

PhD Project Plan

Working Title:

Innovation capabilities in Public Procurement

**A model to strengthen the innovation capabilities in public procurements
in Norwegian municipalities**

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Statement from the main supervisor

Elsebeth Holmen considers the project description to be scientifically tenable and realistic in terms of progression and results.

Elsebeth Holmen will contribute to publication in international scientific publication channels and recognises that the supervisor and candidate together have an independent responsibility for the publication to be carried out.

Trondheim, 12/04/2021

Elsebeth Holmen
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Abstract

Public procurement is a large socio-economic stimulator. In OECD countries, public purchasing constitutes 12% of GDP and in Norway 20% of GDP, amounting to nearly 600 billion NOK per year. The need for innovation to deal with huge societal challenges has shed light on the potential for innovation in public procurement, both for the public sector itself, the suppliers and industry and for the society as a whole. There are reasons to believe that this possible force for innovation will attract even more attention in the post-coronavirus times in front of us.

Essential for creating innovation in public procurements is the public organisations and their innovation capabilities. The public organisations are the bodies that need to carry out the innovation processes, independent of the enabling source of innovation. This study will deeply examine the innovation procurement capabilities in three municipalities in Norway to contribute to our understanding of how public organisations can strengthen their innovation capabilities in public procurements to exploit this tool even more. Previous research tells us that innovation in public procurement is an immature field taking different directions, streams and approaches. Despite this, we cannot escape the need for public organisations' capabilities to innovate in procurement processes. The study will lean on, and mix, research and theories from different scholars and combine an interdisciplinary and multiplied field, examining *public procurements*, *innovation* and *dynamic capabilities* in a public organisation context.

This study intends to produce four articles in a sequential coherent publication plan. Together they will identify and give an overview of elements in the internal and external system surrounding the innovation procurement processes and how they interact and influence each other. The study needs to collect data 'inside' the municipalities, arranging interviews and discussion groups, and 'outside' from actors in the external system. Surveys might be used as a supplemental data collection tool. The methodology approach is a multiple case study using systematic combining inspired by Engaged scholarship and action research.

This PhD work is part of the FORAN research project financed by the Research Council of Norway. FORAN is the abbreviation for 'Anchoring innovation in public procurement in Norwegian municipalities'. The research project will be carried out by NTNU and Sintef, and the participating municipalities are Trondheim, Bergen and Kristiansand.

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1. Introduction

Public purchasing is of great economic importance in most developed countries, both nationally and on a local level. Developed countries with welfare economies have a large public sector, providing basic services to the citizens like education, health and infrastructure. In OECD countries, public purchasing constitutes 12% of GDP (OECD, 2021) and in Norway nearly 20% of GDP (SSB, 2019), amounting to nearly 600 billion NOK per year (SSB, 2019). The municipality sector in Norway spends about 245 billion NOK in purchases per year, comprising 40–45% of their total budget (KMD, 2020). It is easy to see that public purchasing is a significant socio-economic stimulator and is used as a public policy instrument. We may define public purchasing, or public procurements, as any acquisition made by a public organisation and agency where public money is spent to acquire goods and/or services from non-public suppliers (Torvatn and de Boer, 2017). Public procurement is strictly governed by international regulations (EU directives in Europe) as well as national-level rules and procedures (Anskaffelsesloven, 2017) related to these international regulations.

Innovation in public procurements has received increased attention. The need for innovation dealing with huge societal challenges, also described in the UN Sustainable Development Goals (UN, 2021), has shed light on innovation in public procurement in the whole of Europe. The European Commission gave this issue more attention in 2010 as a response to the financial crisis starting in 2007–08. The EU proposed to make innovation an explicit part of the public purchasing directives in 2011, and in 2014 they were finally made. In 2016 the EU introduced a reform of its framework of directives and rules for public procurement that opened up even more possibilities for innovation in public procurements. There are reasons to believe that this possible force for innovation will gain even more attention in the post-coronavirus times in front of us.

The link between public procurement and innovation is well documented (e.g., Edler and Georghiou, 2007; Edquist and Zabala-Iturriagagoitia, 2012; Uyarra et al., 2020) and a broad range of initiatives has been implemented to stimulate innovations through public procurement (Georghiou et al., 2014). Despite the possibilities for innovation in public procurement and documented effects on innovation (De Boer et al., 2018; Fjose et al., 2013, 2014; Ghisetti, 2017), neither the EU nor Norway have set clear objectives for ‘how much’, or share, of the total public procurements should create innovation¹, but the potential for innovation in public procurements becomes apparent in several documents and reports. The national authority report Stortingsmelding 30 ‘En innovativ offentlig sektor’ (Meld. St. 30 (2019–2020)) emphasises public procurement as a tool for innovation in the public sector and also discuss the challenges of measuring innovation in public procurements. The report points to several gains and barriers to innovation in public procurements. The PwC report referred to in the footnote (EC, 2020) shows that neither Norway nor any of the European countries utilise the potential for innovation in public procurements, and points at *immature policy frameworks on a national level* and the need for *more and better competencies* in achieving innovation in public procurement. A study carried out by OECD (OECD, 2017, s138) also emphasises the increased competence needed to organise and manage the process of innovation in public procurements. This is also discussed in the national authority report Stortingsmelding 22 ‘Smartere innkjøp’ (Meld. St. 22 (2018–2019)).

To comply with the need for more and better competence in innovation in public procurement, we shall shed light on the public organisations focusing on innovation capabilities. Capabilities in organisations are the organisations’ ability to deploy tangible and intangible resources to effectively execute tasks and increase performance (Amit and Schoemaker, 1993; Grant, 1991; Teece et al., 1997). Capabilities to create innovation in public procurement will be seen as dynamic capabilities. Dynamic capabilities

¹ A PwC-report on behalf of the EU Commission (EC, 2020) recommend a 20% share should be procurements asking for innovative solutions in some ways, compared with countries like US (20%) and South Korea (25%). The share of innovation in public procurement in Norway is by EC (2020) estimated to 14%, and ranks Norway 2nd in Europe. The Directorate for Digitalization in Norway (DigDir) did an informal “counting” in summer 2020 and ended up with nearly 2%. The Norwegian Agency for Public and Financial Management (DFØ, 2021) do every second year a Maturity Examination in public procurement among public organisations. They report very little progress in innovation in public procurements. Yet there is no definitive way of “counting” innovation in public procurement, and the authority in Norway might consider 10% as a goal, but estimating it can be based on different indicators (Meld. St. 30 (2019-2020)). There is no harmonized way in calculating innovation in public procurement in Norway and EU.

include the way organisations integrate, build and reconfigure internal and external resources to comply with changes in the external environment (Teece et al., 1997; Eisenhardt and Martin, 2000; Zollo and Winter, 2002). These are intra-organisational capabilities (the organisation’s assembled capability to accomplish processes interdisciplinarily and in the different routines and cultures in the organisation) and inter-organisational capabilities (when the organisation involves, in this context, external bodies/third parties such as suppliers, other municipalities, specialists and public policy systems). Our contribution is to identify the several elements and factors in the internal and external system that constitute those innovation capabilities, shown in Figure 1. This figure is the starting point for our research, developed from both theories of dynamic capabilities and the practice of innovation in public procurement.

Researchers and practitioners collaborate in the research project called FORAN, financed by the Research Council of Norway, and their research program FORKOMMUNE. This research project is part of FORAN (abbreviation for ‘Anchoring innovation in public procurement in Norwegian municipalities’). Three municipalities participate: Trondheim, Bergen and Kristiansand. Trondheim municipality is the head of the project while the research will be performed by NTNU and Sintef. The project expects organisational innovation for municipalities in Norway. The National Program for supplier development (LUP)² is also a partner and will participate in the project.

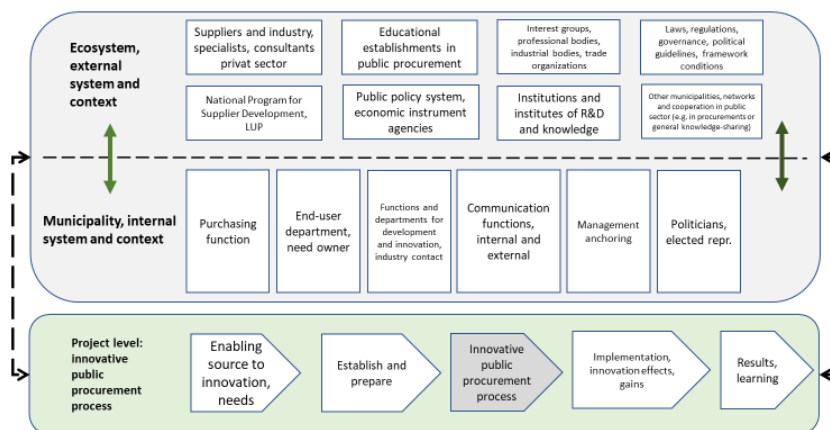


Figure 1: Basic model as a mapping tool for innovative procurement capabilities

There is a need to collect and systematise knowledge and experiences of elements and factors in a new model explaining *innovation procurement capability*. There is little research dealing with innovative capabilities in public organisations (Boukamel and Emery, 2017) and no research focusing on innovative capabilities in public procurements. In the following, we present research questions that could contribute to closing the gap and provide an overview of the literature and previous research the study could be based on.

2. Research questions, literature overview and theoretical perspectives

2.1 Research questions

This project aims to increase the competence in achieving innovation in public procurement and increasing the possibilities for innovation in public procurement by using the knowledge field of *dynamic capabilities*. Through research, dynamic capabilities could be strengthened to create more innovation, but this will require:

² LUPs mission is to be a driving force, a competence partner and a third actor defined as an institutional entrepreneur as a means to promote innovation in public procurement in Norway (Østensen et al., 2021). Read more about LUP: www.innovativeanskaffelser.no

1. A systematised gathering of experiences from public organisations (municipalities) dealing with innovation in public procurement, with the intention to increase the knowledge of:
 - a. which elements the municipalities need to handle satisfactorily
 - b. which barriers, challenges and possibilities are related to those elements when in action
2. Based on this knowledge, initiating actions or initiatives to improve the practice of those elements and the interaction between those elements

The main issue to be addressed in this research project is how to strengthen the innovative procurement capabilities, and innovative public procurement processes, through alteration of

- how the processes are executed
- the organisational system surrounding the processes
- how the municipalities collaborate and interact with actors in the external system surrounding the municipalities and the innovation procurement process

Based on this, the study draws the following research questions:

RQ1: What innovation capabilities in Norwegian municipalities are considered to be essential when they practice innovation in public procurements?

RQ2: How do innovation capabilities evolve within the municipalities' internal systems when achieving innovation in public procurements?

RQ3: How does the interaction evolve with actors in the external system that support and develop the innovation capabilities in the municipalities when achieving innovation in public procurements?

RQ4: What elements in the internal and external system strengthen the innovation capabilities during the innovation procurement process?

The research questions' coherence and continuity are shown in Figure 2. The figure also shows how the research questions will be answered in this structure of papers. See Chapter 4 for more about the papers concerning the thesis and publication plan.

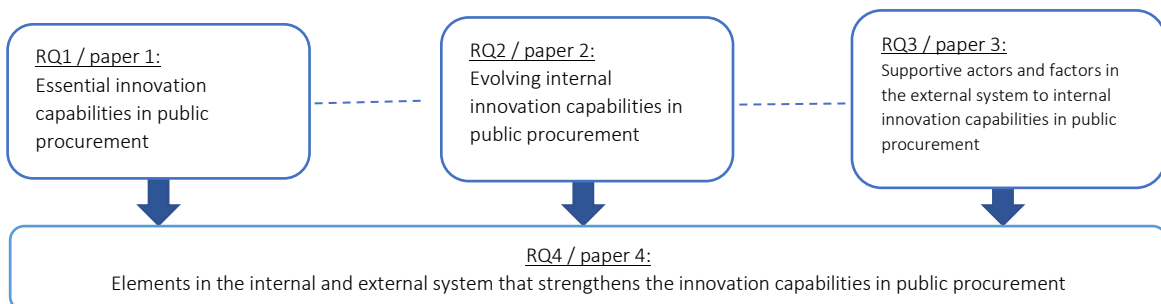


Figure 2: Overview of research questions and papers

2.2 Literature overview and theoretical perspectives

We can find relevant research within the fields of *innovation in public procurement*, *dynamic capabilities (in public organisations)* and *innovation in the public sector* to provide grounds for our understanding and research. The following is identified as relevant literature so far:

Innovation in public procurement

Innovation and demand-driven innovation perspectives in research articles concerning public procurement were emphasised from about 2005, and have since then experienced increased attention. Before that, there were very few research articles concerning public procurement and innovation. Kundu et al. (2020) and Obwegesers and Müller (2018) have performed recent literature reviews and given us

an up-to-date overview of the research field. Both reviews conclude that it is an immature and interdisciplinary emerging field of study missing a clear theoretical foundation and framework. The reviews, despite this, try to categorise the research done, what the focus areas have been and how it defines certain concepts, and examine different perspectives.

Obwegesers and Müller (2018) point out three theoretical foundations in the existing research: institutional theory (Edquist and Hommen, 1999), the system dynamics perspective (innovation in public procurement is dynamics in complex systems) (Pena-Mora, 2001) and risk management theories (Kalvet and Lember, 2010). Kundu et al. (2020) supplement this by pointing out the main contributors to the field: Edler and Georghiou (2007) focus on the demand-side and innovation in public procurement as an innovation policy tool. Edquist and Hommen (1999) indicated that public procurement is more about the lowest price, and mention interactive learning between the demand and supply side to create something new.

Further, Obwegesers and Müller (2018) categorise the literature with three research streams, but three articles are written on a higher level of abstraction and provide insights across categories. These three articles propose taxonomies or frameworks that classify and structure the field and demonstrate that public procurement is an innovation driver (Hommen and Rolfstam, 2009; Uyarra and Flanagan, 2010), and a means to solve problems (Edquist and Zabala-Iturriagoitia, 2012). The categories of the field are: Public Procurement for Innovation, Public Procurement of Innovation and Innovative Public Procurement.

Public procurement for innovation examines public procurement as a demand-side tool to drive innovation, and the research examines public procurement as part of the innovation policy mix. The main contributors to this area are Edquist and Hommen (1999). Perspectives in this category are impact analysis (main contributors are Edler et al., 2012 and Georghiou et al., 2014), and critical success factors and barriers (main contributors are Rolfstam, 2009 and Uyarra et al., 2014). Articles related to *public procurement of innovation* look at the innovation of public services using procurement. The main areas of research in this category are public service policies and innovation management (the main contributor is Valovirta, 2012). The third category, *innovative public procurement*, focuses on innovation of the procurement process. Innovation in the procurement process does not necessarily lead to the procurement of innovative solutions in support of particular markets or modernising public services. Three topics are apparent in this category: procurement strategies, innovative procurement models, procurement process guidelines and how information technology can improve innovation in public procurements.

The concept of innovation used in research and practice in this field differs, and there is no consensus regarding the definition of innovation in public procurement (Rolfstam, 2012). Innovative procurement means different things to different people, and a broad perspective shows the enormous potential for innovation in procurement, but the approaches are limited in terms of measurability and comparability (Obwegesers and Müller, 2018). Definitions differ from ‘innovation needs to be commercialized and have an economic or social impact’ (Borrás and Edquist, 2013), to ‘to affect innovation, public procurement must influence either or both the direction and rate of technological change’ and ‘the purchase involves significant R&D expenditure’ (Hommen and Rolfstam, 2009). Edquist et al. (2000) differentiate between developmental procurement, which is synonymous with creating new products, processes or systems, and adaptive procurement, which denotes the diffusion of existing solutions into new domains or locations. Rullan et al. (2012) argue for ‘a broad concept of innovation that includes not only the product but also process, business model, design, marketing and branding, service, social and organisational’. This conceptual ambiguity poses challenges for both academic researchers and practitioners.

Obwegesers and Müller (2018) suggest that future research must be based on the purpose of analysing, understanding and theorising innovative behaviour as it relates to public procurement. Following this, the Resource-Based View (RBV) (Helfat and Peteraf, 2003) has not yet been utilised in the area of innovation in public procurement. The dynamic capabilities perspective (Teece et al., 1997) holds great

potential in supporting scholars investigating structures within this complex and dynamic research field. The article by Obwegesers and Müller (2018) also points to a need for new and improved management skills. Innovation management approaches should therefore be of interest to researchers, and the lack of management perspectives in the literature is verified by Valovirta (2012). All areas of innovation in public procurement require new management skills and changes in procurement strategy toward long-term planning and risk management approaches to procurement (Boes and Dorée, 2008; Kalvet and Lember, 2010; Klinkler et al., 2014; Lember et al., 2015). More research from a managerial perspective is necessary to close the existing gap between academia and practice and may lead to tangible insights that can guide the managerial practice of R&D and innovation projects.

Mwesiumo et al. (2020, 2019) have conducted relevant studies on innovative public procurement in Norway in recent years. Looking at implementing innovation in public procurement in an organisation (Mwesiumo et al., 2019) and looking at how the purchasers' attitudes towards innovative public procurement could be of vital importance in adopting new practices (Mwesiumo et al., 2020). The conclusion of Mwesiumo et al. (2019) is that implementation of PPI (innovative public procurement) is a necessary but not sufficient condition for reaping its benefits. Given this, and considering Obwegesers and Müller's (2018) suggestions for further research cited above, this research will include the theories of *dynamic capabilities*.

Dynamic capabilities in (public sector) organisations

Research on innovation in the public sector has employed theories of organisational capabilities, using the approach of dynamic capabilities. Using dynamic capabilities can be appropriate to examine innovation capabilities because of the multidisciplinary capabilities in the internal system (intra capabilities) and the open attitude and approach to the external system (inter capabilities). The innovation capability within public sector organisations can be defined as the ability of public sector managers and other key stakeholders within the organisations to make ongoing adjustments in resource allocation and build new thinking (Eisenhardt and Martin, 2000; Pablo et al., 2007). The dynamic resource-based view of Helfat and Peteraf (2003) contribute to this field of knowledge.

There are few studies of innovation capabilities in public organisations, but Pablo (2007) and Klein et al. (2013) confirm the importance of capabilities for enabling innovation in public sector organisations. Clausen et al. (2019) look at push and pull factors in the surrounding environment and how they enable innovation. Push factors are defined as new technologies needing to be adopted and pull factors are admitted needs for change actuating from the external actors or system. The innovation capabilities depend on how to handle those factors. The better those capabilities are, the more innovation takes place in the public organisations (increased innovation intensity). Highly developed innovation capabilities are seen as important push factors themselves (Lichtenthaler and Lichtenthaler, 2009; Klein et al., 2013). Clausen et al. (2019) also demonstrate the important dimension of learning in explaining innovation capabilities.

Some of the studies mentioned above have concluded the importance of dynamic capabilities, but few have identified them. Boukamel and Emery (2017) have conducted a theoretical study explaining capabilities as exploitations and explorations. Questions regarding balancing exploitation and exploration, and their ambidexterity, have given us knowledge about what underlies innovation capabilities in public organisations. To handle these underlying capabilities implies deep structural, cultural and managerial adaptations. Other scholars have highlighted that leadership, experimentation and involvement of employees are important aspects of innovation capabilities (Borins 2001, 2014; Pablo et al., 2007; Fernandez and Moldogaziev, 2013; Demircioglu, 2017).

More available theories in innovative capability include the study of Un and Montoro-Sanchez (2010) in the search for models explaining the development of innovative capabilities. They suggest the 'organisation model' and the 'project team model' and point at communication routines in the organisation, including cross-functional communication and knowledge sharing and sense of cooperation across functions and knowledge in the project team (requires flexible organisational design and depends on how teams are organised) to be important-to-develop capabilities for innovation. Their

study concludes the necessity of facilitators to ensure the absorbing of shared knowledge, and also points at the project team's dependency on the organisational context. Learning and knowledge sharing, both internal and in inter-organisational collaboration, is indicated by researchers such as Pattinson et al. (2016) as building innovative capabilities.

Pavlou and El Sawy (2011) try to conceptualise and operationalise dynamic capabilities based on the seminal research and papers of Teece et al. (1997) and propose sensing, learning, integrating and coordinating capabilities to reconfigure existing operations. They are presented as interacting capabilities occurring in a sequential, logical way to achieve change (or innovation) to create new services or products. The authors have demonstrated through a measurable model that reconfiguring operations (or operational capabilities) can increase performance and moderate environmental turbulence. This has implications in offering an actionable set of dynamic capabilities that decision-makers can use, and that dynamic capabilities are managerially-amenable practices that managers can readily act upon. Pavlou and El Sawy (2011) suggest using this to create a common language between managers and researchers to allow further empirical research on dynamic capabilities.

Valovirta (2015) only appears to mention dynamic capabilities together with public procurement. He proposes several organisational capabilities for public procurement of innovation to be considered as *general requirements for management that need to be established for effective deployment of innovative public procurement as an organisational capacity*. Valovirta (2015) suggest further that *incorporating an innovation perspective in the procurement practice requires improving and expanding organisational capabilities*.

Public organisations and the public sector differ from private firms and industry. It is important in this research to understand what characterises the public sector and how this affects innovation and innovation processes in organisations in the public sector. We will find some distinctive characteristics and interesting perspectives we need to be aware of when investigating innovation procurement capabilities in public organisations.

Innovation in the public sector

Researchers in public sector innovation find that little theory has developed in the public sector itself and that they need to use knowledge developed in the private sector, such as Schumpeter (1961), and other strands of theories that could be relevant in shaping knowledge about innovation in the public sector. De Vries et al. (2015) carried out a study to provide an overview of the research on innovation in the public sector. They looked at research documenting on which level the research has been carried out (mostly on the local government level, such as municipalities), which definitions were used, types of innovation, innovation goals, antecedents in the innovation process and outcomes of innovation. They did not conclude on a specific definition of innovation for the public sector. Based on this analysis they suggest, among other suggestions, more theory development. The understanding of innovation in the public sector is increasingly considered underdeveloped by researchers (Potts and Kastle, 2010; Osborne and Brown, 2011; Sørensen and Torfing, 2011; Gonzalez et al., 2013; Torfing and Triantafyllou, 2016), and Demircioglu (2017) states that studies on public sector innovation have made very limited contributions so far.

It is particularly relevant to this thesis that De Vries et al. (2015) contributed further knowledge about antecedents in the innovation process. Antecedents can be either drivers or barriers for innovation, and they can indicate innovation capabilities. Borins (2001) mentions the risk-averse public administration culture as a key aspect that hinders innovation. Kumar and Rose (2012) have identified a learning culture favouring innovation.

Bloch and Bugge (2013) try to form a theoretical framework for public sector innovation and suggest three theories that can support our understanding of it. The perspectives are: 1) The public sector generates and delivers service, and we need to understand innovation through service production. 2) Public organisations operate in a multifaceted and complex system, and we need to understand these systems. 3) The public sector is mainly different from the private sector due to public organisations not

operating in a market seeking profit, rather having societal objectives that involve other incentives, drivers and barriers to innovation. Bloch and Bugge (2013) refer to Kelly et al. (2002), who have identified three forms of value creation (objectives for innovation) in the public sector: better services, more social outcomes and good trust and legitimacy that will influence user satisfaction. Two more conditions that can be important to understand how innovation in public organisations take place, and how it can be supported, are the fear of failure (Koch et al., 2006; Koch and Hauknes, 2005) and the need for the diffusion of innovation among the public sector (Moore, 1995; Mulgan and Albury, 2003; Rolfstam et al., 2011). The barriers mentioned in Bloch and Bugge (2013) are ‘lack of funding’, ‘inadequate time’ and ‘lack of internal incentives’, and they point at new politics as a strong trigger of innovation.

Bloch and Bugge (2013) suggest that an integrative approach is the most appropriate to capture public sector innovation. Innovation in the public sector seems to be intertwined with and dependent on interaction with the private sector and with users of public services. Innovation in the public sector does indeed not occur in isolation. We can find theories supporting this approach in collaborative innovation (Bommert, 2010; Sørensen and Torfing, 2011; Torfing and Triantafillou, 2016) and co-creation (Bason, 2010).

In elucidation of the need for collaboration and co-creation with actors outside the organisation, it is worth mentioning theories about innovation collaboration and interaction we can find in the field of business relationships and supply networks. Even if these theories mainly have been developed in a private sector context, this could be useful for shedding light on how the municipalities interact with actors in the external surrounding system³, especially in procurement processes.

In summary, we need to bring about models and theories from the related fields and scholars reviewed above and base our research on several previous studies where we can find coherent knowledge forming a more complete understanding, as visualised in Figure 3. Based on this, our ambitions are to contribute to the understanding of innovation procurement capabilities in public organisations.

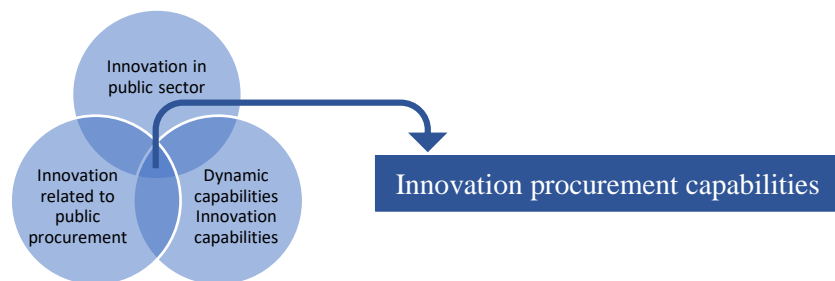


Figure 3: Overview of research fields and scholars

3. Scientific approach and methods

Because of the multifaceted research field of this study, we will examine principles in **Engaged Scholarship** (Van de Ven, 2007) as an appropriate scientific approach. This approach is fetching research and theories from different scholars and has evolved to tighten the gap between theory and practice, meaning that theory will be more used by practitioners and that theory is more rooted in practice. This approach adjusts the co-production of knowledge and helps scholarships advance basic scientific knowledge. Engaged scholarship is defined as a participative form of research to obtain the

³ Inter-organisational collaboration has been emphasized as important for firms to improve their innovation capabilities when collaborating with partners such as suppliers or customers (Faems et al., 2005). Firms can get access to resources they need through interactions with other actors and establish relationships (Harrison and Håkansson, 2006), where resources can be combined through interaction, which can facilitate the innovation process (Rusanen et al., 2014).

different perspectives of key stakeholders in studying complex problems (Van de Ven, 2007). It assumes that this will produce knowledge that is more insightful than when scholars or practitioners work on the problem alone. The approach also tends to engage different scholars to open up the perspective of the problem.

The starting point of this study is the basic model presented in Figure 1. This model's design is based on a presumption of practice and theory and will be our 'preconception' when we search for innovation capabilities in public procurements. As in the engaged scholarship approach, this will be a *pluralist approach comparing multiple plausible models of reality*. This starting point can lead us to surprising facts, data, acknowledgements and disclosures in engaging with both practice and theory, and the research seeks to choose the 'best' explanation based on both 'facts' and reflection. As we cannot draw specific conclusions from our study (point at specific, concrete and permanent capabilities), we need to start with 'incomplete' experiences, but still clear assumptions, and then estimate the best prediction afterwards.

The engaged scholarship approach is appropriate for **case studies**. Case studies investigate a contemporary phenomenon in depth and within its real-world context, and when the boundaries between phenomenon and context may not be evident (Yin, 2018). The 'case' in our study is the municipalities, and three of them will adapt to a multiple case study. A multiple case study allows us to investigate the same phenomenon (innovation capabilities) in every case (municipality) and then draw a single set of cross-case conclusions. The participating municipalities are considered to be 'the same'; nearly the same population, they are cities and they have been practising innovation in public procurement over the same period.

The case studies will be inspired by critical realism, **abduction**⁴ and **systematic combining** (Hanson, 1958; Dubois and Gadde, 2002; Van de Ven, 2007) and systematic cross-fertilisation between the empirical field and research theory. New research-based knowledge will evolve when practical persons in the municipalities and research workers exchange knowledge and experiences, reflect together and have dialogues during the study. The research approach of systematic combining is a continuous movement between an empirical world and a model world. It is a way of conducting case studies, and it is a process where theoretical framework, empirical fieldwork and case analysis evolve simultaneously. It is particularly useful for the development of new theories, as in grounded theory (Glaser and Strauss, 1967). Systematic combining can be described as a nonlinear, path-dependent process (direction and redirection) of combining efforts with the ultimate objective of matching theory and reality (Dubois and Gadde, 2002).

My PhD work does not have the ambition to change the organisations participating in this project, but the FORAN research project might contribute to organisational change because of the expected organisational innovation for the participating municipalities. Change is a dimension in the **action research approach** that could be considered useful to our study. Eikeland (2012) found that this is the preferred research method in studying public organisations, expected to be complex organisations. Action research is well suited to develop new theories, new models and to conduct grounded research when change and development are essential. Organisational learning (Argyris and Schön, 1996) is crucial in this method, and Eikeland (2012) prefers this concept when explaining collective experiential or experimental learning (learning based on doing things together) and testing.

In the last part of the research period, we will test a new model to ensure elements that strengthen innovative procurement capabilities. We might look at **the expansive learning cycle** by Engeström (1987) when testing a new model for innovation in public procurement. This could be a suitable approach to transforming a collective practice reflecting on 'lessons learned' after testing.

Dealing with a mixed-methods approach, and the need for multiple sources, the fundamental data collection method (the main research tool), despite this, will be **interviews** (single and in groups),

⁴ Abduction is discussed in connection to systematic combining in case studies in the article of Dubois and Gadde (2002).

discussions and dialogues, reflections and exchange of knowledge, experiences and analysis between practitioners and researchers (in e.g., tightly directed workshops), based on research approaches highlighted above. Because the exchange with the empirical field and knowledge can result in the identification of unanticipated yet related issues, we cannot lock the way we execute data collection. Methods can change during the study. We might look at surveys as a supplement in collecting data from actors in the external system, and document studies (documents produced by the municipalities in the procurement processes) could be necessary to support, elaborate and expand data.

4. Thesis

The thesis will consist of a collection of four tentative articles, and will not be a monograph. The main supervisor, co-supervisor and the other researchers and practitioners in the FORAN project are relevant co-authors. The candidate has the intention to publish papers and participate in conferences proceedings. The most relevant conferences could be the IPSERA⁵ and ICIESM conferences, arranged yearly. More possible conferences are listed in the footnote. Relevant journals for publications are *Journal of Public Procurement*, *Journal of Innovation Management*, *The European Journal of Social Science Research*, *Journal of Public Sector Management*, *Technovation*, *Strategic Management Journal*, *Public Management Review* and *IMP Journal*.

4.1 Publication plan

The papers will be connected and evolve from identifying innovation capabilities in Paper 1, through developing and supporting elements in the internal and external system to innovation capabilities in Papers 2 and 3, to presenting a new model with elements in the internal and external system that strengthens the innovation capabilities in public procurement in Paper 4.

Paper 1: The goal of the first paper is to devise a better understanding of, and identification of, innovation capabilities that are considered present in the three municipalities when innovation in public procurements take place. The paper will probably also contain the municipalities definition of the concept. The identified capabilities and the definition of the concept of innovation in public procurement will be pursued and further developed in the ongoing research. The paper will be based on a multiple case study that will allow us to compare the identified capabilities and perhaps find common capabilities that could apply to public organisations. This will widen our understanding of innovation capabilities in public organisations that must be present to achieve innovation in public procurement, answering RQ1.

Paper 2: The point of departure is the research conducted in answering RQ1, presented in Paper 1. Paper 2 will answer RQ2 and contribute to our understanding of how innovation capabilities evolve and are continuously developed in the internal system when municipalities achieve innovation in public procurements. Dynamic, innovation capabilities evolve through learning processes and the paper will answer how innovation activities (and behaviour) in public procurement processes can strengthen and further develop the innovation capabilities. The research method will be the same as in answering RQ1, but will probably need certain procurement processes we can study in each municipality.

Paper 3: Prior research answering RQ2 will probably form the basis of examining the external system surrounding the municipalities. We assume that external actors and factors influence both the internal system and the procurement process itself. We will in answering RQ3 try to identify how the external system can support and develop innovation capabilities in the organisations. This will be useful to actors in the external system in developing more appropriate functions, providing assistance and policy instruments helping the municipalities achieve more innovation and contributing to our understanding of how private companies (the suppliers) could build innovation capabilities in public organisations. The research will require interviews with actors in the external system who have been involved in innovative public procurements processes.

⁵ Ipsera: International Purchasing and Supply Education and Research Association. ICIESM: International Conference on Innovation, Entrepreneurship and Strategic Management, IPPC: International Public Procurement Conference, ICIPA: International Conference on Intergovernmental Innovation and Public Administration, IMP: Industrial Marketing and Purchasing Group

Paper 4: Paper 4 will be written after testing a new model to strengthen the innovative procurement capabilities based on the preceding research. After preceding research answering RQ1, 2 and 3, we can assume elements in the external and internal systems and interactions between the elements. We will test to prove identified innovation capabilities. Preceding research will give us several hypotheses to test and contribute to the final new model, presented in Paper 4. The research will require interviews.

4.2 Progress plan

Progress Plan	2021		2022		2023		2024	
	Spring	Autumn	Spring	Autumn	Spring	Autumn	Spring	Autumn
Publications:								
Paper 1								
Paper 2								
Paper 3								
Paper 4								
Thesis								
Research:								
Multiple case study, three municipalities	Interviews, discussions, reflections	Interviews, discussions, reflections	Interviews, discussions, reflections	Interviews, discussions, reflections				
Interview actors in the external system and persons in the municipalities organisations								
Testing a new model						Interviews, discussions, workshops	Interviews, discussions, workshops	
Data collection and analysis								
Publishing conferences and mediation*:			IPSERA		ICIESM			
Courses:								
ØK8000 Philosophy of Science and Ethics, NTNU	5 SP							
MET512 Qualitative Methods—The Basics, NHH	7,2 SP							
IØ8200 Organisational Theory, Technology and Change, NTNU			20 SP					

*Mediation: During the whole research period, LUP will mediate new knowledge continuously, using established arenas in the LUP partnership.

4.3 Funding plan

The PhD project is funded by the FORAN research project, itself funded by the Norwegian Research Council. The end date for FORAN is 31st of July 2024, but the PhD period will last until 31st of December 2024. The scholarship covers 75% of the 4 years, starting the 1st of January 2021.

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