Chapter 4 and discussed in Chapter 5. Chapter 5 will also present limitations and opportunities for future work, before Chapter 6 provides the conclusion.

2 Background

In order to understand the interactions and nature of collaboration during the Innovative Public Procurements (IPP) process, two concepts require elaboration. These are divided along the lines mentioned above of product and process innovation. In this case, the “new method of production” is IPP, while the innovative solution takes the shape of a Information Technology (IT) system.

This section will elaborate on these two topics and examine related literature. The first section will cover what IPP is and how it can be used to capture innovation through different methods or procedures. The second section will elaborate on the product that is to be procured. Relevant traits, requirements, and potential challenges with procuring a large scale IT system will be discussed. Finally, a relationship between methods, IPP, and the product, IT, is proposed through a conceptual network.

2.1 Innovative Public Procurements

When talking about IPP, there are several topics bundled together in one term. As mentioned in Eikeland (2019), various governmental entities often apply the word “innovation” in different settings. The specific example discussed in that project was how the Norwegian government wanted to become more progressive by utilizing innovative procurement procedures (Ministry of Trade, Industry and Fisheries 2019). In this section, the term IPP will be elaborated on by first looking at public procurement, and then how this is done today and which tools are available for public organizations wanting to engage in procurement. Then the innovative foundation of IPP will be explored with a grounding in the existing literature on innovative procurements.

Public organizations work towards solving societal problems and addressing human needs, in order to do this IPP is a valuable tool (Edquist and Zabala-Iturriagoitia 2012). IPP is used when public organizations need to place an order for something, a system or product that does not currently exist, but which could probably be developed within a reasonable period (Edquist and Zabala-Iturriagoitia 2012; Hommen and Rolfstam 2008). This process is under tight regulation by several entities, in European Union (EU) countries, the most dominant of these is the European Commission (EC) which is tasked with instigating and implementing the EUs policies (EC

2 Background

2020). For public procurement, the EC has published several directives that dictate which procedures are allowed. These directives are often updated and revised (EPCEU 2014a; EPCEU 2014b). The national governments of participating countries also maintain policies on public procurement based on the directives received from the EC. In Norway this befalls the Ministry of Trade, Industry and Fisheries (MTIF) (Ministry of Trade, Industry and Fisheries 2020).

When the EC are developing guidelines for the public procurement process, two primary considerations are in focus. The first one is the maintenance of fair competition and equal treatment of all involved suppliers. The second consideration is innovation. However, there are some concerns that, for a time, the ECs elevated focus on competition might impede innovation (Edquist and Zabala-Iturriagoitia 2012). As the EU has focused on preserving competition, collaboration, and interaction for innovation has been inhibited. Policies have been designed to favor competition rather than innovation (*ibid.*).

As a response to this critique, the EU has, over the later years, opened up for new procedures that allowed public entities to purchase innovative solutions, these new procedures have two notable changes (EPCEU 2014b). The first is that the introduction of these procedures opened up for new dialogue between the procurer and the supplier. This dialogue is a prerequisite if the two parties are to understand each other (Edquist and Zabala-Iturriagoitia 2012). Firms seldomly innovate in isolation, and there is evidence to suggest that increased mutual knowledge and better communication influences innovation (Carlile 2004; Edquist and Zabala-Iturriagoitia 2012; Hommen and Rolfstam 2008; Uyarra et al. 2014). “Both empirical knowledge and innovation theory strongly indicate that interactive learning between organizations is essential for innovations to emerge.” (Edquist and Zabala-Iturriagoitia 2012)

The second change that has been introduced in the later years is the increased focus on functional requirements. Instead of specifying solutions, the idea is that it is beneficial for the result if the requirements are specified as needs that can satisfy the human needs or solve the societal problems in question (*ibid.*).

Even if the design of the procurement procedures is updated, it is vital for public organizations that the execution is legal and fair. There is a fine line to walk as a public procurer, on one side, the goal is to procure the best possible service, but on the other, the costs should be as low as possible. As taxpayers fund public organizations, their spending is under constant scrutiny by the public, and accounting for the impact of potentially risky procurement behavior is crucial (Obwegeser and Müller 2018). In order to satisfy both the public opinion and having public organizations be aware of their room for maneuver, national guidelines are essential.

In the following paragraphs, the Norwegian interpretation and execution of these innovative procedures will be briefly explained.

Innovative Procedures

The Norwegian Digitalization Agency (NDA) recognizes that public organizations have a huge potential in spurring development and innovation as they often are “demanding” clients (Difi 2017). In order to achieve these new and better solutions, the government aims to facilitate procurements that challenge and develop the supplier market simultaneously as the public is awarded better solutions for their needs (ibid.). We also find that the NDA is consistent with the literature by stressing a focus on dialogue in these procedures. This dialogue could happen before the procurement, but if it happens during, it is important to adhere to the equal and legal treatment of suppliers (ibid.). In the remainder of this section, the five procedures defined by the EU will be compared and explained (EU 2019).

The “traditional” procurement procedures or those that involve the least amount of dialogue is the open and restricted procedure. How these procedures differ from their newer and more complex counterparts is displayed in Table 2.1 on page 17. This table is an elaborated version of a similar table from Hoezen, van Rutten et al. (2010). As mentioned in the previous section, what makes these two procedures “less innovative” is the lack of dialogue with potential suppliers in addition to the fact that requirements are composed as technical specifications rather than needs.

Since the early 2000s, procurements have become more complex, and the popularity of more nuanced procurement procedures has steadily increased (ibid.). There are three procedures for procuring products or services that incorporate these innovative traits. They are Competitive Dialogue (CD), negotiated procedure, and innovation partnership. How these procedures differ from each other is presented in the Table 2.1 on page 17 mentioned above. What is common for all three of these procedures is that they invite to more supplier dialogue. This dialogue is achieved through a combination of initial market dialogue together with basing the procurement on a specification of needs, which invites further discussion.

Two of the innovative procedures, CD and negotiated, follow relatively similar execution paths. Both procedures start with a pre-qualification phase. At this stage, all suppliers are allowed to express their interest. Next, the requirements specification is developed for CD. This is done through dialogue with suppliers before the tendering stage. For the negotiated procedure, the market dialogue happens after the tendering stage during a negotiating phase. A diagram showing the progression of the CD procedure and negotiated procedure is displayed in Figure 2.1 and Figure 2.2 respectively (Moe et al. 2017).

The third innovative procedure is somewhat different, as the nature of what is being procured is a process rather than a solution. During an innovation partnership, the overarching goal of procuring a new solution that does not yet exist is the same, but the method is different. In an innovation partnership, both the development and the

2 Background

Figure 2.1: Overview of the Competitive Dialogue procedure (Moe et al. 2017).

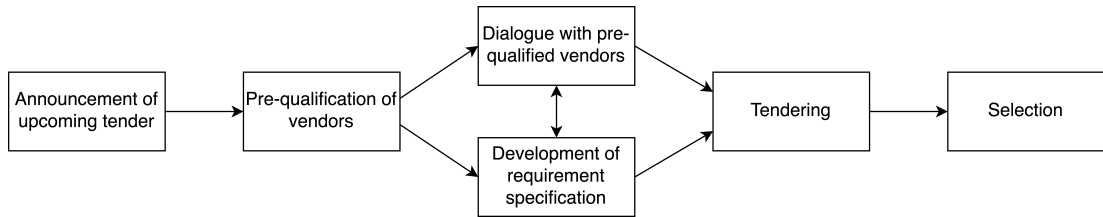
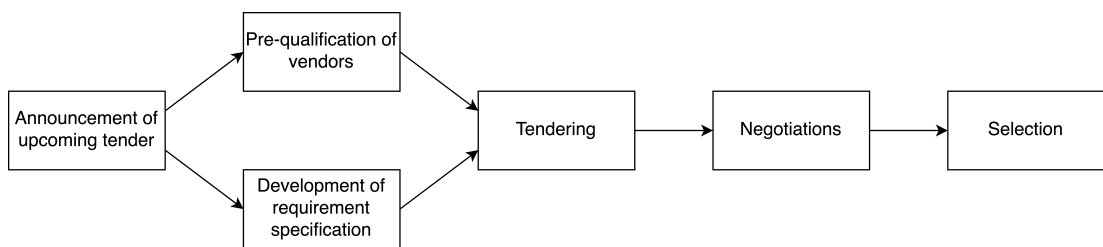
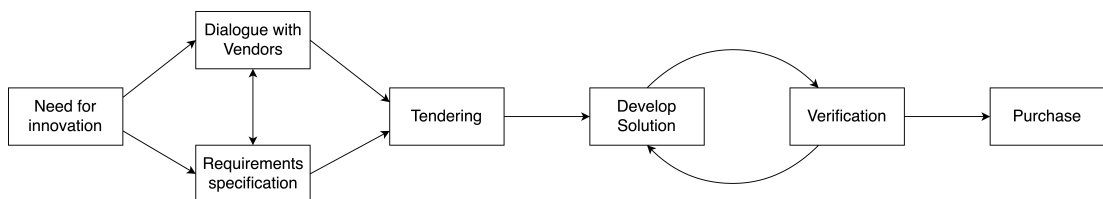


Figure 2.2: Overview of the negotiated procedure (Moe et al. 2017).



solution is covered by the same contract (Difi 2020). Following the initial market dialogue and requirements specification development, the procurer enters a partnership with one or several suppliers. Throughout this partnership, the developed solution is continuously verified at various pre-defined milestones. This process is displayed in Figure 2.3 (Eikeland 2019).

Figure 2.3: Overview of the Innovation Partnership procedure (Eikeland 2019).



2.2 Aligning Solutions and Organizations

The goal of applying the aforementioned IPP procedures is to address a need within an organization. For the procurement to be innovative, the solution should be something new that does not currently exist in the market. However, to achieve this innovation, two types of challenges need to be overcome. The first kind is the challenges related to

2.2 *Aligning Solutions and Organizations*

the procurement, and the second type is the challenges related to the procured solution.

When it comes to procurement-related challenges, a few have already been discussed. As mentioned, issues regarding requirement specification and supplier communication can be present (Uyarra et al. 2014). This presence is recognized by several authors (Eriksson and Westerberg 2011; Lenferink et al. 2013; Manso and Nikas 2016). In addition to this, a lack of experience with new procurement procedures can also influence the procurement process (Wondimu et al. 2018). This lack of experience can also lead to challenges when determining which procurement procedure to use (Carbonara et al. 2016; Soliño and Gago de Santos 2016).

As mentioned in order to facilitate innovation, the solution specific challenges also need to be considered when performing IPP. Innovative procurements are aimed at improving the procurement of extraordinarily complex products or services of a certain magnitude. Large-scale IT systems are an excellent example of this kind of solution and will be the primary research area in this study. Specifically, this study will focus on the procurement of Enterprise Resource Planning (ERP) systems in the Norwegian public sector. In this section, we will examine the challenges related to the development and implementation of systems like this.

As the field of software development is maturing, an ever smaller amount of large scale IT systems are developed from scratch (Moe 2014; Pollock et al. 2003). Instead software packages are adapted for various organizational contexts (Hong and Kim 2002; Pollock et al. 2003). Because of this software package suppliers need their products to be as general as possible to stay relevant across different markets. By using standardizing and easily scalable technologies, this is somewhat achievable (Hong and Kim 2002; Pollock et al. 2003). However, this goal of generalization might lead to challenges when an implementing organization differs significantly from the general case envisioned by the supplier. There might be a misalignment that can have various implications (Soh and Sia 2004).

On the other side of this development, we have the customers of the software who have their processes and requirements, which might influence the system. Organizations of all kinds generally adapt IT systems to become more productive and boost their operations (Cardona et al. 2013). However, research suggests that the amount of effort and commitment needed to implement such systems successfully is often underestimated (Soh and Sia 2004). In addition to this, the customers of IT systems often desire unique business solutions and highly adaptive packages (Hong and Kim 2002). This desire is somewhat incompatible with the suppliers' desire to build generic and reusable solutions. Research suggests that this is a conflict of interest that contains some nuances, and how it is handled is vital for the success of the implementation project (Hong and Kim 2002; Pollock et al. 2003; Soh and Sia 2004).

The literature refers to the difference in interest between supplier and customer as or-

2 Background

ganizational fit or misalignment (Hong and Kim 2002; Soh and Sia 2004). According to Soh and Sia (2004), understanding this misalignment at an early stage is vital for ensuring the success of the entire development and implementation process. As mentioned, suppliers might visualize a general organization with specific processes when developing system packages. The sum of these assumptions and derived structures that the supplier has can be labeled as *package embedded structures* (ibid.). In other words, these embedded structures have served as the foundation for the system packages.

Similarly, on the customer side, there are organizational structures specific to them; these can be referred to as *organization's embedded structures* (ibid.). Both of these structures are a product of external and internal influences in the supplier and customer organizations (ibid.). Examples of external influences could be country or industry regulation, while internal influences could be organization-specific experience or management preferences. Soh and Sia (ibid.) distinguishes between internal and external structures by referring to them as voluntarily acquired or imposed respectively.

When the package embedded structures and the organization's embedded structures differ, the result is package-organization misalignment (ibid.). This misalignment can be remedied either through package customization or organizational adaptation (ibid.). The relationship between remedying measures, misalignment, and the various structures are visualized in Figure 2.4 on the next page. As might be expected, the creators of this model found a difference as to when the two alignment remedies should be used. The conclusion was that conflict between imposed structures was "overwhelmingly" resolved through package customization, while conflicts between voluntarily acquired structures were resolved via organizational adaptation (ibid.).

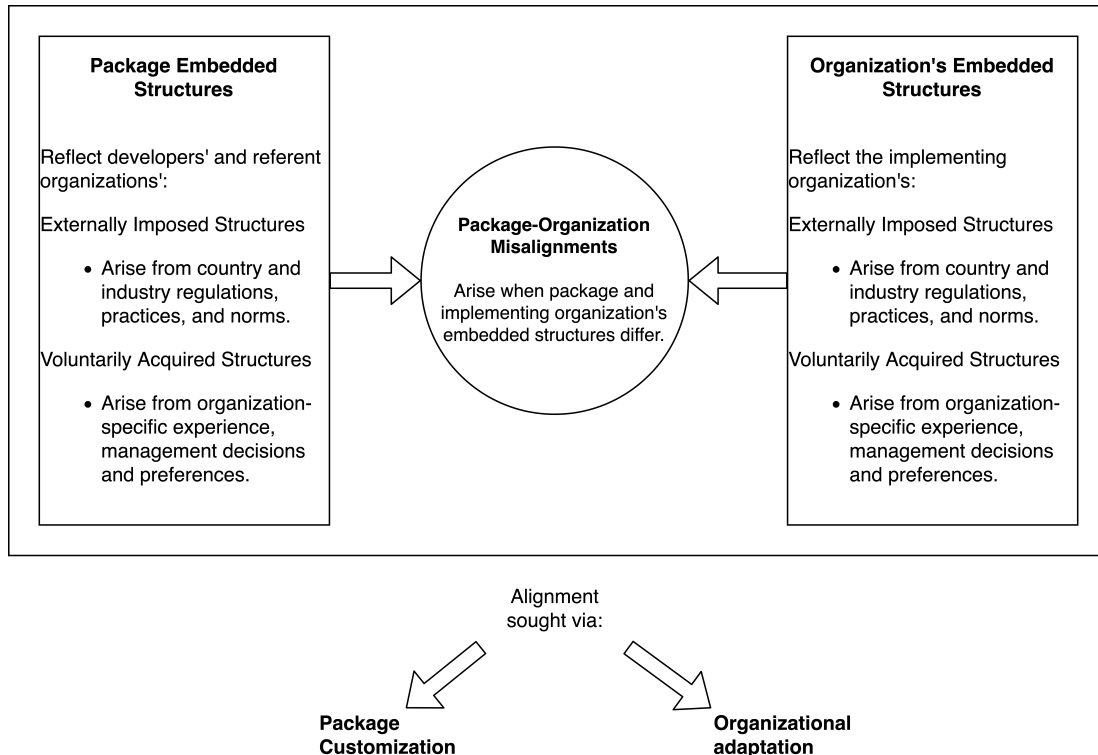
Others have also identified these two specific approaches when implementing IT systems (Hong and Kim 2002). When opting for package adaptation, the system is adapted to align the software with the business processes and the other way around for organizational adaptation. Often process adaptation is recommended by the supplier due to the fear of potential performance, integrity degradation, and maintenance and future upgrade difficulties (ibid.). However, the users in the customer organization would prefer package customization as process adaptation will necessitate significant changes in their work environment (ibid.). It is thus apparent that the most desirable direction depends on one's point of view as well as various implementation contingencies (ibid.).

2.3 Innovative Public Procurements as a Tool for Alignment

To better understand the relationship between the primary concepts discussed in this chapter, this section will present a simple conceptual framework. A conceptual framework can be defined as a network of interlinked concepts that provide a comprehensive understanding of a phenomenon or phenomena (Jabareen 2009). A diagram depicting

2.3 Innovative Public Procurements as a Tool for Alignment

Figure 2.4: Model for the relationship between organizational structures, and the potential misalignment that may occur during package customization, from Soh and Sia (2004)



the concepts elaborated in this section is seen in Figure 2.5 on the following page.

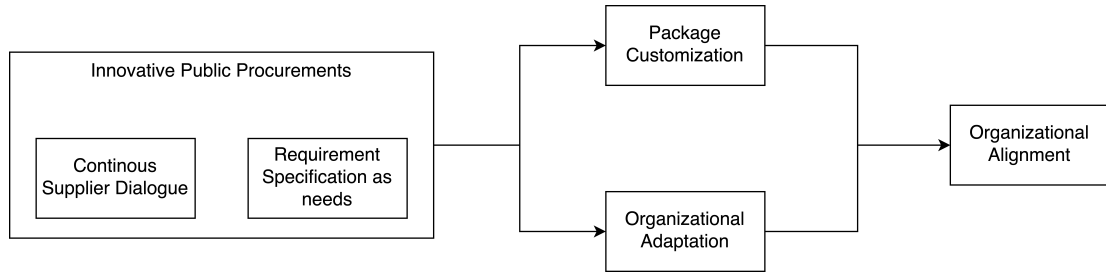
The central part of the framework seen in Figure 2.5 is composed of the “package customization” and “organizational adaptation” concepts. As explored in previous sections, these two concepts are the primary strategies used when aligning packaged software or IT systems with an organization. Achieving this alignment is also the desired goal when procuring IT systems.

As discussed, IPP is designed to facilitate better dialogue throughout the procurement of complex solutions. The conceptual framework proposes a connection between the innovative measures present in IPP and achieving organizational alignment. The hypothesis rooted in the Research Questions (RQ) and reviewed literature shows that the increased dialogue of IPP enables mutual understanding between the involved parties. This mutual understanding is then hypothesized to contribute to creating package-organization alignment during the procurement of IT systems.

This framework will serve as the foundation for this study, as two ongoing procurements in the Norwegian public sector are examined. Additionally, several participants

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Figure 2.5: A conceptual framework depicting the relationship between Innovative Public Procurements and organizational alignment of software packages.



are included in this study as interviewees to provide context and share their experiences with IPP. Through the analysis of interviews, the potential relationship between increased collaboration and organizational alignment will be studied. The following chapter will elaborate on participating individuals, organizations as well as research design and analysis methods.

2.3 Innovative Public Procurements as a Tool for Alignment

Table 2.1: Comparison of the different procurement procedures defined by the EC. The procedures are listed with an emphasis on participation restrictions, and dialogue.

	Open procedure	Restricted procedure	Negotiated procedure	Competitive Dialogue procedure	Innovation Partnership procedure
Who can apply?	All interested suppliers	All interested suppliers	All interested suppliers	All interested suppliers	All interested suppliers
Who can bid?	All interested suitable suppliers	Selection of suppliers	Selection of suppliers	Selection of suppliers	Selection of suppliers
Bid based on	Technical specifications	Technical specifications	Specifications of needs	Specifications of needs	Specifications of needs
Dialogue	None	None	Consultations and negotiations with lowest bidder	With all candidates, prior to final bid	Continuously during development, with selected suppliers

3 Case Description and Methods

This chapter will introduce both the case and the methods used for data collection and analysis. The first section will elaborate on the case design and the selected unit of analysis. The second half of this chapter will be centered around methods. The data collected stems from two main sources, interviews, and documents. After being collected, the data was coded, grouped into themes, and a thematic network was constructed. The findings will be presented in the following chapter.

All of the data was collected in Norwegian, and extracts have been translated by the author.

3.1 Case Description

3.1.1 Selection

When designing and selecting a case for a case study, several factors such as uniqueness, access to data, and problem area is relevant. When developing the case design for this study, the already available data played a key role in defining the domain. This thesis is written as a part of an ongoing research project. Data from this ongoing project was made available for the author and served as the starting point for this study.

Three major Norwegian public organizations participated in this project, and as such, all of the data generated is related to one of these organizations. All of the organizations represent several different regions in Norway and have a similar structure that they need to adhere to when executing projects, such as procurements. They are also publicly funded by the Norwegian government and must adhere to both Norwegian and European Union (EU) guidelines when it comes to Innovative Public Procurements (IPP). In this study, these three organizations will play different roles concerning the study design.

The first organization we are going to look at will be referred to as Norwegian Public Organization 1 (NPO 1). This organization provided most of the initial data regarding the context of this study. All of the organizations included have very similar experiences and leadership structures, but NPO 1 did not have an active IPP at the time this

3 Case Description and Methods

thesis was started. The data gathered from NPO 1 was related to various previous experiences, and the primary purpose served was to provide the context for the rest of the study. For these reasons, NPO 1 was included, but not selected as a primary unit of analysis.

The two organizations chosen to be the primary units of analysis will be referred to as Norwegian Public Organization 2 (NPO 2) and Norwegian Public Organization 3 (NPO 3). The reason these two organizations were chosen was due to the presence of historical data (Yin 2013). This data was related to two distinct instances of IPP, where both organizations utilized new procedures to procure similar systems. In addition to this, the approach chosen by the organizations was something new for both of them. At the time, the data was gathered both NPO 2 and NPO 3 were at the end of their respective IPP procedures. The competition and dialogue stage was completed, and the final supplier selected. This convenience made them excellent subjects for examining the entire process and how it unfolds in similar organizations.

The systems to be procured by both organizations were Enterprise Resource Planning (ERP) systems.

ERP systems

Organizations today use a variety of Information Technology (IT) systems, but a large portion of IT managers view their ERP system as the most strategically important computing platform. The goal of these large-scale systems is to present a single IT architecture with packaged solutions designed to integrate the complete range of a business's processes and functions (Klaus et al. 2000). ERP systems started to gain traction in the 90s, and by the early 2000s, most larger organizations worldwide had adopted ERP. However, there was still some ambiguity to the term "ERP" itself (ibid.). It has been debated whether the term ERP should be used to describe a distinct object or a category of products (ibid.). In this study, the focus is on the functionality of the system purchased and the impact it might have on the organization in question. ERP systems are a multi-billion dollar industry that involves several of the world's largest software firms.

When ERP systems were first adopted in the early 90s, organizations often maintained the system themselves, but the industry is now moving in a different direction (Oracle 2020; SAP 2020). When looking at two of the largest ERP suppliers today, namely SAP and Oracle, it is evident that they are moving in new directions, and utilizing new technologies to lower the costs and risk associated with implementing ERP systems (Oracle 2020; SAP 2020).

3.1.2 Unit of Analysis

As mentioned in the Research Questions (RQ), this study is primarily concerned with IPP and the relations that occur during the process. NPO 2 and NPO 3 provide a unique opportunity for examining these topics in the Norwegian public sector, while the availability of NPO 1 helps provide the context. The procurement processes studied are both innovative and procure IT systems, but they do have some differences.

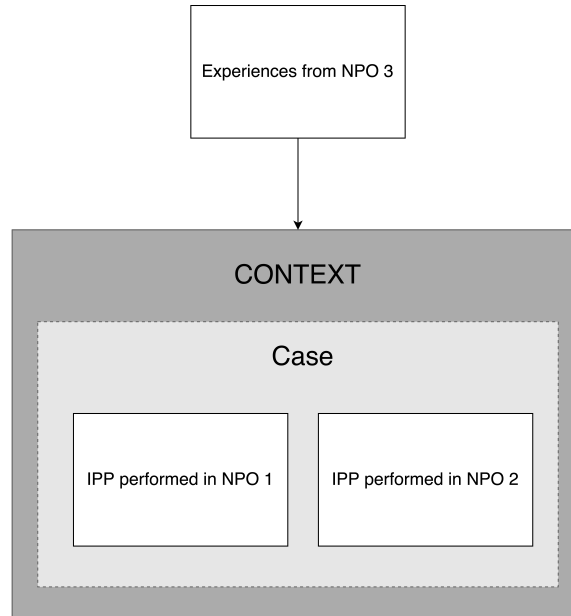
The context of this study is influenced by both literature and government initiatives. The literature has called for more comprehensive research on the procurement of IT systems (Moe 2014). This process has become ever more important as it is the primary method used by organizations for acquiring new Information and Communication Technology (ICT) (Moe 2014; Pollock et al. 2003). The organizational change associated with implementing IT systems is often labelled as Digital Transformation (DT), which can be both challenging and rewarding (Cardona et al. 2013; Reibenspiess et al. 2020; Vial 2019). The potential reward of DT has received an increasing amount of attention over the later years, and the Norwegian government has recently developed comprehensive strategies for digitalizing the public sector (Regjeringen 2019).

As mentioned, NPO 1 was not currently in an active IPP and is therefore included in this study to help provide context for the process. The public organizations included are visualized according to their role in the case study in Figure 3.1 on the next page, this figure is based on the embedded case study illustration from Yin (2013). The context provided by NPO 1 was included due to the organization's previous experiences with innovation and management of Information Systems (IS). This organization has been responsible for public services related to IT systems for many years and has built up significant expertise both as a developer and procurer of such systems. In addition to this, NPO 1 has also been introduced to the new policies initiated by the government. This introduction has ignited a process of adaptation and adjustment for all of the participating organizations.

The processes that will serve as the primary unit of analysis are two IPPs recently performed in NPO 2 and NPO 3. Both of these organizations are similar to NPO 1 when it comes to delivering and developing public services. They have also needed to adapt to new policies and relate to passing government initiatives. Due to this similarity between the organizations, the data gathered from the processes will be comparable. However, during this study, the organizational structure is important, but it is not the primary topic. Beyond the organizational similarities, the process is more important, both NPO 2 and NPO 3 are using new IPP procedures to procure similar products. The products in question are large scale IT systems, which, as explored in Section 2.2 on page 12, might be challenging to adapt. Both organizations are procuring ERP systems, and are using innovative procedures to do so. NPO 2 has been applying the negotiated procedure and NPO 3 has been using Competitive Dialogue (CD). Additionally, the

3 Case Description and Methods

Figure 3.1: Illustration of how the public organizations in this study relate to the case study design.



processes in these organizations have been developing in a comparable time frame. When the data was gathered, both organizations were far along in the process and had completed several rounds of dialogue with suppliers.

The initial conditions in the two organizations chosen for analysis were also quite similar. Both NPO 2 and NPO 3 had experience with regular procurement. However, this type of extensive IT procurement is not something performed often, and some of the policies initiated both by the Norwegian government and the European Commission (EC) are quite recent (EPCEU 2014b; Regjeringen 2019). Due to this recent introduction of policies and procedures, neither organization had extensive knowledge or experience when initiating the IPP.

3.1.3 Data collection and interpretation

According to Yin (2013), the distinction of data is important when designing a case study. For this study, the data will be separated according to the distinction made in the previous section. There will be a distinction between contextual data and data related to the subject of study or phenomenon. All the data provided by, or gathered from NPO 1 is considered contextual and is not directly related to the subject of study. Correspondingly we have that all the data gathered from NPO 2 and NPO 3 is viewed

as directly related to the phenomenon being studied.

Throughout this study, the data gathered is composed of interviews and documents related to IPPs. For all three organizations, a selection of people will be interviewed, the qualification criteria and candidates will be elaborated on in Section 3.2.1 on page 26. However, all the participants interviewed belonged to one of three groups. In order to be useful in answering the RQ, individuals interviewed had to participate in; IPPs or similar procedures, management of IS or upper-level decision-making related to these topics. In addition to the interviews performed, documents, and contracts related to one of the embedded cases were gathered and analyzed.

All three of the participating organizations are very similar, but there is one noteworthy difference that should be considered when interpreting the data gathered. When procuring solutions of all kinds, there is a difference related to who the stakeholders are. For NPO 1, the primary stakeholder is the organization itself, and they are usually not acting on behalf of someone else. NPO 2 and NPO 3 have a somewhat different dynamic, where the solution they procure could end up being used by other smaller public entities. These other public entities may also be involved in the procurement itself and thus making the process more complicated. All the organizations should initially share values and are equally affected by regulations, but this difference is important to be aware of when the results are being discussed.

3.1.4 Proposition

When it comes to the outcome of the study, various conditions could influence the results. Even before analyzing the results, it is apparent that the adaption of ERP systems is no easy task, and it is expected that some of the challenges identified in Section 2.2 on page 12 will be present in the analyzed processes. There is also some uncertainty related to the procedures. From Table 2.1 on page 17, Figure 2.1 on page 12 and Figure 2.2 on page 12 we see that the relevant procedures, CD and negotiated procedure are quite similar. Regardless of this similarity, these procedures are different, and as the literature is sparse when it comes to comparing procurement procedures, unexpected challenges could arise (Eikeland 2019; Moe 2014). The literature also identifies common challenges related to public procurement, and encountering any of these would not be unexpected.

3.2 Data Collection

3.2.1 Interviews

When collecting data, interviews are seen as an important tool for gathering data that can not be collected in other ways (Baškarada 2014). Interviews are guided conversations with other individuals that may either be structured, semi-structured, or unstructured (ibid.). Interviews were chosen as the primary data source for this study.

For this study, the semi-structured interview approach was chosen. This approach is centered around some pre-defined topics. This approach gives the researcher more flexibility when it comes to refocusing the questions in order to better understand the perspective of the interviewee (ibid.). The author was provided with seven interview recordings, as this thesis is part of a larger research project performed at SINTEF. In addition to these seven provided interviews, the author performed four interviews. This results in a total of 11 interviews, which is enough to saturate the topic. Several authors suggest that interview saturation is reached within the 12 first interviews (Baškarada 2014; Guest et al. 2006).

In this study, there were primarily two reasons for choosing the semi-structured approach to interviewing. The first reason relates to the existing interview data provided by SINTEF. These interviews were performed by a senior researcher at SINTEF, Marius Mikalsen, and already followed the semi-structured approach. The second reason for choosing semi-structured interviews was that the flexibility allowed the author to better understand both the topic at hand and the interviewees. As the author had limited experience with the participating organizations, the ability to angle and ask clarifying questions was beneficial.

The interviews were executed using a combination of face to face and video meetings. All of the interviews had only one interviewee; the complete list of participants is discussed in Section 3.2.1 on page 26. The first interviews were performed face to face, but due to the Covid-19 situation, the final interviews were performed over video using Microsoft Teams. All of the interviews were recorded by the interviewer and then transcribed and analyzed by the author. The face to face interviews was recorded using a handheld recording device, while the digital interviews were recorded using the built-in recording functionality of Microsoft Teams. As a further consequence of the Covid-19 pandemic, a few potential interview participants were unavailable due to other obligations. An overview of who performed the interviews and how the data was captured is presented in Table 3.1 on the next page. Due to privacy concerns, the name of the person participating as an interviewee is an alias.

Table 3.1: Who performed the various interviews and how they were executed and recorded.

Participant	Interviewer	Method
Emma	Marius Mikalsen	Face to face, sound recording
Mia	Marius Mikalsen	Face to face, sound recording
Olivia	Marius Mikalsen	Face to face, sound recording
Peter	Marius Mikalsen	Face to face, sound recording
Sophia	Marius Mikalsen	Face to face, sound recording
Greg	Marius Mikalsen	Face to face, sound recording
Liam	Marius Mikalsen & Andreas Eikeland	Face to face, sound recording
James	Andreas Eikeland	Digital meeting, video recording
William	Andreas Eikeland	Digital meeting, video recording
Noah	Andreas Eikeland	Digital meeting, video recording
Lucas	Andreas Eikeland	Digital meeting, video recording

Interview guide

The interview structure followed by the interviewer was the same as the one defined by Kasunic (2010) in Baškarada (2014). This structure can be seen in Table 3.2 on the following page. The first stage was the orientation stage. In this stage, the interviewee is oriented about the process and how the study will handle the collected data. As part of this orientation and introduction, the interviewee was asked to tell a little bit about themselves. This could be details such as position, area of responsibility, and background. After the orientation stage, the information gathering stage followed. For this stage, an interview guide was used.

The interview guide aimed to explore the experiences the various participants had relating to IPP. The topics discussed could be anything from experiences with suppliers, to thoughts regarding change and innovation or how collaboration tools influenced these processes. The interviewer started by asking about a specific project and asked the participant to walk through the process. As the description progressed the interviewer

3 Case Description and Methods

aimed to cover a set of predetermined topics, and steered the conversations towards these at fitting times, this could be done using specific questions. When asking questions, the interviewer paid close attention to the answers and tried to elicit more detail if the answer was too vague or brief. These topics, as well as some sample questions, are provided in Table 3.3 on the next page. This combination of initial breadth progressing into more specific questions as needed contributed to the semi-structured nature of the interviews. While the sequence and wording of the questions could change, the discussed topics remained the same throughout the entire study.

Finally, the interview is wrapped up in the closing stage. In this stage, the interviewee was thanked for their collaboration, and there was some free time set aside. During this free time, the interview subject could wrap up thoughts regarding either the interview process or any of the topics discussed. Additionally, a snowballing approach was used when discovering new participants, so the interviewer often asked if they knew others who might be willing to participate.

Table 3.2: Interview process, adapted from Kasunic (2010) in Baškarada (2014).

Orientation	Introductions and exchange of contact details. Description of the study and the interview process. Clarification of any expectations regarding non- attribution, sharing of data, and any other issues.
Information Gathering	The interviewer uses a questionnaire to guide the interview and to record responses.
Closing	The interviewer reviews the key points, any issues, and/or action items, and confirms accuracy with the respondent. The interviewee is invited to provide feedback on the interview process. The interviewer thanks the interviewee and seeks permission for any future contact.

Interview participants

The participants chosen as interviewees were selected based on a few criteria. First, the initial interview subjects were selected due to being employed in public organizations participating in the SINTEF project. From this, the following participants were found by using a snowballing approach, see the “third party” topic in Table 3.3 on the facing page.

By following this approach, a pool of participants with similar characteristics was created. All of the participants had either participated directly in IPP of complex systems or had managerial roles that directly impacted these areas. So the participants who did not have managerial positions were either employed in the purchasing department or

Table 3.3: The general topics and examples of questions used as a basis for the interviews.

Topic	Questions
Collaboration	How is the collaboration with users? How is it with suppliers?
Users	How do they influence the creation of requirements specification? Who are the users and how are they involved?
Suppliers	How are the suppliers contacted and when? What is useful supplier dialogue?
Tools	Which tools are used? Are the tools used satisfactory?
Third parties	Who is involved in the process? Is there anyone involved worth interviewing?
Innovation	How is innovation related to the needs of the organization? Any thoughts regarding new innovative processes for innovative products?

had project management responsibilities. All the participants had some relation to one of the public organizations participating. A complete list of participants, their role, and affiliation are provided in Table 3.4 on the next page. It is also worth noting that while all participants had experience working within one of the public organizations, some were externally hired as consultants.

Transcription

As mentioned, the interviews were recorded using various interviewers and methods. The interviewer was changed because this thesis was started after the entire project, so the author did not become available until some of the interviews had already been performed. When it comes to the method of interview, the final interviews were initially planned to be performed face to face. However, the restrictions put on society as a consequence of the Covid-19 pandemic only made it possible to perform these final interviews digitally.

Regardless of how the interviews were performed, they were all transcribed similarly by the author. The interviews were both performed and thus transcribed in Norwegian. When transcribing an intelligent verbatim approach was used. This approach was used because it was deemed the most useful and saved some time as one person transcribed

3 Case Description and Methods

Table 3.4: Overview over the roles and affiliations of the people participating as interviewees.

Participant	Affiliation	Responsibility	Consultant
Emma	NPO 1	Project management	No
Mia	NPO 1	Upper management	No
Olivia	NPO 1	Project management	No
Peter	NPO 2	Project management	No
Sophia	NPO 1	Purchasing department	No
Greg	NPO 1	Project management	Yes
Liam	NPO 1	Upper management	No
James	NPO 3	Purchasing department	No
William	NPO 2	Purchasing department	No
Noah	NPO 1	Purchasing department	Yes
Lucas	NPO 2	Project management	Yes

all the interviews. In this case, intelligent verbatim means that filler words like “ehm” or “hmm” were mostly omitted. Additionally, duplicate sentences or non-relevant digressions were not included in the transcription.

Primarily one tool was used during transcription, and this was Nvivo. This tool was chosen due to the quick integration between audio and timestamps in the text while transcribing. Later on, this tool was also used when coding the transcribed material. No automatic tools or third party service was used during transcription. This was both due to the unavailability of such tools for Norwegian, but also due to privacy concerns.

3.2.2 Documents

Throughout this study, several documents were used, an overview of the documents, and their source is provided in Table 3.5 on the facing page. Documents can be used for a variety of purposes. For instance, they can be used to provide data on the context of operation (Bowen 2009). They can also be used to supplement research data or verify

findings (ibid.).

The first type of document that was used is one that most researchers usually do not mention in their source of data, namely existing literature (ibid.). The existing research relevant for this study was identified in Eikeland (2019), which served as a starting point for this thesis. The crucial topics from the related literature were presented in Chapter 2 on page 9.

The preliminary purpose of documents provided by governing entities, such as the Ministry of Trade, Industry and Fisheries (MTIF) or the EC, is to define the study context. These documents describe laws or governing principles that the participating organizations need to adhere to. These documents were created to convey these rules and principles and were, therefore, widely published online.

The final type of document used in this study is the procurement documents provided by NPO 2. These documents include the tender specification for one of the procurements serving as a primary unit of analysis. NPO 2 also provided the contracts signed at the end of the procurement. These documents are included in the study in order to verify findings and serve as a supplementary source of information as they were written without the intervention of any researchers. In this case, the documents were submitted by William, but they were publicly available as public organizations operate with a high degree of transparency.

Table 3.5: Overview over the documents used and their purpose in this study.

Title	Research Purpose	Origin
Directive 2014/23/EU	Context	EPCEU (2014b)
Directive 2014/24/EU	Context	EPCEU (2014a)
Public Tendering rules	Context	EU (2019)
Veileder til reglene om offentlige anskaffelser	Context	Ministry of Trade, Industry and Fisheries (2020)
Meld. st. 22 (2018–2019)	Context	Ministry of Trade, Industry and Fisheries (2019)
Digitaliseringsstrategi for offentlig sektor	Context	Regjeringen (2019)
Contracts	Supplemental data	NPO 2
Tender specification	Supplemental data	NPO 2

3.3 Analysis

In this section, the methods used for analyzing the data gathered will be presented. These methods are especially important as this study classifies as qualitative research that deals with human experiences. Qualitative research has gained popularity over the last few years, so it is important to conduct it rigorously and methodically to yield meaningful and useful results (Attride-Stirling 2001; Nowell et al. 2017).

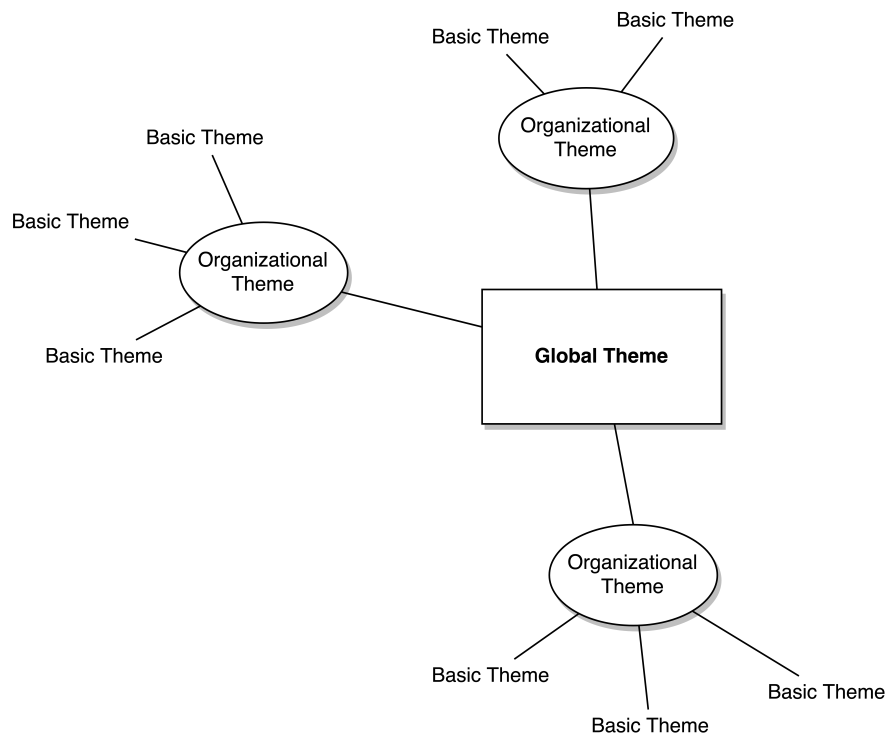
When analyzing the interview transcripts and documents, a thematic network analysis was used. Thematic networks aim to facilitate the structuring and depiction of underlying themes present in the data (Attride-Stirling 2001). The identification and visual presentation of themes is a well-established tool in qualitative research (ibid.). When using the thematic network approach, the methods used in going from text to interpretations become explicit (ibid.). This method is primarily concerned with extracting three concepts from the text; *Basic Themes*, *Organizational themes* and a *Global theme*.

These three themes together form the organizational network structure, as depicted in Figure 3.2 on the facing page. On the outer level, the basic themes can be found, they are the most fundamental or lowest-order themes derived from the textual data (ibid.). These basic themes say very little about the text by themselves and need to be grouped into organizing themes to be useful. The organizing theme is a middle-order theme that organizes the basic themes into clusters. These clusters summarize the assumptions of the underlying basic themes, and so the organizing themes are more abstract and revealing of what is going on in the text (ibid.). At the final abstraction level, there is the global theme, which groups together the organizational themes and creates an overarching assumption or argument (ibid.). This type of theme tells us something about what the analyzed texts are all about. It simultaneously acts both as a summary of the main themes and a revealing interpretation of the texts (ibid.).

When analyzing texts using the thematic network approach, Attride-Stirling (ibid.) suggests a six-step method. The steps relevant for this section are the first three, who deal with reducing or breaking down the text. These three steps are coding the material, identifying the themes, and finally constructing the thematic network.

As mentioned, qualitative research methods have increased in popularity over the later years, and several authors have written about coding qualitative data (Baškarada 2014; Bowen 2009; Nowell et al. 2017; Oates 2006; Thomas and Harden 2008). As suggested by Oates (2006), the data was initially read through with only three categories in mind. These three categories or labels that were applied to the data was, contextual, unrelated, or relevant. Data that was in some way related to the unit of analysis, as mentioned in Chapter 3.1 on page 19, was branded as relevant, while data providing descriptive information necessary for describing the research context was branded

Figure 3.2: Structure of a thematic network (Attride-Stirling 2001).



contextual. Table 3.5 on page 29 utilizes this categorization.

When coding the material, the next step is to devise a coding framework. When doing this you could either take a *deductive* or *inductive* approach. When using deductive coding, the categories used are derived from existing or developed theories (ibid.). On the other hand, when using inductive coding, the categories originate from the data and are defined as the data is processed (ibid.). During this study, the inductive approach was used, and as suggested by (Baškarada 2014), a computer-based tool, NVivo 12, was used to aid with coding. This tool was especially useful as this software also had been used when transcribing the interviews. As the interviews were coded, and categories started to emerge, the same categories were applied when analyzing the documents. The application of existing codes to documents has been recommended in cases where the documents act as supplementary data to, for example, interviews (Bowen 2009).

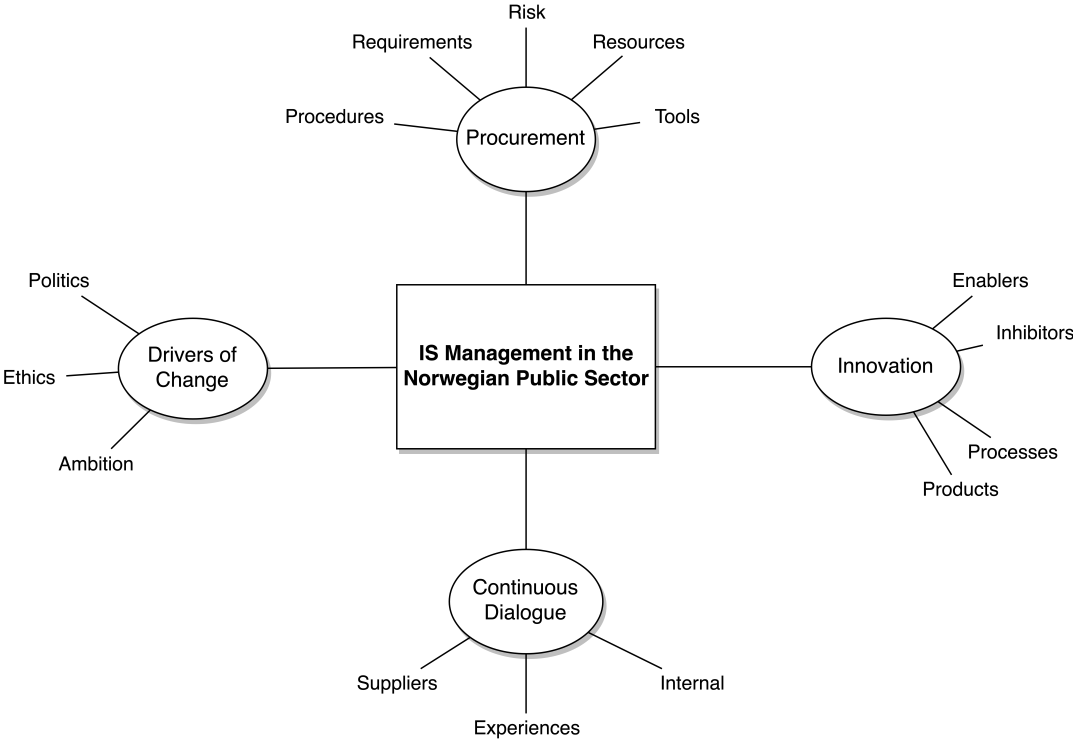
After coding, the next step in this data analysis was to define the themes. As suggested by Attride-Stirling (2001), coded segments were reread within the context of the codes or abstracted from the full text. From these coded segments, themes were extracted and refined in order to be both discrete, but also “broad enough to encapsulate a set of ideas contained in numerous text segments” (ibid.).

3 Case Description and Methods

Finally, during the third step, the thematic network was constructed. This was done by identifying and grouping the themes. The first step was by defining the existing themes as basic themes. These resulting basic themes and the rest of the thematic network is depicted in Figure 4.1 on the next page and elaborated on in Chapter 4 on the facing page. These basic themes were then grouped into organizational themes that were created and named. Finally, the central proposition was summarized as the Global theme. This is supposed to act as the principal metaphor that encapsulates the main points of the texts (Attride-Stirling 2001).

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Figure 4.1: Overview of the themes identified throughout this study, visualized as a thematic network. The resulting global theme *Information Systems (IS) Management in the Norwegian Public Sector* was created by merging the organizational and basic themes (Attride-Stirling 2001).



When analyzing the transcribed interviews, specific reoccurring themes were eventually identified. These topics have been presented as a thematic network, which can be seen as Figure 4.1. As explored in Chapter 3 on page 19, this network has been created following the guidelines from Attride-Stirling (ibid.). In this section, the resulting data from the document and interview analysis will be presented. The section will be structured based on the basic and organizational topics presented in Figure 4.1.

4.1 Drivers of Change

When procuring Information Technology (IT) systems, one of the first things that need to be understood is what the need and domain of operation is. This is something we explored in Chapter 2 on page 9. With both governmental entities as well as different authors emphasizing the preliminary work to reduce misalignment between IT and organizational structures (EPCEU 2014b; Hong and Kim 2002; Ministry of Trade, Industry and Fisheries 2020). Over the past years, there has been more focus on enabling a mutual understanding of the domain where the procured solution will operate.

When procuring their new Enterprise Resource Planning (ERP) system Norwegian Public Organization 2 (NPO 2) provided a concise summary of what they expect the winning supplier to deliver regarding functionality. This initial desire was expressed in the preliminary tender specification posted at the very start of the procurement. As seen in Table 1.1 on page 4, this tender specification is a part of the first documents exchanged in the procurement process. Potential suppliers read this specification. They are then able to show their interest in participating in the procurement. The following quote is from the tender specification provided by NPO 2:

The processes and features within [the organization] are automated to a varying degree at the current time, and this leads to much manual labor. This is one of the reasons for prioritizing digitalization . . . , and the procurement of a flexible and forward-looking ERP solution is one of the most important measures going forward. (tender specification)

The system is expected to support areas such as recruitment, logging of hours, and competency management. There is also a requirement for integrations towards independent subject-specific systems.

When inquired as to where these digitalization initiatives originated, the response was slightly nuanced. However, the primary motivation for procuring a new ERP was to save money by automating processes. At this stage, it is vital to separate the decision to change and the drivers executing change. In this case, the decision was made on a political level (Regjeringen 2019), while public organizations are tasked with executing these initiatives. This execution might prove challenging due to demanding expectations put forth by both the public and governing entities:

It is expected that if you purchase an IT system, you are going to save a lot of money, while you usually don't. Because if you purchase a system where citizens can operate certain tasks themselves, and thus receive a better service. It does not necessarily follow that you can save the equivalent of 20 yearly salaries from this. And especially during the transitional phase, expenses can occur as you are teaching an organization, or training a popu-

lation to service themselves ... so there are probably too high expectations for this to result in specific gains in the form of budget cuts. (Mia)

When examining public organizations, it is quickly apparent that there exists a duality, as well as ethical concerns when executing projects like this. There is the point just mentioned about expectations, but there are other organizational conflicts as well. Public organizations are funded by taxpayers, which will pay attention to how their money is spent. Several of the organizations queried mentions that the transparency expected by public organizations is challenging to maintain. One employee noted: "... the logic of the media and the public opinion is not necessarily the same as business logic" (Mia). As a part of this, public organizations are expected to enact a principle of impartiality when executing projects. This impartiality is both bound by the law as well as organizational guidelines "... following legislations and regulations, we have to self evaluate our impartiality, then we have the ethical guidelines [of the organization], and they are even more strict." (Sophia)

Besides these ethical and political considerations, there was one more relevant theme found during the analysis of the interviews, namely ambition. When developing their organization, public entities do have ambition and are composed of people who are interested in performing their job in the best way possible. Even though change can be hard and the implementation of new IT systems can alter established procedures, this change can sometimes be for the better.

[The employees] want to feel enlightened. Finding good ways of collaboration is difficult, but the willingness to change is enormous. You see, when we introduced cloud-based tools, we discarded the old [locally installed solution] and went over to [cloud]. There was an atmosphere of revelation ..., so the willingness to change is enormous, people want so dearly to do their job in a better way. (Liam)

... from my experience, people won't be happy initially but be gradually more satisfied eventually. It is change, and change is not something that people enjoy. So I think some people will be happy and others not so much, I think you will cover the entire spectrum, but then I think you will converge towards a better solution in the end. (Lucas)

4.2 Continuous Dialogue

The ongoing pandemic has had a tremendous impact on the perceived importance of digital collaboration tools. In this thesis, participants were interviewed about their relation to information sharing, digital or otherwise, before the pandemic. This section

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will focus on the interactions experienced by public organizations concerning the management of IS.

As seen in the previous section, employees in a public organization can appreciate new Information and Communication Technology (ICT) solutions, but the dialogue with the suppliers of these solutions is not always straightforward. One instance of this can be when it comes to having a mutual understanding of nature and ambitions relating to IT system delivery. Specifically, this can be related to dialogue with an established supplier after the contract of delivery is signed. In their tender specification NPO 2 say this about their desired relationship with a potential supplier:

[The organization] desires a close partnership with the chosen supplier, both on a strategic and operational level. The supplier should challenge the way we work and have clear perceptions about how we can solve [our] tasks better based on our needs and desired effects. Moving forward we desire to collaborate with the supplier regarding development, have the opportunity to voice our needs and desires, and to influence the development to be prioritized during the contractual term. (tender specification)

Despite these rigorous and comprehensive desires for entering a partnership, the participating public organizations have experienced challenges with IT supplier relations. There have been instances where the public organizations feel neglected and left behind in these interactions. Furthermore, in order to remedy this, various sanctions have been attempted to little effect. These challenges are especially prominent in the cases where the suppliers are not present on-site in the public purchasing organization.

We have a few external suppliers, but they are seated here, they have to sit here ... I have some experiences with external suppliers, where the solution is delivered, and they drive me mad. They are impossible to relate to. The deliveries won't come due to a lack of understanding. They don't have the promised people. And the moment we sign a contract we're stuck. (Emma)

For each new contract or competition we have in the market, we have some ambitions, raising quality, new services, new features, or something else new. And this is supposed to be the baseline for the entire contractual term. And it is so demanding, to make suppliers understand that we are going to collaborate on achieving something ... it is demanding to realize that we as a public organization have grand ambitions within these areas. (Liam)

In addition to supplier relations, there is a need for information sharing between and among public organizations. During the interviews, it was identified that several participating organizations often wondered whether a process had been performed elsewhere in the country; "... it's weird that we're the only ones working on this ... there are 400 others, there has to be someone else ... " (Olivia). Others also noted that

some sort of database or searchable system of what the other organizations were doing would be useful. A lot of the collaboration happening “across borders” between different public organizations, started coincidentally. The participants noted that this collaboration often started when people reached out through their personal or professional networks. In other cases, opportunities for collaboration were discovered by people who coincidentally visited different areas of business. A potential gathering of similar projects would also benefit potential suppliers. If they see a market, they could be willing to invest more.

There is still a lot that could be done when it comes to public dialogue, or dialogue between public entities, it is a small country we live in. It’s not easy for a market to specialize in niche concepts.

(Mia)

The interviews identified a few challenges or concerns related to continuous dialogue, but there was also some optimism. As uncovered in a previous paragraph, there is a willingness to change, and this is, for instance, noticed by external consultants working in the public sector. Public organizations might have a history of being perceived as slower or less prone to change. However, the participants interviewed both public employees and hired consultants working in public organizations, hinted towards this being more of a general difference between organizations. How mature an organization is regarding dialogue and IS management differs widely throughout all kinds of organizations, whether public or private. One specific measure performed by public organizations was the writing and distribution of a write-up of their experiences following an especially challenging project.

[Regarding] other projects I have worked on in the public sector, yes we have talked with neighboring areas, but you often hear things like “no, we’re different from them” or “we have our processes and our people, so we have to do it our way” so there is some resistance perhaps ... I have to say that public organizations are generally good at contacting each other, and sharing experiences and things like that, after all, they have the same regulations from the government to adhere to. (Noah)

And we will be writing a rapport based on our experiences, but there were some challenges here, the summary meeting was canceled due to corona. But we are following up on this as soon as things open up again, and we will write the experience rapport. Which we will share then, that’s the plan. (Lucas)

4.3 Innovation

Much attention is being paid to innovation in the public sector and how this can be achieved. In the interviews, several experiences and opinions related to innovation in the public sector were recorded. From these results, several activities were identified, where some were used to enable innovation while others were perceived as inhibiting innovation. This section will primarily cover these activities or processes, as well as artifacts or products resulting from these processes.

When developing more complex innovative products, the participating public entities often relied on a supplier to deliver this solution. In these cases, the involvement of several potential suppliers was deemed crucial in order to ensure the quality of the resulting innovation. In the next section, the costs related to innovative procedures will be covered. However, they are expensive, so suppliers will need some incentive to participate in innovative activities. The interviewed participants stated that the involvement of suppliers was usually not a problem, as long as there was some financial incentive. This incentive could be either in the form of a significant contract or only compensation for participating. However, the participating organizations were of some size. It was recognized by several of them that providing sufficient financial compensation could be difficult for smaller organizations: "It is easier to experiment in a larger municipality, in a way than in a smaller one, as you can simply discard and return to a different way of doing things" (Sophia). One such form of compensation can be found in the aforementioned tender specification: "Suppliers participating in the dialogue- and/or tender phase, and do not win, will be remunerated with NOK 50 000.". Some also commented that this involvement of suppliers was a good thing: "I think there is a considerable innovative effect that can be gained by capturing as many new impulses from the market as possible." (Noah)

... we contributed some funds, and no one expects you to develop [a solution] for those funds. So there are some resources, and they are very non-committal resources in the sense that we don't have very many restrictions, and [the suppliers] will then have the opportunity to spend them as the market see fit. And it is a signal as well. ... it creates an expectation in the market that this is something we would like to purchase. (Peter)

Throughout the interviews, several participants mentioned that processes, where something new was developed, were expensive, but useful to a degree. The participants displayed a willingness toward executing expensive processes as long as the product warranted it. Certain traditional and non-negotiable products might be bought off the shelf, but mostly anything that required some customization also required significantly more resource-intensive processes. A distinction was also noted here by several participants, namely the difference between an innovative process and an innovative product. While the process used when acquiring new solutions can be branded as in-

novative, the solution itself does not necessarily have to be. On some occasions, it was desired to adapt the organization to the product rather than the other way around. In other words, the preferred solution was not necessarily “off-the-shelf”, but rather a product developed by the supplier and adapted to the public organization.

If you purchase a standard system it is a safe bet that it won't fit a hundred percent with the processes you have internally, so I have to say that over the later years we notice a broader understanding of this [in public organizations], we have to adapt to the systems instead of the systems being adapted to us. Because that is a part of purchasing these developed solutions. You have to adapt rather than list a comprehensive set of requirements where the solution is tailored to you. (Noah)

... and we have said, we will adapt to the system. The system is not to be adapted to the way we work today, which requires something of us, we need to follow and adapt. So the development is lead by the solution and the supplier rather than us telling them what to develop. (William)

I suspect that in some environments, it is merely to purchase a system, and that's it, but if you wish to some organizational development, to become more productive, it demands a bit more, and that's what we want.

(Lucas)

When queried regarding the inhibitors of innovation, the public organizations participating drew forth three interesting elements. In one interview, the passing of time was discussed as a potential inhibitor of innovation. The challenge is that large public projects are sometimes required to stay innovative over several years, and it is tough to keep developing during this execution while also regarding the changes happening in society. The second point was the conflict between innovation and auditing. When undergoing audit as a public organization, everything needs to be accounted for and correct, while innovation, by definition, involves trial and failure. This room for failure is very delicate in the public sector. Finally, the last inhibitor towards innovation identified by the participants was document-heavy processes. This generation of documents was perceived as being more labor than worthy and was a deterrent for new project managers.

[Auditing] is supposed to be right and follow the rules, and there is not supposed to be any deviation. And then you have innovation, the nature of innovation is that not all ideas are equally good. And we live in that balance here. Because we have had some experiences with innovation that did not go too well. (Emma)

There are some time constants in projects like these that need to be con-

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sidered. If you can handle the developments that are happening both in society and within the organizations that are natural stakeholders towards the solution. Yes, sometimes it works out, and sometimes it does not work out. It is quite demanding because a lot is going on during a two-three-year period. Over this time frame, huge things are happening in society, and then the public must be innovative for three years before the innovation arrives. (Liam)

These cumbersome and document-driven processes solely for the document generation itself is perhaps not the most innovative driver, and there is a lot of it here. ... And these documents can again receive add-ons in the form of various checklists and duplicates that you need to process. ... a process needs quality control, and it receives quality assurance through the established procedures, but it does not necessarily need to be through the documents generated. (Emma)

The results gathered from interview participants when talking about innovation also touched some of the same themes mentioned in the previous section. Namely, the topic of organizational culture and how various individuals perceive change and new things. For instance, one participant noted that: "... it is a very human thing to do. You have done something once. It is easy to repeat it. So changing to a new way of working is terribly demanding." (Sophia). Others also noted the inertia present in their public organization when it came to implementing new solutions. The interviews uncovered a spectrum regarding willingness for change. So in conclusion, trends within organizations are changing, but there is also the political angle where new and "exciting" projects are advocated and prioritized.

And in the public sector, at least compared to other places I have worked, you are not as keen on change, at least in my experience. ... Many people have been working with the same system for ten-twenty years, and in those cases, it requires a bit of effort to think differently, perhaps this can be done in a different and perhaps smarter way. (William)

... it is always attractive with everything that revolves around creation and innovation, it is a bit remarkable ... And then it involves a bit, or a lot of politics, it is something the regional politicians become proud of, they are proud of the project, and they want to talk about it, they want to show that they are doing something extra. (Peter)

4.4 Procurement

When discussing innovation and IS in the public sector, there is no way around the topic of procurement. All of the participating organizations utilized procurement to provide the public with a variety of services. In this section, the participants' opinions and experiences with Innovative Public Procurements (IPP) of IT systems will be discussed. These experiences cover both challenges and advantages of using IPP. As displayed in Figure 4.1 on page 33, there were five basic concepts identified from the analysis.

The first step in the procurement process is to establish what the organization needs. Following government regulations and increased knowledge, there has been a recent shift in how public organizations create their requirement-specification. The primary response from participants has been that this new method of specifying needs rather than requirements is incredibly time-consuming. This time consumption is primarily related to the varying "innovative-maturity" present in different organizations. In order to successfully specify needs, some organizational change is needed. Participants noted that this change, while resource-intensive, could be lasting, and this new mindset would make subsequent IPPs less resource-intensive. It was also suggested that this innovative approach could help suppliers better understand the domain and lead to better solutions.

And when we have looked at the requirement specification, if you say there are two extremes, one of them is to specify precisely what you want, that's one side. And the other is to not say anything about what you want, but instead, only describe your needs. We have usually preferred the latter; the purpose of this is not to put any restraints on the supplier, that they should deliver precisely this and that. I think that will hurt innovation and force the supplier to deviate from their best solutions. (Noah)

So we spent some time doing that, we worked on expressing needs rather than requirements. That is to say, needs that are solution-independent and not absolute. . . ., and we used a lot of time internally to express our needs as user stories. That is a previously unknown concept, and we spent months doing that. We banned the use of the word system or other solution-specific terms. Everything should be independent . . ., and clearly, if we were to do the same again, the mindset would be more accurate now. (Lucas)

No, I think it is a very good method, but it is very demanding, both on our part as customers, but also on suppliers . . . But experience shows that tenders we have executed in this manner. When we don't explicitly say what we want, we receive a much better offer, as the supplier know their own systems the best, they are allowed to express themselves and put forth what they think will satisfy our needs. (James)

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After specifying the desired solution's requirements, the next step in the procurement process is to select one of the mentioned procurement procedures. In this study, the focus is on IPP, and the participating organizations had some experience with one or the other. The primary feedback received through the interviews is the same as for the requirement stage above. However, it is highly resource-intensive, but there is generally a conviction that the results are better than traditional procurements. There were also ambiguity or uncertainty as to what exactly "innovative procurements" were amongst the participants, as some had incorporated innovative elements into their traditional procurements. It was mentioned that the specific procedure did not matter as long as the mindset and innovative elements, such as market dialogue and "need specifying", were used. Generally, the improved dialogue provided with the IPP was reported to follow a similar structure with joint dialogue first followed by one on one meetings with the different suppliers. There was a general agreement between participants that these two meetings served different purposes. The joint meeting was to inform the suppliers about the problem, and the one-on-one meeting was for the suppliers to present their solutions.

We have a distinction here, we separate them in that we have the dialogue conference that is where we explain what we want, that's the topic for the dialogue conference. An then we give them some time before one on one meetings where they get back to us and tell us how they answer the questions related to the problem ... it is a two-part monologue, where we start a monologue conference and the one on one meetings where the monologue is reversed, so it's the one on one meetings that are important to facilitate, that's where you get new knowledge. (Peter)

What we have arrived at lately is that we had executed several innovative procurements before they received a name. And that was interesting. We had an innovation partnership before it was invented. And we have been very innovative in the idea stage, and [we] still are ... (Olivia)

We have invited the suppliers to meet now afterward and receive their experiences of this process and asked for what went well and what we can improve on until next time, we assume that this is something we need to continue doing and do even better next time ... I hope I haven't given the impression that this has been an easy process because it has not. It has been time-consuming, but we have learned a lot. There might have been some feedback regarding the fact that this process took place over a long period of time. It could be a while between dialogue meetings, and that could be challenging at least for some suppliers. (William)

It has been brought up several times that these innovative activities are expensive, and it is interesting to look into how these projects are funded. The interviews revealed

a couple of challenges related to the funding of public projects. The first one was mentioned in Section 4.1 on page 34, these projects are funded by the public; because of this, the spending of these funds is of great interest to the public. If these funds are spent without any visible reward, it will make headlines, and someone will be held accountable for an extended period. A second interesting example of funding challenges is related to how money is allocated. For one large project discussed in the interviews, the funding allocated to a project was separated from the executing entity due to a political decision.

So the public context is entirely different. And that comes with increased caution when it comes to the spending of money because it is not my money. . . ., so it is evident that taking chances in our business leads to entirely different consequences. Then say a CEO who takes a chance, he has the trust of the board until he receives a severance package of ten million and leaves due to familial reasons the same day. While here you would have to deal with laundry for months, in the public sector. (Mia)

... and what happened, utterly unrelated to everything discussed so far, was that the [social service], was moved from one City Council to another. And so the responsibility changed hands, but not the money, not nearly the amount of money, and suddenly they did not have the required funds. (Greg)

From the responses gathered, it is evident that the funding of public entities influences the risk-taking capabilities and, in turn, the freedom to execute innovative procedures. It was also suggested that this goes the other way around, as certain departments would not execute procedures that were too risky: "And in my experience they were pretty conservative at the concern purchasing and municipal attorney ... they thought innovation partnership was too risky and said no" (Greg).

The procurement process requires a lot of collaboration between internal departments in the procuring entity, but also towards suppliers, and for this, several tools are used. Initially, all procurements over a given size in Norway needs to be published through a portal called Doffin. Following this post, selected suppliers are invited to various dialogue meetings; some of these dialogue meetings can also be supplemented with written documents. The participants noted that while these meetings can be performed using video conferencing tools, face to face meetings are preferred. This was said by one person interviewed: "And for the one on one meetings we would prefer to do it personally and face to face, but sometimes you have to resort to Skype, to create equal opportunities ... the instance you are on Skype the closed relation changes, and you don't get the same sharing." (Peter).

You have both, the suppliers would like to meet face to face, but then you have, or could have parts of a supplier or their team situated in other coun-

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tries, and they are participating over Skype, Teams or whatever. And the format of these one on one meetings, we usually run some kind of combination, where we have both the dialogue conference, but also for them to provide some documentation in writing. (Noah)

Regarding internal collaboration, cloud-based office software and chat programs were pulled forth as efficient tools. Specific examples were both Google and Microsoft suites. During projects, action monitoring software such as Trello was also used. Generally, several different tools were used, and there were a few shortcomings noted. One participant voiced a desire for a tool supporting more mundane tasks related to the organization of procurement activities. This type of supporting software could help organizers who have less experience with these new procedures. This could be as simple as checklists for logistical tasks such as booking hotels or creating registration forms.

But everything is digital, so we are using tools in that sense. Spreadsheets, email, movies, links, Google, hangout, and chat groups ... So there's that, Google is very capable when it comes to sharing and communal writing, so we share disks. We use team disks and share documents. (Olivia)

Now lately, when we have two projects, [one] side uses Microsoft Teams for files, and also Skype for Business has been used for video conferencing. [This project] also uses Teams for video meetings, actions, files, and chat. ... We still use Sharepoint for files [in the other project], and we still use Trello for actions, and we have barely begun using Slack for chatting in [this project]. So there are many different tools. (Greg)

I don't need any tools for communicating with people, some might need that, but we don't. Some administrative tools, where you fill out a form, press send, and it is automatically posted on Doffin, and the hotel is booked, tedious, uneventful tasks, the surrounding logistics in a sense. There are many things to remember that you might not be used to. ... Maybe it is scary to post on Doffin? ... So things like that, having the registration sheet was very useful, as everything ends up there rather than my inbox, simple things that can be very useful. (Peter)

5 Discussion

When performing case studies, other authors mention that the separation of context and phenomenon can be challenging (Yin 2013). This difficulty has been noted throughout this study, as well. As seen in the previous section, the phenomenon in question, Innovative Public Procurements (IPP) touched all other aspects of the business, and a broad selection of topics was discussed and evaluated during this process. The interviews uncovered complex relationships that become important when dealing with change and the adaption of Information Technology (IT) systems in the Norwegian public sector. In this section, the findings will be discussed, and their relation to the literature and Research Questions (RQ) will be elaborated on.

This chapter will initially loosely follow the same structure as Chapter 4 on page 33, where the organizational themes from Figure 3.2 on page 31 are discussed in turn. The following discussion will first focus on the nature of innovation and collaboration during IPP. Following this, the application of digital tools throughout the process will be discussed. Finally, in the latter parts of this chapter, areas of future work and the relevant limitations for this study will be identified.

5.1 Addressing the Research Questions

The following sections will discuss the findings from this study by answering the RQ. The first question that set the stage was: “What is the nature of collaboration during Innovative Public Procurements of Information Technology in the Norwegian public sector?”. The first answer to this question is that the broader picture is more complicated than what has been noted in the literature. The nature of collaboration during IPP of complex IT systems, is by far accounted for merely through this study. However, by breaking down the question, some insight can be gathered.

The two sub-questions posed in Chapter 1 on page 1 were “What is the relationship between innovation and collaboration in this case?” and “What kind of tools are used during the process?”, respectively. The first of these will be answered through Section 5.2. The answer reveals a relationship where procurement mandated dialogue has the potential for directly influencing how well a procured IT solution fits into an organization. For the second question, the answer will be revealed in Section 5.3, where both

the types of tools used, and future potential for new tools will be discussed.

5.2 Innovation and Collaboration

Figure 2.5 on page 16 depicts a conceptual framework and provides a suggested relationship between the utilization of IPP and the organizational fit of a procured system. The findings from this study show that the traits in IPP designed to facilitate innovation performed their purpose, but were resource-intensive. This study provides empirical data that the use of innovative procurement traits from the literature, in fact, result in better solutions when procuring IT systems. The findings suggest that while the resource use is higher for this type of procurement, there is a general agreement that this method of procuring IT systems is the correct one.

The findings from this study propose a nuanced attitude towards agility and willingness for change in public organizations. While the literature often paints a picture of a slow-moving public sector, (Mergel 2016; Mergel et al. 2018; Soe and Drechsler 2018), the organizations participating in this study suggest a broader picture. For the participating organizations, the will to change might be present, but the execution could require public or political support. One example is the challenges related to funding found in the literature (Obwegeser and Müller 2018). According to the findings from this study, managing conflicting goals is a part of everyday life for public organizations. This conflict is especially evident when examining public spending on high-risk activities, such as funding innovation activities.

Even though investing in innovative activities come with some risk, this study provides some empirical data regarding the public motivation for this spending. This motivation is mainly consistent with the literature, which suggests that there is much potential in innovating the public sector through the act of procurement (Edquist and Zabala-Iturriagoitia 2012; Hommen and Rolfstam 2008). In addition to this potential for performance and quality gains, the findings from this study shed light on the fact that public organizations are composed of individuals eager to perform their job in the best possible way. Over the past years, it has become evident that one way to improve organizations of all kinds is to utilize new advancements in the field of Information and Communication Technology (ICT) (Cardona et al. 2013). In later paragraphs, it will be argued that innovative activities will become crucial to ensure alignment between software and organizational structures.

Throughout this study, the importance of continuous dialogue provided by IPP when procuring IT systems has also been observed. In this case, the continuous dialogue has been suggested to significantly influence the relationship between supplier and procurer. The literature states that this relation is essential in order to achieve innovation (Carlile 2004; Edquist and Zabala-Iturriagoitia 2012; Hommen and Rolfstam 2008;

Uyarra et al. 2014). Throughout this case, an increased dialogue is motivated by the innovation potential, but also the opportunity to build a repertoire with several suppliers before signing a contract. The findings suggest that this type of dialogue plays a crucial role in organizational alignment. Another important finding is that when utilizing rigorous dialogue, suppliers often become aware that their solution falls short and, therefore, willingly leaves the IPP process. This has led to fewer complaints after the IPP is complete.

So far, there has been much focus on supplier dialogue, but the interviews also uncovered potential regarding public dialogue. By collaborating across several organizations on a regional or national level, public organizations can influence the supplier market to a more considerable extent. The findings consist of several successful examples, and this collaboration is something that should be performed more frequently in the future.

Innovation is a central part of IPP, and in the cases studied, innovation is used as a tool for achieving organizational alignment. The relationship between IPP and innovative IT systems is not well researched, (Moe 2014), and this study can provide some empirical data on this topic. The findings show that participating public organizations have similar attitudes when it comes to developing new and innovative solutions from scratch. It is too expensive. This is something the literature agrees with, (Moe 2014; Pollock et al. 2003), as it would also pose significant challenges for the suppliers.

The findings from this study also include empirical data regarding the influence of the innovative traits used during IPP of IT systems. Several of the participants interviewed noted that this approach where needs are specified, and work processes are adapted to a system still was new to them and required much work. The same was said for the increased effort put into supplier dialogue. Despite this, the findings from this study support the literature in the sense that needs specification combined with thorough dialogue leads to better and more innovative solutions (Carlile 2004; Edquist and Zabala-Iturriagoitia 2012; Hommen and Rolfstam 2008; Uyarra et al. 2014). The findings also suggest that IPP directly influences how well a procured IT system aligns within an organization, see Figure 2.5. This is done by balancing the amount of package customization and organizational adaptation (Soh and Sia 2004). Both in this case and in the literature, organizational adaptation is preferred (Pollock et al. 2003; Soh and Sia 2004).

Although the findings suggest a beneficial relationship between IPP and IT system alignment, potential barriers were also identified through this study. Several authors have suggested that both communication and lack of experience can be challenging factors when using IPP (Carbonara et al. 2016; Eriksson and Westerberg 2011; Lenferink et al. 2013; Manso and Nikas 2016; Soliño and Gago de Santos 2016; Uyarra et al. 2014; Wondimu et al. 2018). Out of these, the most prominent challenge encountered when looking at the interview data was lack of experience. As far as some of the participants

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were aware, they were the first public organization in the country to apply their respective procedures. This inexperience consequentially leads to excessive use of resources. However, there is a willingness to change, and collaboration between organizations is getting better. By performing more IPPs, the public organizations will gain experience and confidence, which lowers the amount of time and resources spent. This, combined with the drive to collaborate more, will likely lead to better solutions being procured in the future.

5.3 Tools

When public organizations are collaborating with suppliers and other public organizations during IPP various collaboration tools are used. The literature and interview analysis uncovered two types of commonly used tools. On one hand, there are the traditional digital collaboration tools, and on the other hand, there are eProcurement tools designed to support the IPP process.

When collaborating externally and internally during the IPP, the participating organizations used “traditional” tools with varying experiences. The initial dialogue with suppliers mostly happens through conferences and face to face meetings. Of all the participants who had experience with IPP, there was widespread agreement that face to face meetings, while expensive, were preferential. This was, in part, related to the building of a relationship and trust. When performing a meeting containing sensitive information over video, the atmosphere changes in the sense that privacy and confidentiality are lost. There is less control over who might be participating and what is recorded.

Regarding tools designed for supporting the procurement process, the interviews provided some interesting insights. The participants agreed that the area of supplier dialogue was reasonably developed, but wished for more checklists and recorded experiences. As the most comprehensive types of IPP are not performed that often, it was noted that merely remembering all the tasks that needed to be done when organizing large meetings required some effort. So eProcurement tools could be improved by including functionality for supporting administrative tasks. The second type of functionality desired was a shared database where organizations recorded their experiences. This could greatly help minimize duplicate work and function as a networking tool where organizations could easily share experiences. Today this information sharing occurs somewhat at random, and through individual networks, utilizing tools and organizing a national database of sorts would be a vast improvement.

5.4 Suggestions for Future Work

This study has elaborated on several aspects of the IPP in the Norwegian public sector, but there are still topics that need to be addressed. These topics originate from both literature and interview analysis.

One of the most exciting areas of future work is related to the suppliers in IPP processes. This study has been concerned with the procurer perspective, and suppliers have not been included as a primary source. The examination of this process from the supplier perspective is of great interest as the opinions and impressions of the process could be entirely different. The suppliers could also have interesting experiences when trying to adapt their organizations to new procedures. Finally, as noted by others, the continuing supplier relationship has not received enough attention from the literature in the form of longitudinal studies (Moe 2014). Much is written about procurement, but to the best of the authors' knowledge, little has been written about the procurer-supplier relationship after IPP. This is especially interesting as several participants brought forth challenges with this type of dialogue.

While the format of IPP is, for the most part, strictly defined, this does not stop organizations from "bending the rules". During the analysis, it was noted that traditional procurement procedures were made innovative by performing dialogue prior to the announcement. This happened before the IPP procedures were invented. Others also stated that the exact format of the procurement was not as important as the organizational mindset when procuring. An exciting topic of research is, therefore, to understand the trends of innovative methods. As far as the author is aware, there is little research on the trends of innovative procurement applications. This could also help provide an image of whether or not public organizations are changing and adapting.

Finally, the politics surrounding IPP is a candidate for future research. The literature and the findings of this study hint at an interesting relationship between the public and innovative projects. One of the interviewed participants noted that some innovative projects receive a large media following and become important causes for politicians. On the one hand, there is this popularity, and on the other is the mentioned scrutiny, in which unsuccessful innovative projects receive unwanted media attention. How media can shape public opinion regarding IPP would be an interesting topic for future research.

5.5 Limitations

Finally, as most research, this study has some potential limitations. These limitations are either methodical, related to the researcher or external factors. The most apparent

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external limitation was the development of the Covid-19 pandemic. This pandemic influenced this study by limiting the data sample size and causing several of the interviews to be conducted over video.

So one limitation this study has was access to data. First and foremost, the aforementioned lack of published research was one such limitation. The interviews could be supplemented by including more individuals with even more diverse backgrounds. There is also a gap regarding the inclusion of suppliers. This study could be improved by interviewing a selection of the organizations who served as suppliers during the IPPs. The study would have benefitted from a more diverse data set, possibly consisting of more documents or workshop activities.

Finally, the last set of limitations is related to the author and research design. The study has been limited by the authors' lack of experience with qualitative research and time concerns. The inductive coding and interview execution could also be limited or biased as the author has worked on the same topic for an extended period.

6 Conclusion

In this study, the process of Innovative Public Procurements (IPP) has been researched. IPP is a form of procurement designed to be more innovative by enhancing dialogue with suppliers. This is an important process, as it is a vital tool used by governments worldwide to deliver better services to the public. In the European Union (EU) the European Commission (EC) are responsible for issuing guidelines defining the rules of how IPP can be executed.

The study has gathered data in the form of interviews and documents from ongoing IPPs in the Norwegian public sector. The analysis of these interviews provided significant insights into the nature of collaboration between public sector organizations and suppliers. The existing literature has often branded public organizations as slow-moving or resistant to change, but this study shows a different picture. In this case, we see public organizations willing to commit a large number of resources to utilize new procurement procedures. The motivation for doing this is to ensure that the procured solution will result in the best possible service for the general public. The findings from this study also suggest that public organizations in Norway will continue to utilize IPP as the resulting solution was considered to be worth the effort.

This study's results are a starting point for examining the development of innovative measures in public organizations. By examining how these procedures are applied in real-world situations, the processes can be streamlined, and organizations can learn from each other. This increased understanding can also lead to better services with lower public costs, and that benefits everyone. As the literature is lacking, more research is needed to supplement this study and potentially generalize the results in an international context.

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